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Marine Services
Supply Chain Study
for Tidal Energy
Industry

2015



Cefnogi Ein Cymunedau Pysgota
Supporting Our Fishing Community

MarineSpace
Making Sense of the Marine Environment™



aquatera

Marine Services Supply Chain Study for Tidal Energy Industry – 2015

Prepared by:

MarineSpace
Making Sense of the Marine Environment™



aquatera

MarineSpace Ltd
16 Temeraire House
Milford Marina
Milford Haven SA73 3BN

Aquatera Ltd
Stromness Business Centre
Stromness
Orkney KW16 3AW

Prepared for:



Menter Mon
Llangefni Town Hall
Buckley Square
Llangefni
Anglesey LL77 7LR

List of Acronyms

ADCP	Acoustic Doppler Current Profilers
AIS	Automatic Identification System
DP	Dynamic Positioning
EIA	Environmental Impact Assessment
FLAG	Fisheries Local Action Group
FLO	Fisheries Liaison Officer
GMDSS	Global Maritime Distress and Safety System
GPS	Global Positioning System
HSE	Health and Safety Executive
LFDS	Local Fisheries development Strategy
MCA	Maritime and Coastguard Agency
MGN	Marine Guidance Notice
MMO	Marine Management Organisation
MSN	Marine Safety Notice
MW	Megawatt
O&M	Operation and Maintenance
PAM	Passive Acoustic Monitoring
PPE	Personal Protective Equipment
PPR	Professional Practices and Responsibilities
PR	Public Relations
ROV	Remotely Operated Vehicle
RYA	Royal Yacht Association
SCV	Small Commercial Vessel
SFF	Scottish Fisherman's Federation
STCW	Standards of Training, Certification and Watchkeeping
TPOD	
UKFVC	UK Fishing Vessel Certificate
WFA	Welsh Fishermen's Association

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1. Introduction

Marine renewables is a potential growth area in the UK with Anglesey being a focus for tidal stream energy projects. This could present significant opportunities for the wider supply chain, and the potential for diversification of existing services into this new, emerging sector.

The fishing industry across Europe faces pressure from changes in fishing policy, reductions and changes in the quota system, cost escalation, and the sustainability of the fish stocks, therefore diversification into other sectors, such as support to tidal energy projects, may be of interest to the fishing community.

Anglesey & Gwynedd operate a Fisheries Local Action Group (FLAG) with Menter Mon as the lead organisation responsible for delivering its Local Fisheries Development Strategy (LFDS) and Implementation Plan. Menter Mon has secured funding through the FLAG to carry out this study looking at opportunities for Anglesey's commercial fisheries community to benefit from the potential growth in the tidal energy sector in the region, through utilising its skills and marine experience, and the vessels it has at its disposal.

1.1. Background

Growth of the tidal energy sector

Tidal energy has been a potential growth sector for a number of years and the UK, and Anglesey has been a focus for a lot of the work to date with a demonstration project at the Anglesey Skerries being one of the first tidal array projects proposed (and consented). Although no technology has yet been deployed in the water around Anglesey, significant momentum is building with the development of a tidal Demonstration Zone (Morlais) announced in 2014 with Menter Mon acting as third-party manager, on behalf of The Crown Estate.

Development of a commercial scale project off Holy Island (Minesto's Holyhead Deep project), and talk of the consented Anglesey Skerries project being re-started after being on hold for over 2 years also highlight the growing importance of this sector to this region.

The Morlais Demonstration Zone will host up to 100MW of tidal generation which is likely to consist of a number of array scale projects of up to 30MW. Each project will need to carry out extensive physical and environmental surveys during the development of the project, and the majority of construction would likely take place in 2018-21 if everything develops as planned.

Commercial fisheries around Anglesey

The Marine Management Organisation (MMO) publishes lists of all of the licensed and registered fishing vessels in the UK on its website (MMO, 2015). In 2015, the number of vessels registered for commercial fishing in Wales was 381, this is down from 431 in 2010. Section 4 looks at the local situation around Anglesey in more detail.

In the UK, fishing activity directly employed 4,747 fishermen during 2012, in either a full or part time capacity, and has seen a 10% reduction in personnel numbers since 2004. Together with the fall in employee numbers in associated industries, there has been a significant reduction in employment

supported by commercial fishing, therefore, opportunities for diversification may be welcomed by the fishing community.

1.2. Purpose of the study

MarineSpace Limited (MarineSpace) and Aquatera Ltd (Aquatera) have been commissioned by Menter Mon to undertake this study that will consider the following:

- Tidal energy industry requirements;
- Vessels / skills / equipment needed to enable requirements;
- Local supply chain - engagement with Anglesey fisheries community to assess the vessels and skills already there, potential and appetite for diversification;
- Summary of options for collaboration between tidal sector and commercial fishing industry;
- Key conclusions; and
- Recommendations and proposed Key Actions.

In order to best achieve these objectives, MarineSpace has utilised its associate relationship with Martin Esseen, an Anglesey based fisheries consultant, to provide local, specialised knowledge of the commercial fishing industry in this region. Aquatera has utilised its relationship with Green Marine to provide insight into how the supply chain has developed on Orkney.

Further details of the various elements of the study are provided below.

Identification of tidal energy sector requirements

Identify and detail services that could be provided by the local fishing sector across the lifetime of a project i.e. project development, construction, operation and decommissioning.

Identification of skills and equipment requirement

Identify the equipment / skills / certificates / insurances that would be required in order to provide the services to the tidal energy projects including an indication of the likely investment required to get these different elements in place.

Identification of local supply chain gaps

Engagement with the local fishing sector in order to gauge the following:

- The current capability to respond to the tidal energy opportunities;
- The gaps in the capability; and
- The appetite within the fishing industry to collaborate with the tidal energy sector.

Preparation of an Action Plan

Prepare an Action Plan that will identify and rank opportunities for the Anglesey fishing sector to get involved in the development of tidal energy projects around Anglesey. The Action Plan will also outline which steps need to be taken in order to respond to the opportunities.

2. Industry requirements

2.1. Overview

To identify services that could potentially be delivered by the fishing industry, the first task undertaken was to explore the requirements of the tidal energy sector related to the marine environment, for developing, constructing and operating a tidal project in the Morlais Demonstration Zone.

The following tidal energy sector stakeholders were consulted to ensure that all the requirements had been captured across all project phases. All were asked to highlight any activities specific to their technologies, or additional activities from their own project experience.

The study also looked at areas where marine energy development has already been undertaken and examples of diversification of the fishing industry into the sector.

Table 2.1 Stakeholders consulted

Organisation	Type	Contact
Minesto	Technology / Project Developer	Ylva Sörqvist Hultgren
Tocado	Technology / Project Developer	Paul Morris
Open Hydro	Technology / Project Developer	Shane Quill
Nova	Technology / Project Developer	Simon Forrest
TEL	Technology / Project Developer	Chris Williams
MCT	Technology / Project Developer	Jess Hooper
The Crown Estate	Seabed Leasing Body	Jess Campbell
ORE Catapult	Trade Organisation	Paul Elsmore
MEP	Trade Organisation	David Jones
RUK	Trade Organisation	Dee Nunn
		David Clubb

2.2. Services required

The consultation identified the full spectrum of industry requirements for a tidal project and the following activities were identified that could potentially be provided by fishing vessels:

- **Physical surveys¹** – geophysical surveys of the seabed;
- **Environmental surveys¹** – bird and marine mammal boat surveys, benthic grab and drop-down video surveys, fish resource surveys (potting/trawling etc), deployment of CPOD's/TPOD's for monitoring marine mammals;
- **Metocean surveys¹** - boat based tidal resource assessment using Acoustic Doppler Current Profiler (ADCP), deployment of seabed-mounted ADCP's for resource assessment, deployment of Waverider buoys for assessing wave climate; and

¹ Surveys could be characterisation surveys to inform EIA work and/or pre, during and/or post-construction monitoring surveys to comply with consent conditions.

- **Construction and maintenance support** - deployment of ROV's, navigation marker buoys, guard vessels, crew transfer, diver support, Fisheries Liaison Officer (FLO) work, site visits.

Based on the consultation exercise and experience of the project team, services explicitly excluded as being outside the capability of most, if not all, fishing vessels were geotechnical surveys (drilling and coring); work-class ROV operations; cable laying, recovery and repair (via trenching, ploughing & backfilling); subsea construction.

With increasing focus on cost reduction, developers are also exploring ways of utilising smaller, less expensive vessels for these high value activities. Therefore, there could be further future opportunities for fishing vessels, but at this stage it is not considered standard practice.

The different activities identified as possibly being able to be provided by the commercial fishing industry would require vessels with a range of characteristics, so the process split the vessels required into size categories - small (<10m), medium (10 – 15m) and large (15+) in line with the MMO's UK fishing vessel list. With the majority of Anglesey's fishing fleet being in the small-medium category this made it clear where the opportunities existed for the local fishing industry. Specific vessel requirements were also highlighted where appropriate, including the need for cranes, deck space, stability etc.

Physical surveys

Physical sea-bed surveys are important for a number of stages of a tidal energy project; informing project design and installation processes (engineering), collection of site-specific data to inform numerical models used to predict the potential impact of a project on physical processes, i.e. changes in wave/tide regime, sedimentation, erosion (EIA) and collection of site-specific data to assess status of installed infrastructure and/or the local environment (monitoring). Surveys normally consist of two elements:

- **Geophysical surveys** - these characterise the seabed in terms of bathymetry (depth and profile), sediment type/cover and the uppermost, underlying rock strata. The Morlais Demonstration Zone covers an area of 37km² and will likely be surveyed via single survey campaign at the start of the project to inform the EIA and ongoing engineering studies. It is estimated that this initial survey would take a total of 15 days and further surveys would be required post-installation focussed on the installation infrastructure. Additional, future geophysical surveys may also be required as part of consent-related monitoring;
- **ROV surveys** - deployment, operation and recovery of observation class remotely operated vehicles for ground-truthing of EIA characterisation surveys and/or inspection of cables and foundation structures post-installation and for ongoing O&M. n.b. work-class ROV operations (trenching, ploughing & backfilling; cable recovery and repair) were not considered suitable for fishing vessels. For the purposes of the study it has been assumed that an ROV survey lasting 2 days would be required during construction to ground-truth geophysical survey data as well as an additional survey for each project and the Morlais export cable at the post-installation phase. It was assumed that a further 5 days per year would be required per project for duration of operation for monitoring and maintenance.

Table 2.2 Activities deemed suitable for fishing vessels – Physical Surveys

	Potential Role	Project Development	Construction	Post-installation monitoring	O&M	Vessel requirements	Additional equipment
Physical surveys	Geophysical surveys	x		x		Medium sized workboat (10-15m) Stability important - catamaran preferred rather than single hull Decent sized cab for all equipment. Appropriate coding and certification.	Multi-beam system Scientific echosounder
	ROV surveys of seabed and scour, condition monitoring of foundations and cables		x		x	Medium sized workboat (10-15m) Decent sized cab for all equipment. Appropriate coding and certification. Winch/crane/hi-Ab (min 1.5 tonnes, safe working load (SWL) tested and certified) Clear deck area (min 16m2).	ROV spread

Environmental surveys

The following environmental surveys can be expected to be carried out during the various phases of a tidal energy project. All the surveys listed below will likely be required during the EIA phase of the project, i.e. characterisation surveys to inform the EIA process, and also the post-construction phase, i.e. monitoring surveys as part of consent compliance:

- Benthic surveys:** These consider species that live on the seabed and in sediment. They involve the collection of both visual data (via Drop Down Video (DDV) physical samples from representative areas of seabed. Surveys can often be carried out using locally based fishing vessels onto which survey equipment is installed. Of particular interest are unique tidal channel habitats. For the purposes of the study it was assumed that 5 days of survey effort would be required per project to inform EIA, and that there would be 3 projects in the zone. It was assumed that a further 5 days would be required per year per project for 2 years post installation;
- Fish surveys:** These establish what are the key characteristic fish species in a study area, with the data being used to inform EIA studies and/or pre/post-construction monitoring surveys. These are often carried out by deploying various fishing gears, including scientific (2m) beam trawls as well as commercial gear (larger otter trawls, potting, netting etc), again, using local fishing vessels and knowledge. Seasonal spawning grounds are of importance due to potential temporal interactions with cable installation and/or piling of foundation for turbine structures. For the purposes of the study it was assumed that a survey would be undertaken for the whole zone to inform the EIA taking 5 days, and repeated pre and post installation as part of environmental monitoring;
- Marine mammal surveys:** These analyse the species composition, distribution, location and behaviour of marine mammals in a project area. Aerial and boat-based surveys can be used, combined in some cases with land-based visual surveys, tagging of mammals to track movements in and around project areas and the use of Passive Acoustic Monitoring (PAM) using CPOD's / TPOD's. As per benthic and fish surveys, data from marine mammal surveys are key to the EIA process, although a significant difference is that unlike benthic and fish surveys post-construction marine mammal surveys are often not required as part of consent condition,. Another important potential difference in marine mammal surveys is that there may be a need to implement marine mammal mitigation during the construction phase of a project, i.e. visual surveys, deployment of Acoustic Deterrent Devices (ADDs), use of PAM etc. Such mitigation will require the use of a suitable vessel, i.e. an appropriate fishing vessel. For the purposes of the study it

has been assumed that boat-based surveys will be carried out for the whole zone. It was assumed that 2 days survey effort would be required per month per project for 2 years to inform EIA, 20 days per project during construction for mitigation and a further 2 days per month per project for 2 years post installation. It was assumed that 8 CPODS / TPODS would be required over the zone for 2 years to inform EIA (4 days for deployment, 8 days for planned interventions, and further 4 days for retrieval). It was assumed that the same would be required post installation;

- **Bird (ornithological) surveys:** These are necessary if the project may affect bird populations and are typically carried out as standard for all offshore projects to inform the EIA and also, for pre and post-installation monitoring. For projects more than 2km offshore physical observations are usually carried out using vessels. For the purposes of the study it was assumed that the same vessel would be used for both bird and marine mammal surveys; and
- **Subsea noise surveys:** A key potential impact on marine mammals and fish from the installation and operation of tidal energy projects is subsea noise. Therefore, background noise surveys are carried out at the start of a project to inform the EIA and then operational noise is also typically monitored post-installation. For the purposes of the study it was assumed that 2 days survey effort would be required per project to inform EIA, 2 days per project during construction, and 2 days per project once operational.

There is the potential for flexibility in the logistics of delivering environmental surveys and a range of different vessels can be used, including fishing vessels with appropriate capabilities, i.e. winches/cranes/deck space etc. Some environmental survey tasks are undertaken alongside physical surveys on large, specialist survey vessels, whilst others can be undertaken using smaller, non-specialist vessels that can provide a platform for wildlife observers, marine biologists or ecologists. Regular visits are likely to be required over the survey period and a single vessel may be fully utilised across several projects taking into account weather delays.

Table 2.3 Activities deemed suitable for fishing vessels – Environmental Surveys

	Potential Role	Project Development	Construction	Post-installation monitoring	O&M	Vessel requirements	Additional equipment
Environmental surveys	CPODS / TPODS for passive acoustic marine mammal monitoring for EIA studies / consent compliance	x		x		Medium sized workboat (10-15m) Decent sized cab for all equipment. Appropriate coding and certification. Winch/crane/hi-Ab (min 1.5 tonnes, safe working load (SWL) tested and certified) Clear deck area (min 16m2).	Hydrophone, clump weight, mooring lines Surface mark / acoustic release
	Benthic surveys (drop-down video and grab samples) for EIA studies / consent compliance	x		x		Medium sized workboat (10-15m) Decent sized cab for all equipment. Appropriate coding and certification. Winch/crane/hi-Ab (min 1.5 tonnes, safe working load (SWL) tested and certified) Clear deck area (min 16m2).	Hamon/Day grab Grab stand Sieve and sieve table Camera and stand
	Boat-based marine mammal surveys for EIA studies / consent compliance	x	x	x		Medium sized workboat (10-15m) Decent sized cab for all equipment. Appropriate coding and certification. Clear deck area (min 16m2). Raised platform min of 5m above sea level	
	Boat-based bird surveys for EIA studies / consent compliance	x		x		Medium sized workboat (10-15m) Decent sized cab for all equipment. Appropriate coding and certification. Clear deck area (min 16m2). Raised platform min of 5m above sea level	
	Subsea noise surveys for EIA studies / consent compliance	x	x	x		Small / medium size workboat Appropriate coding and certification required.	
	Fish surveys for EIA studies / consent compliance	x		x		Small / medium size workboat Appropriate coding and certification required.	Appropriate fish sampling equipment (nets/pots/trawl)

Metocean surveys

The following metocean surveys can be expected to be carried out during the various phases of a tidal energy project:

- Acoustic doppler current profilers (ADCP)** are used to measure tidal characteristics at a site. A boat-based ADCP survey would likely be carried out for each project site. For the purposes for the costing it has been assumed that a separate boat based survey would be carried out for each project rather than whole zone lasting 2 days per project to capture neap and spring tides. Four or more bottom mounted ADCP’s would need to be deployed for up to 3 months at start of project, and once at start of operation. It was assumed that up to 12 ADCP devices would be deployed over the zone, 4 per project) (12 days for deployment and further 12 days for retrieval 3 months later);
- Wave rider buoys** are also likely to be required to inform the design of devices, as well as assessing the accessibility of the site for construction and ongoing maintenance activities. These can be towed to site or lowered and anchored very simply and may take just a few hours to install. In contrast to ADCPs, the buoys may need to stay in place for several years to fully characterise the wave climate at the site, owing to its temporal variability. Assume deployment of four waverider buoys devices over zone. For the purposes of the study it has been assumed that 2 days would be required for deployment and further 2 days for retrieval 3 months later. It was assumed that 1 waverider buoy would be deployed at each project site during operation to inform access for maintenance activities which would need to be retrieved and maintained twice a year (2 days per maintenance trip).

Table 2.4 Activities deemed suitable for fishing vessels – Metocean Surveys

	Potential Role	Project Development	Construction	Post-installation monitoring	O&M	Vessel requirements	Additional equipment
Metocean surveys	Boat based ADCP tidal current resource survey	x		x		Medium sized workboat (10-15m) Stability important - catamaran preferred rather than single hull Decent sized cab for all equipment. Appropriate coding and certification. Clear deck area (min 16m2).	Acoustic Doppler Current Profiling system Deployment pole
	Bottom mounted ADCP deployments	x		x		Medium sized workboat (10-15m) Decent sized cab for all equipment. Appropriate coding and certification. Clear deck area (min 16m2).	Acoustic Doppler Current Profiling system Deployment frame, batteries, deployment and recovery rigging Clump weight/mooring lines/surface mark or acoustic release
	Moored buoys (waveriders) deployment	x	x	x	x	Medium sized workboat (10-15m) Decent sized cab for all equipment. Appropriate coding and certification. Winch/crane/hi-Ab (min 1.5 tonnes, safe working load (SWL) tested and certified) Clear deck area (min 16m2).	Wave rider buoy, clump weight, mooring line

Installation and Operation and Maintenance (O&M) support

Although the main activities during installation and subsequent O&M such as towing and heavy lifts are not considered suitable for fishing vessels, there are a number of support services required during these project phases that could be suitable:

- **Support for mooring installation vessels** – floating tidal devices require moorings and whilst it would likely require larger stable vessels for the main installation process, additional support would likely be required during the O&M phase, i.e. checking and/or re-positioning of surface marker buoys. For the purposes of the study it has been assumed that installation of moorings would take 2 weeks per project;
- **Debris recovery** – there will inevitably be debris that needs to be recovered from incidents during construction. Depending on the size of the debris this could potentially be recovered by fishing vessels using grapples and/or nets. For the purposes of the study it was assumed that there would be 2 instances of debris surveys per project during construction;
- **Navigational marker buoy deployment, servicing and recovery** – marker buoys will likely be a Maritime and Coastguard Agency (MCA) requirement during construction and possibly also on an ongoing basis for O&M. For the purposes of the study it was assumed that 8 navigational marker buoys would be required per project during construction and operation (4 days for deployment and retrieval per project during construction, 4 days per year for retrieval, servicing and redeployment during 25 year operational life of project);
- **Guard vessels / safety standby** – guard vessels will also be a likely MCA requirement during construction and possibly also on an ongoing basis for O&M, MGN280 should be referred to regarding the use of guard vessels. For the purposes of the study it was assumed that 2 guard vessels would be required on standby for duration of installation, estimated to be 3 months / project. It was assumed that, 1 maintenance activity would be required per project per month each lasting average of 2 days, 1 guard vessel would be required during maintenance activities.
- **Fisheries Liaison Officer (FLO) services** – with the fishing industry being one of the most important stakeholders to offshore projects, FLO’s are usually employed to act as the main

point of communication between the project and local fishing communities. An FLO will be required throughout the lifetime of a project, inputting into the EIA during the project development, engaging with fishermen and providing information where necessary during the construction and O&M. It is assumed that one FLO will be employed for the zone, covering all of the projects. It was assumed that an FLO would be required for 1 day / month during project development , 1 day per week during construction period and 1 day/month post-installation;

- **Crew transfers (divers, engineers etc) and transport of small maintenance parts** –Personnel will be required to be transported between installation vessels and the shore during construction, and often small maintenance parts will need to be shipped out. It was assumed that a vessel would be contracted on a call-off capacity during the construction period to be shared across the projects in the zone, and that construction activities would be halted for winter (9 month period for activity). There would be an ongoing requirement for this support and it was assumed that one maintenance activity will be required per project per month each lasting average of 2 days;
- **Diver/diver equipment support** – divers may be required during installation and for O&M activities. Vessels would be required to transport them to site and to support equipment. It was assumed that this resource would be shared across the zone and would be required for 10 days per project during construction and 2 days per month during operation; and
- **Site visits for project developers, stakeholders and PR** – with tidal energy still being relatively new there is a significant amount of interest from stakeholders, hence it is expected that vessels would be needed to provide site visits. For the purposes of the study it was assumed that 5 half-day-trips would be required per year per project during project development, construction and post-installation.

Table 2.5 Activities deemed suitable for fishing vessels – Installation and operation and O&M support

	Potential Role	Project Development	Construction	Post-Installation monitoring	O&M	Vessel requirements
Installation and maintenance support	Support mooring installation vessels		x		x	Medium sized workboat (10-15m) Decent sized cab for all equipment. Appropriate coding and certification. Winch/crane/hi-Ab (min 1.5 tonnes, safe working load (SWL) tested and certified) Clear deck area (min 16m ²).
	Debris recovery		x		x	Medium sized workboat (10-15m) Decent sized cab for all equipment. Appropriate coding and certification. Winch/crane/hi-Ab (min 1.5 tonnes, safe working load (SWL) tested and certified) Clear deck area (min 16m ²).
	Navigational marker buoy deployment, servicing and recovery		x		x	Medium sized workboat (10-15m) Decent sized cab for all equipment. Appropriate coding and certification. Winch/crane/hi-Ab (min 1.5 tonnes, safe working load (SWL) tested and certified) Clear deck area (min 16m ²).
	Guard vessels / safety standby		x		x	Medium sized workboat (10-15m) Appropriate coding and certification required. Need to adhere to MGN280
	Fisheries Liaison Officer (FLO) services	x	x		x	
	Crew transfers (divers, engineers etc) and transport of small maintenance parts		x		x	Small / medium size workboat Suitable for carrying 2-6 passengers Appropriate coding and certification required.
	Diver/diver equipment support		x		x	Small / medium size workboat Suitable for carrying 2-6 passengers Appropriate coding and certification required.
	Site visits for project developers, stakeholders and PR	x	x	x	x	Small / medium size workboat Suitable for carrying 2-6 passengers Appropriate coding and certification required.

2.3. Examples of Diversification

The study looked at the Orkneys as an example of where a fishing community has successfully diversified into providing marine services to the marine energy sector.

Case Study – Green Marine

Green Marine was formed to provide marine services to the energy sector using the decades of knowledge gained in the fishing industry working around Orkney, Europe & beyond. The company was started in 2012 by Jason Schofield who has 29 years of fishing experience, starting on his first vessel at 19 and skippering his own vessel at the age of 24. Jason & his family bought his first vessel the *Norlantean* (Ex *Dorothy Gray* from Aberdeen) in 1998 which was one of the biggest whitefish vessels in the UK, being 38m long overall it had been fishing out of Aberdeen working as far afield as Greenland and the east coast of America. He subsequently replaced her with a newer vessel the *Norlantean II* a 28m vessel built in Spain in 2004. In 2007 another vessel was purchased, the *Viking Monarch* which was 40m in length and at the time the largest whitefish vessel in the UK. After an extensive refit, she started fishing in 2008.



Figure 1

Norlantean II K508

Viking Monarch K58

These vessels worked in the harshest environments known from Orkney to Rockall in the Atlantic and also in some of the strongest tidal currents known in the UK. During the late 2000's the company started to see the changes in fishing practices and the increased regulation become more and more restrictive. They carried on fishing but became interested in the emerging marine renewable energy industry. During this period the price of oil was continuously rising which was also seriously impacting on the profitability of the fishing enterprise.

Jason and his directors took their interest in marine renewable operations further by looking at contracts and the possibilities within the industry. One of the key issues that was becoming apparent to Green Marine and other companies in Orkney was the high cost that developers were having to pay to deploy devices. This was due in part to them not having the experience of working within these very high tidal resource areas but also the high cost of Dynamic Positioning (DP) vessels being hired from the oil and gas sector.

Jason and Gareth Davies of Aquatera then teamed up to look at ways to fill this gap with a more cost effective solution. This led to the inspection and ultimate purchase by Green Marine of the Gantry Barge. This was followed by the purchase of the Green Chief tug and Green Isle Multi-Cat.

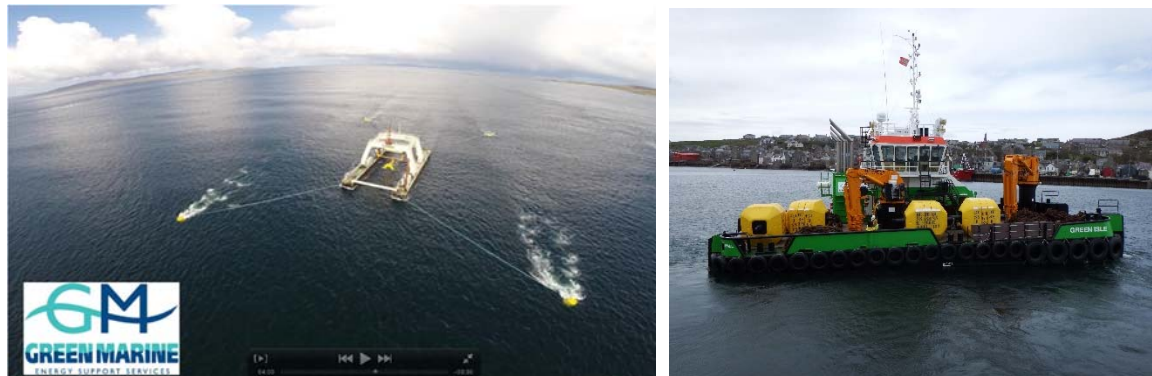


Figure 2 Gantry barge on a tidal site

Green Isle

The last fishing vessel owned by Jason was sold in 2014 and the company is now fully invested in the marine renewable industry having delivered projects for Hammerfest, Voith, Wello Oy, Aquamarine, Seatricity as well as the Scottish Government. Jason regularly travels the world developing the industry and is building a consultancy portfolio.

The team at Green Marine consist of 14 people with 150 years of fishing experience between them. They have found the skills they developed with the fishing industry easily transferable and also highly valued as very few people have the practical experience of working in these harsh areas and in fact most other seafarers would avoid them if at all possible.

Jason explained “*We initially started working in the energy sector by utilising our fishing vessels, placing mooring bases and laying pipelines and have moored in the strong tidal currents for periods lasting up to 6 weeks through all tidal conditions while commissioning works were being undertaken.*

We then progressed into purchasing and using more specialised vessels for operating in the marine renewable energy sector and have been involved installing wave & tidal generating devices around the Orkney waters, with the Andritz Hydro Hammerfests tidal turbine installed by GM being one of the most successful in the world to date, with the much of the preparation, planning & advice given by GM”

2.4. Vessel requirement and value of services

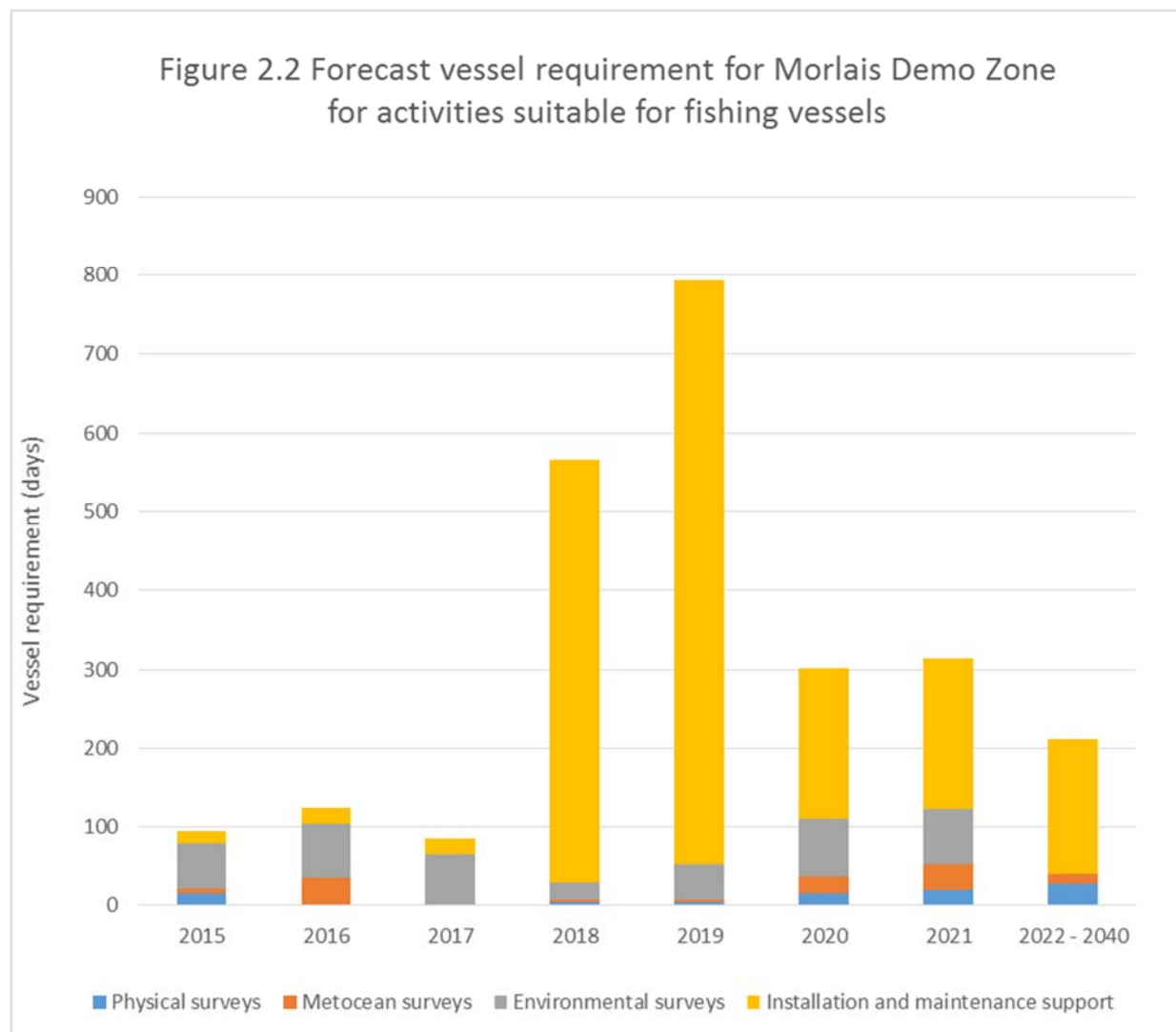
The study attempted to provide an indication of the potential commercial fishing vessel requirements for the Morlais Demonstration Zone, in terms of duration of services, timing of when they would be required and also potential value of these services to these vessels/vessel owners.

This indicative build-out was based on the following general assumptions:

- The size and number of projects hosted by the Morlais Demonstration Zone is still to be determined but for the purpose of this exercise it was assumed that the zone would host three 30MW size projects. The study also considered development activities associated with offshore balance of plant such as the export cable and offshore substation;
- Project development and consenting activities would be ongoing for the next 3 years;
- The majority of construction will take place in 2018-19 if projects developed as planned. Assumed that the first project would be a year ahead of other two projects;

- Post-construction monitoring requirements on top of normal O&M activities for at least 2 years post-installation; and
- O&M phase support for up to 20 years post-installation.

The table of activities assembled through the consultation with industry stakeholders was used, together with estimated durations of activities, to forecast the vessel requirement for the Morlais Demonstration Zone over the coming years as shown in Figure 2.2



A typical commercial rate of £2,000 per day for small – medium size vessel hire was applied to provide an indication of the potential contract value for activities considered suitable for fishing vessels. A reduced rate of £1000/day was used for long term work and stand-by duties.

The study found that that the value of potential contracts associated with vessel use in the Morlais Demonstration Zone could be as much as **£3.5M** over the next 10 years if the projects develop as envisaged. This includes:

- Up to £400k over the next 3 years during the development phase;

- Up to £1.4m during the construction phase; and
- Up to £300k/year during the operational lifetime of the project (25 years).

Additional services are also likely to be required for the development of the Minesto Deep Green project off Holy Island, and potential further development of the Anglesey Skerries project which together could represent additional contracts of as much as £2.9M over the next 10 years.

This requirement for vessels during all stages of the planned projects around Anglesey presents a significant opportunity for local vessel owners and operators. Established marine service providers and charter vessel operators from elsewhere in the UK, as well as on Anglesey e.g. Holyhead Towing, will also be interested in these opportunities. This could also represent further opportunities for personnel with offshore experience to act as crew and vessel support, where specific experience of the conditions around Anglesey will be particularly valuable.

Menter Mon, the third-party managers of Morlais, have a remit to maximise the economic benefit to Anglesey hence are keen to work with the local commercial fishing sector to take advantage of these opportunities where possible.

3. Standards & Competencies

3.1. Overview

To provide these services there are a number of minimum requirements that come from the MCA as well as additional standards that are likely to be imposed by Morlais and individual developers when working on their projects. These will apply to both the commercial fishing vessels themselves as well as the operators.

It should be noted that many of the vessel standards and crew competencies are mandatory for commercial fishing so may already be held by fishermen.

This study has identified the minimum legal requirements and has also attempted to provide an indication of additional standards likely to be imposed by Morlais or individual developers based on similar projects such as the EMEC test centre in the Orkneys.

Safety is of paramount importance when considering a choice of vessel for offshore activities hence this will need to be given priority over other factors including efforts to maximise local content in project supply chains.

3.2. Vessel Standards

The main requirement for any vessel operating on any development site is that is fit for purpose.

The minimum vessel specification is as follows:

- Complies with MGN 280 (Code of Practice for Small Vessels in Commercial Use for Sport or Pleasure, Workboats and Pilot boats under 24m);
- Complies with SCV (Small Commercial Vessel) Code;

- Holds a valid SCV certificate for Area Categories 2 / 3 (for operation up to 60 / 20 miles from a safe haven); and
- Has appropriate Employers Liability and Third Party Liability cover under the terms and conditions of its own insurance.

The cost of SCV certification including surveys can vary but is likely to be less than £500.

Vessels may require modifications and additional equipment to comply with the SCV Code. However, given that all fishing vessels should already have passed an MCA inspection, the cost of additional equipment and modifications are unlikely to be significant.

Further information on the process of certification can be found in a Briefing Note in Appendix 1.

The minimum specification for a fishing vessel to be used as a Guard Vessel is as follows:

- British Registered Fishing Vessels holding a valid UK fishing vessel certificate;
- Meet MCA statutory safety specifications for fishing vessels;
- Be in possession of a valid MCA Safety Certificate(s) or exemption certificate that permits use of the vessel and its personnel to act in the capacity of a guard vessel;
- Equipped with GPS navigator, Radar, Echo Sounder, Radio equipment for GMDSS Area A1, AIS Class B transponder as a minimum and a suitable mobile or satellite phone;
- Be manned by sufficient experienced and competent crew to enable all the functions of a Guard Vessel to be maintained and to keep a proper lookout for the duration of the period that the vessel is on station; and
- Be suitable to carry out the duties of a Guard Vessel in all expected weather conditions.

Load Line Exemption

It should be noted that a Load Line Exemption certificate will suffice for certain categories of work, such as Guard Ship duties or carrying research scientists or observers. In order to get the certificate, subject to survey, the fishing vessel must be over 15m in length and carry a UK Fishing Vessel Certificate (UKFVC). Vessels under 15m in length cannot hold a UKFVC and hence must be surveyed under the Workboat Code to undertake such duties.

More information can be found in the MCA's Instructions for the guidance of surveyors, which covers the survey of fishing vessels.

Carrying research scientists or passengers whilst fishing for profit.

If the vessel is not fishing commercially for profit it must comply with Annex 13 of the MCA's Instructions for the guidance of surveyors, see link –

https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/403234/msis27_chapter_1_annex_13_rev_7.pdf

If the vessel is fishing commercially for profit whilst research scientists or other persons are on board, it must comply with Annex 15, see link –

https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/403237/chapter_1_annex_15_as_at_23_oct_2012.pdf

For vessels under 15 metres length overall (LOA), regardless of whether the vessel has had a safety inspection in the last five years, it is strongly recommended to the vessel owner or any passengers a safety inspection of the vessel is undertaken by the MCA prior to the vessel being used.

3.3. Vessel Characteristics

Four predominant characteristics are critical for vessels: deck space/stability, accommodation, track/station-keeping, and lifting/towing.

1. Deck Space – adequate deck space must be available for survey equipment, modular equipment (such as standard containers), ROVs and related support equipment, and other items. Even though a vessel may have adequate deck space, it must be stable enough to safely carry the added cargo;
2. Accommodation – cab space must be available for survey crews and to house equipment;
3. Track/Station-keeping – a number of roles such as boat-based tidal current resource surveys require precision for data collection. Use of ROVs requires the vessel to maintain position based on the length of tether;
4. Lifting/towing – a number of the roles require a lifting (crane, A-frame, davits, etc.) and a towing characteristic (winches, fairleads, bollards, etc.) to carry out the work required. Note that any lifting equipment would need to demonstrate certified lifting capacity

One other issue with smaller vessels can be the amount of electrical power available which can be important for some activities, where this is the case an extra generator may be required.

For boat-based bird surveys there is also a specific requirement of the observation point being a minimum height of 5m above sea-level.

3.4. Crew Competencies

The vessel Skipper or one or more of the crew will need to hold the following certification, or be able to demonstrate the following competencies:

- Basic Sea Survival Course Certificate;
- Evidence of First Aid Training;
- Radio Operator's Certificate;
- Medical Fitness Certificates;
- Evidence of Radar Training;
- Approved Engine Course (if towing or lifting over 1000 tonnes); and
- RYA Professional Practices and Responsibilities (PPR).

All personnel would be expected to wear the correct Personal Protective Equipment (PPE). Further information can be found in MGN 411 which applies to training and certification standards for crew.

Fishermen should already be able to demonstrate the majority of these competencies and may already have a number of the certificates. Appropriate training could be organised by the FLAG or Morlais through SEAFISH or other training providers where necessary.

3.5. Additional equipment

The requirement for additional equipment will depend on the work being carried out. Most fishing boats will already have accurate position fixing and navigation equipment and a good echo sounder which would be sufficient for most activities.

Specialist equipment such as multibeam sonar or a high grade sounder could be rented if required together with a trained operator so it is unlikely that they would need to be purchased. Lifting gear, such as is available on beam trawlers and scallopers will be useful in the deployment of the smaller items of equipment. Extra generators may be required on smaller vessels where the amount of electrical power is not sufficient for the equipment being used.

MSN 1813 (F) covers requirements for safety equipment.

4. Local supply chain gaps

4.1. Overview

The study has engaged with the commercial fishing sector around Anglesey in order to gauge the following:

- The current capability to respond to the tidal energy opportunities;
- The gaps in the capability; and
- The appetite within the fishing industry to collaborate with the tidal energy sector.

4.2. Current Situation

According to the (MMO) list of licensed and registered fishing vessels in the UK (MMO, 2015) the Anglesey fishing fleet consisted of 67 vessels in 2015, of which 11 are over 10m.

Most of the North Wales fleet is composed of small – medium size fishing vessels, with just 6 vessels in North Wales exceeding 15m overall length, all of which are based on Anglesey (two registered at Holyhead, and one at Amlwch). The generally small size of fishing vessels around Anglesey is typical of the UK fleet overall.

It is acknowledged that the MMO list does not capture all of the vessels that operate around Anglesey so the lists were treated as indicative and more focus was placed on local engagement.

Positive initial meetings were held with the Welsh Fishermens Association (WFA) who were keen to explore the types of opportunities the study has focussed on, and how its members could benefit. WFA highlighted that they had recently organised the provision of services and were considering setting up a services division where they would act in a facilitator role.

An open invite workshop was held in Llangefni on 8th September 2015 to present the study, gauge interest and start the process of exploring opportunities with the fisheries sector. There was representation from WFA and Gwynedd & Anglesey FLAG as well as a number of local vessel owners and operators. A number of other local fishermen had expressed interest but were unable to attend.

A questionnaire was issued through WFA to its members following the event to gauge interest. Five vessel operators responded to the questionnaire confirming their interest, with a range of vessels of different size and capabilities, further details can be found in Appendix 2.

5. Opportunities for collaboration

Individual vessel operators could market services they could offer to Morlais and developers directly. However, if there are a number of fishermen interested in providing a range of services then there may be an opportunity for collaboration that could be beneficial to both the fishermen and to developers. A range of services could be offered under one banner effectively providing a one-stop-shop to developers. This could be coordinated through an established organisation such as one of

the trade associations. This model has been used successfully in Scotland with the Scottish Fishermens Association (SFF) acting in a facilitation role.

Taking this approach would have the following benefits:

- Identifying and contracting suitable service providers is easier for developers;
- Would provide increased resource available to developers, i.e. not reliant on a single vessel/operator;
- Fishermen would not need to engage in marketing themselves;
- Would provide flexibility to fishermen to fit work around normal fishing activity;
- Provide more confidence to the developers that vessels were fit for purpose, crews were competent and all certification and insurances were in place;
- Coordination of training programmes to reduce costs and increase options; and
- Opportunity to explore grant funding to purchase or lease equipment or more versatile vessels to be manned by fishermen if this enabled it to improve offering to tidal sector.

WFA has previously carried out similar marine services on an *ad hoc* basis for other sectors and the organisation is planning to set up a division dedicated to providing services through its members so could be well placed to carry out this facilitator role.

6. Conclusions

Through consultation with the tidal energy industry, other key stakeholders (R-UK, The Crown Estate etc) and with the commercial fisheries community in and around Anglesey, this study has made the following findings and conclusions:

- There could be significant growth in the emerging tidal energy industry around Anglesey over the next 10 years with up to 200MW of generation expected to be deployed. This could represent a significant opportunity for vessel operators to diversify and provide a range of services in the development, construction and operation of projects;
- The fishing fleet in Wales is small compared to other parts of the UK although there are still a number of small/medium size vessels that operate around Anglesey and elsewhere in Wales that could potentially be used for activities required in offshore development. Most of the fishing activity around Anglesey is focussed on scallop fishing and potting so the size of the vessels themselves is relatively small, most less than 15m, but there are at least 6 larger vessels (>15m) that may be suitable for activities that require larger deck space and bigger cranes;
- Services that could realistically be carried out by the fishing vessels typical of the Anglesey fleet include physical, environmental and metocean surveys, deployment of monitoring equipment, ROV's, buoys etc., guard vessel duties and crew transfer services;
- The total value of contracts for these activities associated with the Morlais Demo Zone could be as much as £3.5M over the next 10 years if everything develops as envisaged, with up to £400k over the next 3 years during the development phase, up to £1.4m during the construction phase, and up to £300k/year during the operational lifetime of the project (25

years). Activity associated with the Anglesey Skerries and Deep Green projects could potentially represent a further £2.9M over the next 10 years;

- Investment may be required to ensure vessels have the necessary coding, and operators have appropriate training, certification, and any additional insurance required. However, this is not at a level that is thought to be prohibitive – circa £1.5k;
- A number of certification and competence requirements have been identified, the main ones being that vessels would need to have a valid SCV certificate for Area Categories 2 / 3, skippers would need to be able to demonstrate a level of competence as well as having been through appropriate HSE training including Basic Sea Survival, and if towing or lifting over 1000 tonnes then at least one of the crew would need to have been on an approved Engine Course. Many of the vessels and operators will already have some or all of the required certification and competencies;
- The study has focussed on vessel use but it is clear that there could be significant opportunities for fishermen themselves to act as crew on either local charter vessels including established marine service providers such as Holyhead Towing, as well as service providers from elsewhere such as Orkney-based Lies Marine and Green Marine setting up hubs in Wales;
- WFA is setting up a services division and this could be an ideal vehicle for providing marine services in a coordinated manner. WFA could act in a facilitator role ensuring the vessels provided are fit for purpose with the necessary coding and certification, and operators have appropriate experience and necessary training. This would make identifying and contracting marine services much easier for Morlais and individual developers. This model could also help individual fishermen secure work through taking the burden of marketing and contracting administration;
- Through the focus on Orkney as a case study it is clear there is potential for significant wider socioeconomic benefits associated with the development of marine renewables. One example being the development of three new piers on the back of the growth in marine renewables which has also been a significant benefit to local fishermen.;
- Although it is clear that there are significant opportunities if the marine energy sector progresses as hoped, it should be acknowledged that it is still a fledgling industry with a lot of uncertainty. Efforts are being made to make Anglesey an attractive location for developers through provision of grid and consent, as well as the development of local supply chains. However success locally will be heavily influenced by the success of the industry at a global level; and
- Furthermore, whilst the engagement with the commercial fisheries has confirmed interest in opportunities to diversify, there are also understandable concerns at this early stage related to potential impacts of offshore development on fishing activity. Ongoing engagement with the commercial fisheries sector will be an important part of the consenting process, and will provide a steer to the design and management of the zone, and the projects within it.

7. References

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Appendix 1. Guide to getting MCA certification for small commercial vessels

1 Introduction

For a vessel under 24 metres in length to operate commercially under charter, Merchant Shipping Regulations state that it should comply with the certification, survey, safety and manning standards laid down in the Codes of Practice Small Vessels in Commercial Use for Sport or Pleasure, Workboats and Pilot boats under 24m (known as Marine Guidance Notice (MGN) 280).² For a vessel whose keel was laid after 1st January 2015, the more recent Workboat Code³ will apply.

2 Where can I operate?

A vessel may be considered for the issue of a Small Commercial Vessel (SCV) certificate allowing it to operate in one of the following areas:-

Area Category 6 - to sea, within 3 miles from a nominated departure point(s) named in the certificate and never more than 3 miles from land, in favourable weather and daylight;

Area Category 5 – to sea, within 20 miles from a nominated departure point named in the certificate in favourable weather and daylight.

Area Category 4 - Up to 20 miles from a safe haven, in favourable weather and in daylight;

Area Category 3 - Up to 20 miles from a safe haven;

Area Category 2 - Up to 60 miles from a safe haven;

Area Category 1 - Up to 150 miles from a safe haven;

Area Category 0 – Unrestricted service.

Category 3 or 2 should be sufficient for work on the Morlais Tidal Energy Demonstration Zone.

² https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/282245/mgn280.pdf

³ https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/441389/Workboat_Code_I_WG_Tech_Std_14-06-09-sgs.pdf

3 Who will issue a SCV certificate?

A number of organisations are licenced by the MCA to carry out the necessary survey work for a vessel to be issued with a SCV certificate; these are known as Certifying Authorities. To be issued with a certificate for a particular area of operation, a vessel must comply with all of the requirements of the Code for that operating area to the satisfaction of the Certifying Authority. A list of Certifying Authorities⁴ is given at the end of this document.

4 Which category will I be given?

This depends primarily on the stability of the vessel. Stability will be determined by the Certifying Authority, usually by calculation, although in some cases a heel test will be required. If the vessel has an existing Stability Booklet or certificate, this may be sufficient. The area reflected in the Allocated Stability Category is the maximum distance it can operate commercially.

5 What's the procedure for getting certification?

The first step is to decide which Certifying Authority you are going to use. You will then contact them and they will send you an Application for Examination⁵ form and an Application for Stability Category Allocation form. They will also give you the contact details of the local surveyor who will be authorised to carry out the inspection and survey. The surveyor will be able to assist in filling out these forms.

Forms required by the Certifying Authority are usually as follows

SCV1	Application for Examination
SM1	Application for Stability Category
SCV2	Compliance document

⁴ https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/282381/min456.pdf

⁵ For example, the Royal Yacht Association Application form can be seen at

<http://www.rya.org.uk/SiteCollectionDocuments/technical/Web%20Documents/SCV1-SCV1R%20Ver3.pdf>

and the stability form at

<http://www.rya.org.uk/SiteCollectionDocuments/technical/Web%20Documents/SM1%20Non-Inflatable.pdf>

An initial survey will produce a list of equipment that must be fitted and alterations that must be made. The boat requires fitting out and equipping to the standards required in MGN 280. General equipment and fit-out requirements stated in MGN 280 refer to all commercial boats. There are also specific vessel requirements, such as vessels operating in higher categories require more equipment and more stringent design.

The SCV2 Document of Compliance is filled in by you when equipping the boat, though the surveyor will be able to assist. The surveyor will then survey the vessel to ensure that the necessary equipment has been fitted and the modifications carried out. A hull survey is also required, for which the vessel must be slipped or hauled out.

Following successful survey, certificates are issued to the owner and copies of the certification and code paperwork should be carried on-board.

6 How long is my SCV certificate valid?

Code compliance certificates are valid for five years. Annual, intermediate and renewal surveys are required to keep the vessel compliant.

- By and large, annual surveys often check the vessel against its paperwork and are carried out by the vessel owner.
- Intermediate surveys are mid term (year 3) physical checks on the equipment and condition of the vessel and require a surveyor, though the boat can remain in the water.
- Renewals are a full inspection after 5 years including out-of-water inspection.

7 How much will this survey cost?

This will vary according to the size of your boat and the Certifying Authority which you choose to employ. One Certifying Authority we spoke to charges £40 +VAT for a stability calculation. The survey for certification costs £48 +VAT per metre of vessel length, with a minimum charge of £480 + VAT. Issue of the certificate is £75 + VAT. Travelling costs for the surveyor are capped at £100.

While the above is indicative of costs it is strongly recommended that a number of quotes are got from different Certifying Authorities.

8 How much will the modifications to my boat cost?

This will depend entirely on the size, age and condition of the boat. Given that all fishing vessels must have passed a five yearly MCA inspection,⁶ then it is possible that the additional equipment and modifications may not be too expensive. MGN 280 will give you a better idea.

9 What qualifications and certificates are needed?

This section provides a brief outline of the certification and manning requirements and should be read in conjunction with Annex 3 (pages 118 - 126) of MGN 280 which also covers topics such as stability, risk assessment, single handed operation, working hours, revalidation of certificates etc.. MGN 411⁷ gives details of basic training and of the applicability of fishing certificates for small commercial vessels.

Skipper certification

Any person appointed as a skipper of a Small Commercial Vessel must be a minimum age of 18 years.

Depending on Code Category needed, the table below shows accepted skipper qualifications.

⁶ Merchant Shipping Notice (MSN) 1813 gives detail of safety requirements for different sizes and designs of fishing boats.

https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/440581/1813.pdf

⁷ https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/440965/MGN_411.pdf

TABLE 1 - Deck Manning Requirements Small Vessels in Commercial Use

	CATEGORY		6	5	4	3	2	1	0
SKIPPERS QUALIFICATION ACCEPTABLE FOR GIVEN CATEGORY	Certificate of Competency -Yachtmaster Ocean (MCA Accepted)	Note A	√	√	√	√	√	√	√
	Certificate of Competency or Service - Yachtmaster Offshore (MCA Accepted)	Note A	√	√	√	√	√	√	
	MCA Boatmasters Licence Grade 1,2 & Modified Grade 3	Note A Note B	√	√	√	√	√		
	RYA/DfT Certificate of Competency or Service - Coastal Skipper	Note A	√	√	√	√			
	RYA/DfT Advanced Powerboat Certificate	2 years relevant experience	√	√	√	√			
		12 months relevant experience	√						
	Certificate of competence for appropriate area issued by Competent Authority	Note A Note C	√	√	√	√			
	RYA/DfT Day Skipper Theory & Practical Certificate	Note A 12 months relevant experience	√	√					
	Local Authority Licence for appropriate area	Note A Note D	√						
	RYA/DfT Day Skipper Practical Certificate	Note A	√						
	RYA/DfT Powerboat Level 2 Certificate	12 months relevant experience	√						
ADDITIONAL REQUIREMENTS	Unless operating in the single-handed mode in accordance with Paragraph 7 of this Annex, a second person capable of assisting the Skipper in an emergency should also be on board		√	√	√	√			
	There should also be on board a second person deemed by the skipper to be experienced.						√		
	There should also be on board a second person holding at least an RYA/DfT Certificate of Competency or Service as Coastal Skipper.							√	
	There should also be on board another person holding at least an RYA/DfT Certificate of Competency as either Yachtmaster Ocean or Yachtmaster Offshore.								√

Note A. Certificate should be designated motor or sail as appropriate.

Note B Existing MCA Boatmasters Licence Grade 3 is only acceptable if it has been validated for the specific area in the license prior to this Code coming into force. All Boatmasters licence holders (1, 2, and modified 3) are subject to the area limitations as defined on the certificate.

Note C Competent Authority in respect of manning requirements means either the Maritime and Coastguard Agency or an organisation that issues Certificates of Competence which has been applied for and granted recognition by the Maritime and Coastguard Agency as having the appropriate technical and administrative expertise.

Note D Local Authority Licence - only those Local Authorities that have the approval of the MCA may issue Licences under this Code.

Acceptance of fishing vessel certificates of competence for employment on small commercial vessels.

The Codes of Practice for Small Commercial Vessels state that they should be manned in accordance with tables given in those Codes. Qualifications differing from those tabled, but of equal standing or specialist application, will be considered. The following table aims to clarify the use of fishing qualifications on these vessels.

Fishing Certificate	Small Commercial Vessel	
	Rank	Limitations/Area of Operation
Deck Officer Certificate of Competency (Fishing Vessel) Class 1	Skipper	Category 0
Skipper Full	Skipper	Category 0
Deck Officer Certificate of Competency (Fishing Vessel) Class 2	Skipper	Category 1
Second Hand Full	Skipper	Category 1
Second Hand Special	Skipper	Category 2
VQ Completion Certificate Level 4	Skipper	Category 2
VQ Completion Certificate Level 3 (Skipper Inshore)	Skipper	Category 2
VQ Completion Certificate Level 3 (Mate Unlimited)	Mate	Category 0
Engineer Officer Certificate of Competency (Fishing Vessel) Class 1	Engineer	Any vessel, any area

Skipper (under 16.5m)

This is a voluntary qualification introduced by Seafish to improve safety in this sector of the fleet. In order to apply, experienced fishermen must have completed all mandatory training courses and prove sea time of at least 18 months. In addition, the following courses must have been completed:

- Two-Day or Five-Day Navigation
- Two-Day Engineering
- One-Day Intermediate Vessel Stability
- One-Day GMDSS Short Range (Radio Operator) Certificate

There are two grades of qualification available:

Silver, for those who complete the Two-Day Navigation and Two-Day Engineering courses, which covers skippers fishing within 20 nautical miles from a safe haven.

Gold, for those who complete the Five-Day Navigation and Two-Day Engineering courses, which covers skippers fishing beyond 20 nautical miles. The gold qualification enables holders to undertake other 'non-fishing' commercial activities.

Acceptance of under 16.5m skippers certificates for small commercial vessel operations

The Under 16.5m Skippers Certificates are recognised by MCA for use on Small Commercial Vessels as follows:

- Under 16.5m Skippers Certificate (beyond 20 miles) (Gold) may be used on Small Commercial Vessels operating up to Area Category 3 (up to 20 miles from a safe haven);

- Under 16.5m Skippers Certificate (up to 20 miles) (Silver) may be used on Small Commercial Vessels operating up to Area Category 6 (up to 3 miles from a nominated departure point named in the certificate and never more than 3 miles from land, in favourable weather and daylight).

RYA certification

The most likely certificate that will be needed for work on tidal projects would be the Yachtmaster Coastal Certificate of Competence that is awarded by the RYA/MCA on successful completion of an exam. You are not required to take the five-day Coastal Skipper course above prior to your exam. However, if you have not previously taken RYA training you may find it useful to complete the course or organise some informal tailor-made tuition.

You will also require a commercial endorsement, which requires in addition to the Certificate of Competence:

- PPR certificate (see below)
- Medical certificate ENG1 or ML5(see below)
- RYA Basic Sea Survival certificate or STCW Personal Survival Techniques
- GMDSS Marine Radio Operator's Certificate.

You can then work on commercial vessels up to 24m in length, operating in category 3, 4, 5 and 6 waters

Fees vary according to which qualification is required, but seem to be in the region of £200 - £300. Exams can be sat locally.

Engineer requirements

If a coding of Category 2 is required, and the vessel will be engaged in towing, lifting or carrying cargo greater than 1,000 kg, at least one person on board will need to have passed an Approved Engine Course or have satisfied the MCA as to their appropriate engineering experience and competency.

Basic Sea Survival Course

Skippers of vessels to which the Code applies should hold an approved Basic Sea Survival Course Certificate. Fishermen will already have this qualification.

First Aid Training

The skipper or a member of the crew of vessels which operate in Area Category 2, 3, 4, 5 or 6 should hold an MCA approved Elementary First Aid Certificate (or the First Aid at Sea certificate or Medical First Aid certificate), an RYA First Aid Certificate, or a SeaFish Basic First Aid Certificate, provided use of the medical stores is covered in the course. The skipper or nominated first-aider should undertake refresher training at least every five years. Many fishermen will already have a suitable first aid qualification.

Radio Qualifications

Every vessel should carry at least one person holding a Radio Operator's Certificate suitable for the radio equipment on board.

Medical Fitness Certificates

The skipper and anyone else who is employed on board and who has safety responsibilities should hold an authorised medical fitness certificate. The standard medical fitness certificate for anyone employed at sea is the seafarer's medical certificate (ENG1), available subject to a satisfactory medical examination, from an approved doctor appointed by the Secretary of State, listed in a Merchant Shipping Notice (currently MSN 1777(M)), or on the MCA's website (www.mcga.gov.uk). This medical certificate is acceptable for any area of operation (unless it includes a specific restriction) and is valid for a maximum of two years, in line with international requirements.

For those employed on small commercial vessels that operate no further than 60 miles from a safe haven (Area Categories 2, 3, 4, 5, and 6) the alternative ML5 certificate is acceptable. The ML5 certificate is attached to the ML5 report and may be issued by any registered medical practitioner on the basis of a satisfactory ML5 report. An ML5 certificate is valid for no more than 5 years. The ML5 report form is available from any MCA Marine Office, or may be downloaded from MCA's website (www.mcga.gov.uk)

(Note - Additional guidance on both ENG1 and ML5 certificates can be found in Marine Guidance Note 264)

For vessels operating no further than 60 miles from a safe haven, the following will be accepted as evidence of medical fitness:-

- CAA commercial pilot's licence,
- HSE diving medical certificate,
- DVLA Group 2 Drivers Licence.

Radar Training

In any vessel that carries radar, the Skipper and any member of the crew who is liable to use the radar are strongly recommended to undertake appropriate training in its use.

Professional Practices and Responsibilities PPR

As the skipper of a chartered workboat you have a duty of care to crew, passengers, and other water users, and you will be held to account if things go wrong. All new applicants for a commercially endorsed RYA Certificate of Competence must first pass the PPR⁸ course. Anyone renewing a commercially endorsed RYA Certificate of Competence must pass the PPR course prior to their next renewal date, if they haven't already done so. The recommended cost is £39 + VAT.

The course can be taken at centres in Holyhead or Menai Bridge.

⁸ <http://www.rya.org.uk/coursestraining/professional/Pages/ProfessionalPracticesandResponsibilities.aspx>

10 What about my insurance?

Given that any work you've had done or equipment you've bought will increase the safety of your vessel, and that any charter work is not likely to be more hazardous than fishing is, then insurance companies should not have much of a problem with your converting to charter work. One leading fishing vessel insurance company we spoke to said that it was unlikely that premiums would go up substantially, but this would depend on what your existing policy covers.

It is suggested that you discuss insurance matters with your company before making the decision to change the use of your vessel. It is vitally important that you notify your insurance company of changes in what you use the boat for.

11 Will I need any special equipment?

This will depend entirely on what sort of charter work you will be doing. Most fishing boats already have accurate position fixing and navigation equipment and a good echo sounder. This would be adequate for such work as marine mammal or seabird surveys. For any fish sampling surveys, you will probably already have the necessary gear.

Specialist electronics such as multibeam sonar or a high grade sounder might be required for some charter work. These can often be rented, along with someone who knows how to use them. This would be by negotiation with the company who is chartering the boat.

Serious consideration should be given before buying equipment, as the number of times it gets used may be limited.

Lifting gear, such as is available on beam trawlers and scallopers will be useful in the deployment of the smaller items of equipment.

Appendix 2. Anglesey based vessels

The table below contains details of vessels whose owners responded to the questionnaire distributed through the WFA following the workshop and expressed an interest in providing services to the marine energy sector.

BOAT NAME	SKIPPER QUALIFICATION	HOME PORT	LENGTH (m)	FISHING METHOD	CLEAR DECK SPACE (M2)	LIFTING CAPACITY	DERRICKS, OUTRIGGERS	MAX SPEED (knots)	ENGINE POWER (Kw)	SINGLE / TWIN ENGINES	240 volts?? HOW MANY Kw	AIS FITTED	OTHER COMMENTS
Lottie Holly	Class 1 fishing skipper	Port Penrhyn, Bangor	27	Dredges	10 x 12	10 tonnes	Derrick (x2) Deck crane	10.5	1000	Twin	250 / 415 V 550 Kw	Yes	Boat easily configured to suit most applications. Highly manoeuvrable with bow thruster. 150 tonne capacity
Sarah H	Sea fish 16.5 m skipper ticket (unrestricted)	Holyhead	16.5	Pots	>30	2 tonnes	Gantry Derrick	8.5	138	Single	6 Kva	No	Any requirement can be met. UKFVC 2019
Speedwell 2	Sea fish 16.5 m skipper ticket	Holyhead	9	Pots	6 x 3.5	1 tonne	Derrick	15	175	Single	1 kw	No	
Mare Gratia	Class 1 deck (fishing)	Port Penrhyn, Bangor	44	Dredges	50 plus 200m3 cargo hold	2 tonne winch 1.5 tonne Hiab 500 kg MOB winch	Derrick (x2) Deck crane	10	2 x 375	Twin	240 / 415 V 2 x 100 KVA generators	Yes	
Harmoni	Sea fish 16.5 m skipper ticket (unrestricted)	Holyhead and Pwelli	14.9	Dredges	16	Main winch 11 tonne. Gilson winches 2 x 3 tonnes. Landing derrick 750 kg	Landing derrick Gantry	8	220	Single	240v 3 phase. 45 KVA	Yes	Would consider fitting deck crane if enough work made purchase economically viable