

ON BOARD



Port of Milford Haven

Autumn 2021 | Issue 13

News from the Port of Milford Haven



It's a gas!

Hydrogen power is here
and it looks good



PRESERVING OUR HERITAGE

Lime rendering project protects
port buildings



GIRL POWER

Meet the woman overseeing
the hotel development



GRAZE BOXES GALORE

The graze box craze has arrived at
Milford Waterfront



GENTLE GIANTS

Blue Gem Wind – leading the way
in FLOW

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FROM THE CHIEF EXECUTIVE



Port of Milford Haven



Hello,

I had hoped to be writing a more cheerful update for this latest edition of OnBoard; however, very recently our Port family has been shocked and saddened by the loss of one of our long-standing colleagues, Andrew Kerrison. As a business immersed in the local community, this loss, we know, will be felt not only by us, but by many others up and down the Haven and in the wider community, and our thoughts and prayers are with his family and friends at this difficult time. Andrew's death is a harsh reminder that COVID remains a threat to us all as we search for a way to live with this awful virus.

With COVID case-rates rising locally, our team continues to work flexibly, whether that be at home, in our offices or on the frontline. I am extremely proud that we have been able to operate safely across the business over the past 18 months and continue providing our customers with safe and reliable services, from guiding in ships and providing port services across Milford Fish Docks and Pembroke Port to tempting in more visitors with the development of Milford Waterfront. In these difficult times, I know our team spirit and support for one another will help keep us on track over what looks to be another challenging winter period.

There's always been a strong and independent spirit here in west Wales. Our geography has its advantages, but it can have its downsides. While other major centres pull in the resource and collaborative energy from all sides in order to make their regions stronger, more than half of the compass bearings here in Pembrokeshire point out to sea! The city region structure has been created in part to address the problem of peripheral areas such as ours not having their

voice heard. However, as this issue of OnBoard makes clear, even city regions need to work hard to be noticed. I think we need to sing from the rooftops about what this region can offer to the UK as our energy economy moves to 'Net Zero'. In fact, as home to the UK's energy capital, I think Pembrokeshire really needs to lead the region's chorus, particularly about the Hydrogen Economy.

Hydrogen is a piece of the renewable energy puzzle that we need, in order to complete a virtuous circle in energy terms. As our feature on Blue Gem Wind's plans for floating wind arrays in the Celtic Sea makes clear, this region will most likely be a significant contributor of marine renewable energy. As producers and storers of hydrogen, we could decarbonise our own energy intensive industries - make them more efficient and ensure they are able to operate, invest and employ our workers - and continue to be a storage battery for the UK's energy requirements, just as we are with oil and gas products. Most importantly, we can hand on to our children a local economy that offers jobs and opportunity.

As everyone looks for opportunities to build back stronger and greener, we have the best chance in decades to sing out loud and be heard at one of the most exciting times for progress since the Industrial Revolution. Let's all sing from the same hymn sheet!

Stay safe everyone.

Andy Jones

Andy Jones Chief Executive

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TŶ HOTEL UPDATE

Work on the construction of the new 100-bed TŶ Hotel at Milford Waterfront is making excellent progress.

Undertaken by **Carter Lauren Construction**, the build has passed the halfway point and is on track to meet its target opening date of Spring 2022.

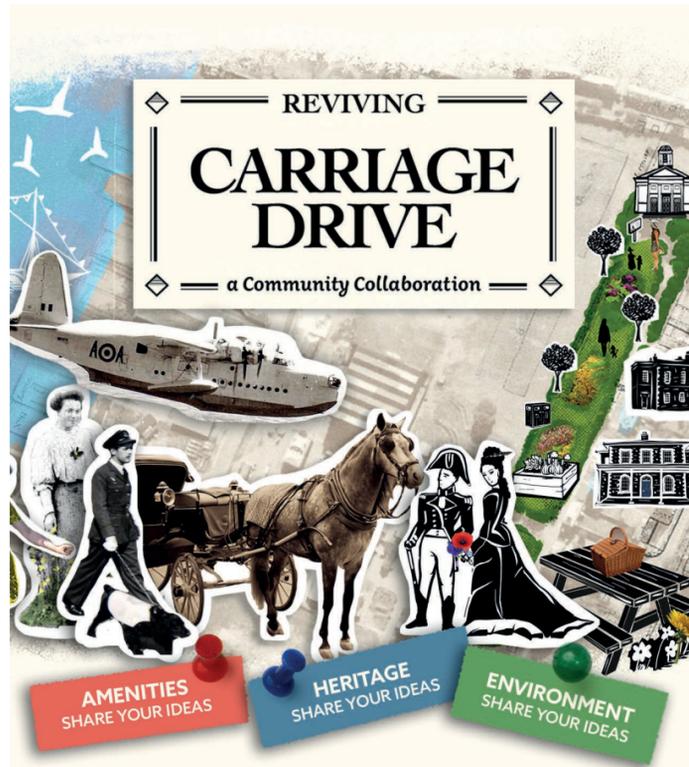
The timber frame structure is now fully in place and the brickwork has begun on the exterior of the five floors. The ground floor, with floor to ceiling windows, will house the reception area, activity suite, bar and restaurant, and a total of 100 bedrooms will be spread over four floors of accommodation.

Many people will have noticed the huge Mantis crane (it was hard to miss!) which was being used to manoeuvre the timber panels and other materials into place. Internally, electrical works and plaster boarding are underway and glazing has been completed on most of the first and second floors.

The hotel's design has recently been awarded a BREEAM 'Very Good' environmental rating which recognises sustainable environments that enhance the wellbeing of the people who live and work in them and help protect natural resources.

The TŶ Hotel will be operated by the owners of the prestigious Celtic Manor Resort, The Celtic Collection, who will soon be starting the search for the team that will run the hotel.

To follow the latest developments visit www.milfordwaterfront.co.uk



REVIVING CARRIAGE DRIVE

As part of the Pembroke Dock Marine project, Carriage Drive has been identified as an area that could benefit from heritage enhancements.

Carriage Drive (also known as The Avenue) was the formal entrance to the dockyard which officers of the Royal Navy used in horse-drawn carriages to access their residences – the Georgian buildings on the street now known as The Terrace. Whilst it was once a grand, formal space, the avenue of trees remains but much of the surrounding space is now largely overgrown.

The Port of Milford Haven enlisted the help of the community to reimagine this space and produce a joint vision for an improved, more community focussed use of Carriage Drive. The Coastal Communities Adapting Together (CCAT) team ran a three week public consultation where participants used interactive tools to map their ideas for a specific location, as well as voting for other ideas already submitted.

Pembroke Dock Heritage Centre, who were partners in the project, provided expertise and a pool of willing volunteers and members brimming with ideas for improvements to the space.

During the consultation, 490 separate ideas were put forward. And that doesn't include a further 399 votes and 40 comments!

The most suggested idea was heritage interpretation, followed by benches and plants for pollinating species. The next stage will be to publish the results in more detail and all ideas will be considered when forming plans to develop a more ambitious strategy for the future of Carriage Drive.

For more details about the project visit www.ccatproject.eu/reviving-carriage-drive

PRESERVING OUR HERITAGE

The town of Milford Haven is renowned for its rich history and the buildings around the marina and docks are a constant reminder of that.

The Old Sail Loft and Milford Museum have been recognisable for many years for their exterior masonry, but time has taken its toll on the buildings so back in 2020 the decision was made to lime render them to prevent further decay to the stonework and improve the buildings' longevity.

Having been used in construction as far back as 12,000 BC, lime offers permeability and flexibility that is required specifically in historic buildings and effectively allows buildings to breathe. It works through carbonation which is the natural process that allows lime mortar to set.



Milford Museum before the lime rendering process

Attention to detail after the render has been laid on is critical as it is highly temperature dependent. Carbonation is affected by the cold and wet slowing down the process, or heat and wind drying out the surface too quickly. Wrapping the building in hessian is one of the best ways to prevent frost from stopping carbonation although cold, wet conditions will still be able to slow the process down considerably, and in hot spells the hessian can be wetted down to create a humid micro-climate preventing the lime render from drying out too quickly.

Local Built Heritage lime mortar plastering specialists **Tree & Sons Ltd** were appointed who are experienced in this type of plastering. The Port worked closely with Pembrokeshire County Council's historic officer,

Milford Museum and used photographs from the past to ensure the work was carried out to complement their listed building status.

Claire Lawrence, the Port's Assistant Project Manager, oversaw the lime-rendering project. She said "The museum and the Old Sail Loft have always been iconic buildings and ones that we want to ensure last long into the future. Lime-rendering is an excellent way of ensuring they are preserved and protected, therefore we are looking into replicating this work on other structures in the future."



The Old Sail Loft which accommodates Coco's restaurant, the Waterfront Gallery and the Port's Simulator Suite has benefitted from the lime rendering.



Milford Museum now

INVESTMENT AT WALES' LARGEST FISHING PORT

Work to enhance health, safety and welfare facilities at Milford Fish Docks has been completed which includes the installation of the only marine crane in Wales.

Following close consultation with the fishing fleet and a successful application to the European Maritime and Fisheries Fund, as well as the marine crane, the Port has also installed embankment ladders, additional life rings and fire extinguishers, refurbished the shower, toilet, and laundry block.

The crane enables fishers to load and unload their bait and catch in a safe, more efficient manner. Port staff have been trained to use the equipment and can operate it any time of the day or night, at no additional cost to the customers.

Melanie Durney, Marina and Docks Manager, said "Over the last few years, we have been investing to ensure the inshore fleet can work as effectively and safely as possible, and having this funding meant we could build on what is already here."



The new marine crane is the only one in Wales!

Hydrogen - Zero Hour



It's Zero Hour – A zero carbon watershed moment. The Port's Energy team refuel the RASA hydrogen fuelled electric car for the very first time. Credit: Gareth Davies Photography

As we add more and more green energy to the mix, Pembrokeshire, which is home to the UK's energy capital - the Port of Milford Haven, is set to remain critical to the UK's zero carbon future. Already, floating offshore wind (FLOW) plans are well underway. Sites for these giant rig mounted turbines have been identified off the coast of West Wales that could send back the equivalent of enough power (1 gigawatt the initial target) to completely decarbonise the region's electricity usage within a decade.

Whilst green electricity fed straight into the grid is the biggest win from marine renewables, there is another very significant potential player in the energy revolution: Hydrogen. Among its many useful properties, Element number 1 stores a lot of energy for its mass, much more than hydrocarbons. It's what powers the Sun after all.

Humankind's most needed commodity, energy, is in infinite supply. It's how we harness or extract it that's the burning issue.

The Port of Milford Haven is known as the energy capital of the UK. We were in the right place at the right time when the nation needed refineries and port infrastructure to receive and process first oil and then liquefied natural gas (LNG) hydrocarbons to heat its homes and to power its transport and industry. The Waterway's sheltered depths and its location close to global shipping routes made it a critical nexus for UK PLC.

The same assets, along with the capabilities that 60 years of being an energy capital have nurtured, are now helping the Port and the region to secure a prominent position in the global race to decarbonise energy production. The Pembroke Dock Marine project, creating a world class centre for the development of marine energy, is underway. But there's also a lot of excitement around hydrogen.

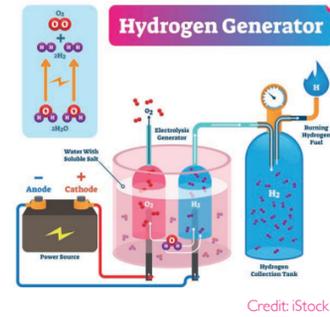
Hydrogen (H₂) is the most abundant element in the universe but rarely travels alone. It teams up with Earth's most ubiquitous element, oxygen (O), to make water (H₂O). This pairing, without which there could be no life on Earth, can be unpicked

relatively simply – although energy intensively - using electricity. Applying an electrical charge through positive and negative electrodes dipped in water quite literally decomposes it into bubbles of its two basic ingredients. Using this process, surplus electricity generated offshore could be diverted to make hydrogen, which can be stored.

“Pembrokeshire has an opportunity to play a vital national role in driving new green growth in floating offshore wind (FLOW), marine energy generation and hydrogen”

explains Steve Edwards, Commercial Director:

“The addition of hydrogen is critical here, not least because our ability to make and store it when there's spare electricity means renewable energy can be kept for when Mother Nature is otherwise unable to provide.”



Credit: iStock

Using fuel cell technology, we can reverse the electrolysis process and generate electricity, from the stored hydrogen's reacting with oxygen, and the only by-product is water. This is how most hydrogen-fuelled electric vehicles operate. This chemically elementary process could hold the key to helping us smooth the unavoidable peaks and troughs of renewable energy generation that relies on sun, wind, wave or tide.

But our greatest energy requirement is for heat: heat in our homes, offices and factories, both to keep us warm and for processes that need heat, such as steel production. Until now, burning fossil fuels has been the cheapest way to create this heat, but at an environmental cost of which we are now very aware. If we are to reach our target to be net zero emitters of carbon dioxide by 2050, we must create heat both via electricity and through using fuels that do not produce greenhouse gases when they burn or react. Hydrogen suits well here as, when it burns, it simply re-embraces its old partner, oxygen and becomes water once again.

It seems fitting that the universe's most simple element should be so fundamental to solving humankind's most complex challenge, but then again, the answer has been staring us in the face from dawn until dusk every day since life first appeared on Earth.

“While there may be some debate about how hydrogen fits into our plans to reach Net Zero, and how we extract it, we believe it has a big part to play as we add more renewable sources to our energy mix” says Tim James, Head of Energy Development at the Port. *“That's why the Port and its partners in the Milford Haven Energy Kingdom project are leading the way, as this coastal region offers the very best imaginable combination of assets – its pipelines, pylons, port and people - to make the most of hydrogen's potential.”*

MILFORD HAVEN: ENERGY KINGDOM

MHEK is exploring the use of zero carbon hydrogen alongside renewable electricity to meet all of our future energy needs for buildings, power generation and fuelling transport. This collaborative project, led by Pembrokeshire County Council, explores what a decarbonised smart local energy system could look like for Milford Haven, Pembroke and Pembroke Dock.

“We've installed this pioneering hydrogen refilling station for fuel cell

cars here at Milford Waterfront,” explains Tam Bardell, Energy Development Manager at the Port. *“It's a brilliant concept: an electrolyser that can use spare energy from our solar arrays to create, store and dispense hydrogen. We also have two RASA prototype cars from Welsh firm Riversimple here on trial, showcasing zero carbon transport as it could be.”*

“On the heating side, we've installed a smart hybrid hydrogen heating system in one of our offices,” continues Tam. *“It runs a heat pump powered by renewable electricity, and we are pairing this with the trial of a prototype hydrogen boiler that can kick in when it needs a boost during*

cold weather. The two big energy challenges we need to crack are the decarbonising of heating and transport, so these projects are important for proving the ability of hydrogen to play a crucial role.”



This hybrid heating system installed at the Port of Milford Haven's offices uses a heat pump powered by solar energy, but can switch to hydrogen during cold spells.

HYDROGEN BLUES

Towards 2050, if we are to switch our heating from gas (or oil where gas is not available) to electric, using heat pumps for example, we will have to ramp up green electricity production massively. The UK will need to triple its generation capacity to deal with the switch and to support the roll out of EV charging. We will also have to invest in power lines and home insulation and to upgrade the heating systems of millions of homes and offices.

The owner of Pembroke Power Station, RWE, has announced that, with its focus on decarbonising its business entirely by 2040, it will pursue opportunities in on- and offshore renewables, looking

into options for developing an electrolyser plant to supply local heavy energy users as well as using hydrogen within the plant. For the last, it will need a lot more hydrogen than could be produced through electrolysis so-called 'green hydrogen' from spare capacity on windy days. As Tim James explains, that demand could be met by 'blue hydrogen' as well.

“Hydrogen can also be produced by stripping it from natural gas (methane – CH₄). But, when hydrogen is stripped from methane, what does the process leave you with? CO₂, the very gas we are trying to eliminate from the energy formula!”

“We use the term ‘blue hydrogen’ to describe hydrogen stripped from methane, where the waste CO₂ is

then captured, shipped or piped away and stored in underground caverns, such as the voids created by extracting gas and oil deep under the sea floor,” says Tim. *“RWE is part of a consortium seriously looking at this option and if it can be done cost effectively and efficiently, it will be a very neat solution.”*



Pembroke Power Station operator, RWE, is looking into developing an electrolyser plant which could pipe hydrogen to local energy intensive industrial users to help them reduce their carbon footprint and improve their efficiency.

COLLABORATION

And if carbon capture and shipping is viable for South Wales, many others in the region stand to benefit. RWE is one of the partners of the South Wales Industrial Cluster (SWIC), which also includes energy-intensive businesses such as Valero, Tarmac and Tata Steel, SMEs including the Port of Milford Haven, and Pembrokeshire County Council. The collective SWIC collaboration on hydrogen use and carbon capture and storage may be crucial to Wales' ambitious decarbonising targets.

Detractors believe any energy equation that has CO₂ in it is the

wrong way to go. However, it is possible that the timescales involved and the practical challenges of decarbonising the nation's heat, transport and industrial complexes are going to be tough without blue hydrogen playing a role.

Be it green or blue, this simple and abundant element will have a lot to offer us over the next few decades. Producing it more cheaply and learning how to make it a part of our energy mix as soon as possible can only bring down the cost of going green. The Port of Milford Haven has committed to invest over £50m in the next five years to support and grow the

energy cluster for a decarbonised future. With similar commitment coming from other members of the South Wales Industrial Cluster, we can not only make our contribution to Wales' targets, but also make the region a world leader in zero carbon technology.

Livelihoods, as well as lives, depend on it.



The way we use energy to heat our homes and travel from A to B is set to change. The Energy Systems Catapult was set up by government as an independent, not for profit organisation, to put people at the heart of this transition. It has set up an online community called Home Truths to hear what the public want from their energy future. If you'd like to shape the future energy system and win cash prizes, sign up at <https://hometruths.org/>



Ty Hotel Milford Waterfront under construction. The hotel will also house a restaurant and bar, a private dining area, and an activity suite within the ground floor. Credit: Owen Howells.

BALANCED TO PERFECTION

The Port of Milford Haven's assistant project manager, Claire Lawrence, takes on life and career with equal passion, and she's loving every minute.

Highly driven people often have a 'tell'. They sometimes seem to look past the objects and people not directly on their path to achievement. Claire Lawrence is not one of those people. The friendly and thoughtful assistant project manager, overseeing the Port's landmark development of the new hotel on Milford Waterfront, masks her ambition, and the commitment to get to where she is going, very well.

“Choosing a career that's male dominated has given me the appetite to prove that in this day and age it really doesn't matter, you can succeed in any industry”

says Claire, standing in the middle of the construction site for the Ty Hotel Milford Waterfront, due to open this coming spring.

“I've always been quite practical and outdoorsy – I've never been girly. But I like to be really organised and bossy too,” laughs Claire. *“If there was a friends' party or trip to be organised, I was always head of group chat, organising everyone,”* she admits. Early signs, then, of an aspiring project manager.

Born and raised in Crundale, north of Haverfordwest, Claire went to Sir Thomas Picton School and, following her A Levels in 2012, went straight into an apprenticeship at the Port's Estates department, looking after the business' property portfolio. She was offered a full-time position at the Port when she completed her apprenticeship.

Not content to ride her career, Claire set out to continue her personal development. *“I wanted to work in the construction side of the business, so the Port agreed to fund me through a foundation degree in construction management at Pembrokeshire College,”* explains Claire. She was still working full-time but was given day releases and worked evenings to complete her studies. She got her degree with distinction.

In search of more practical experience, she switched to the engineering side of the Port's business, and yet the drive for personal development continued. With the Port's support, she completed a BSc in construction management at Coleg Sir Gâr, which she achieved with first class honours. As the Port's assistant project manager, Claire was finally able to satisfy a lifelong calling.

“The hotel build has been a brilliant project. I was here from the start. When I worked with Estates, it was all about managing the empty Burnyeats building [which is being replaced by the hotel] that had been standing here for years. It was frustrating spending time and money just to keep it safe and keep people out. To see it being demolished and this vibrant, new hotel being built... it's just so rewarding to see.”

Claire is far from being 'all work, no play'. In fact, as she explains in a way that would be familiar to many lucky enough to live and work in Pembrokeshire, life outside work defines her just as much. The self-described big foodie heads to the coast (Nolton Haven is her favourite place for a swim and a bite at the brasserie there) to switch off.

“I've always been a perfectionist and motivated to achieve to the best of my ability, but becoming a parent was what really became a driving factor. It's increased my focus to ensure I not only deliver in work but that I maintain a balance outside too,” she says.

“For me the Port is a fantastic place to work; no two days are the same and many of my colleagues have turned into lifelong friends,” continues Claire. *“My role is challenging and exciting, and I feel so fortunate to have been supported by the Port through my education and training over the last few years. Our Trust Port status is also a big attraction for me, seeing the investment into my local community is really important and rewarding to see.”*



Left to Right - DP Energy's Chris Williams, Head of Development UK and New Markets; Bethan Simes, Project Development Manager; Jaime Bohata, Engineering and Logistics Manager with Tim James, Head of Commercial & Energy at the Port.

GLOBAL RENEWABLES FIRM DP ENERGY ESTABLISHES BASE IN PEMBROKE DOCK

Independent renewable energy development company **DP Energy** has become a tenant of the Port and set up an office at the Marine Energy Wales Hub in **Pembroke Dock** to work with and develop the local supply chain and infrastructure for their 300MW floating offshore wind farm called Gwynt Glas in the Celtic Sea.

DP Energy has been active in the marine renewables sector all over the world over the past fifteen years and are now looking to develop their UK offshore wind ambitions.

Simon De Pietro, CEO at DP Energy said *“We have visited Pembroke Dock many times and have always been impressed with the infrastructure, supply chain and friendly welcome from the industry and officials. The port facilities at Pembroke Dock provide a great opportunity for the emerging floating wind industry and we are working hard to ensure we can maximise use of the infrastructure to ease logistics and costs, whilst creating sustainable long-term employment in the region.”*

Chris Williams, Head of Development UK and New Markets, said *“DP Energy currently has a global portfolio of over 5,000 MW of renewable energy projects at various stages of development including wind, solar and tidal technologies. Our goal is to contribute to decarbonisation and achieving net zero. We are looking forward to using our experience, track record and resources to help meet Welsh, UK and global renewable energy targets”.*



MILFORD HAVEN 'FOODIE' LAUNCHES GRAZING BOX BUSINESS

Georgie Neale was about to return to Australia for her third year of backpacking when the Covid-19 pandemic hit. She needed to find a job in her hometown of Milford Haven so drew on her love of food (especially cheese) and being creative with food presentation.

After carrying out some research, Georgie found that most graze boxes were fairly healthy and contained lots of raw ingredients, but she wanted



Left to Right - Louise Wiseman, John Charles and Sally Star outside HavenAcupuncture.

HAVEN ACUPUNCTURE EXPANDS AT MILFORD WATERFRONT

Established in 2017, **HavenAcupuncture** is going from strength to strength now offering an even wider range of holistic therapies. Whilst continuing to practice Traditional Chinese Acupuncture, owner Louise Wiseman is studying Psychotherapy at masters level. In conjunction with Welsh Psychotherapy Institute, Louise is launching the Affordable Therapy Service offering good quality psychotherapy and counselling at a reduced rate. This will help to make psychotherapy more accessible within Pembrokeshire. Louise's approach includes gentle awareness to work with emotions held in both mind and body.

HavenAcupuncture also welcomes two other therapists into the practice. John Charles is offering Bio-Energy and Reiki therapy, holistic approaches to work with mind, body and spirit. John also practices EMMETT Technique gentle muscle release therapy. Sally Star is a Sound and Aromatherapist working on the electrical and vibrational resonance of the body. This helps restore people's balance and harmony through the use of sacred sounds and/or aromatic essential oils.

Commenting on why she chose Milford Waterfront as the location for her business, Louise said *“The premises and location offer a lot – a bright and tranquil space with lots of public transport, car parking, and it's fully wheelchair accessible. Some clients also enjoy a coffee or lunch at the nearby cafes after their treatment.”*

She added, *“I'm looking to build a team of good quality professional therapists to provide a comprehensive health and well-being service to the people of Pembrokeshire.”*

For more information on the services available visit www.havenacupuncture.net

to put her own spin on this and add more indulgence into the boxes. After weeks of creating and testing a variety of treats she came up with some signature goodies and chose the name **'The Cheesy Cow'** (because cows like to graze and she wanted everything to be cheesy!)

Georgie is delighted with the reaction to her new venture and is already thinking about the future, commenting *“Once my home had turned into a Cheesy Cow factory I decided to take the leap and find a place to rent. I was so pleased to find an empty unit at Milford Waterfront as I'm such a lover of watching the boats and the sea! I would eventually love to be able to have a place that can cater for dining in, a Cheesy Cow restaurant with a whole graze'in menu is the dream, maybe one day!”*

Graze boxes can be ordered through The Cheesy Cow's Facebook and Instagram accounts, by phone on 01 646 697265, or there is just a 30 minute wait if items are ordered in store at Milford Waterfront.

Gentle Giants

Thanks to a Pembrokeshire based company, it's hoped huge floating wind turbines will soon join their 'fixed bottom' cousins making offshore wind power the most significant player in the UK's move to zero carbon electricity. But what do Blue Gem Wind's plans mean for Pembrokeshire?

The pace at which renewable energy technologies have emerged and evolved in the last decade is astonishing. The urgency of the situation we face, emphasised by the avalanche of projections mapping climate change, has prompted governments to provide financial incentives to developers, keen to narrow down the list of likely technologies that can supply zero carbon electricity within just a few years.

Pembrokeshire has felt the tremors of this emerging sector, partly due to the Port's facilities and location next to outstanding wind, wave and tidal resources, and partly due to the talent and intent of local fabricators, agencies and businesses who see so much potential for the regional economy. We have seen a range of tidal and wave devices, some featured in this magazine, constructed and trialled on and around the Waterway. However, one technology has leapfrogged all the others to become the frontrunner in the race to deliver clean, green electricity from the sea and onto Pembrokeshire's shores: floating offshore wind or FLOW.

It's a simple concept, once you take for granted the brilliance of the scientists and engineers who created and constructed the wind turbines capable of surviving some of the world's most hostile environments, and once you have given a substantial nod to the oil and gas industry that made the idea of giant, floating platforms anchored to deep seabeds and connected to thick power cables seem, well, almost humdrum. Then there are the investors, putting many millions of pounds into this technology at some risk.

Earlier this year, Blue Gem Wind, a company that emerged from a joint venture between French energy giant TotalEnergies and Irish/UK marine energy developer Simply Blue Energy, announced they were launching a project to build wind farms in the Celtic Sea off the coast of Pembrokeshire.

So why wind turbines and why here?

Wind power is one of the big success stories of renewable energy in the UK, which is a world leader in the sector. It contributed a quarter of all electricity supplied in the UK last year. Just under half of that capacity is offshore but the government wants more of it, four times more, by 2030.

The relatively shallow waters off the east and south coasts of England – most less than 50m deep - made it possible to install fixed bottom turbines to the seabed. However, off West Wales' coastline the sea floor plunges to depths between 60 and 150m very close to land. As David Jones, Stakeholder Manager at Blue Gem Wind, explained that represents both a challenge and a huge opportunity.

"80% of the world's wind resource can be found in water deeper than 60 metres," explained David. "That is why floating wind will become a key technology in the fight against climate change. Moving offshore into deeper waters also brings other benefits, it is where wind speeds are higher, meaning you get more energy. There is also less visual impact and fewer potential conflicts with other marine users. In fact, with

between 150 – 250 GW of wind resource off the coast of Southern Ireland, Wales and the southwest of England you could say the Celtic Sea was made for floating wind. That's why we are here."

"It's worth mentioning, too," he continued, "that Pembrokeshire has port facilities that could support deployment, operation and maintenance and there is the connectivity to deliver electricity to the rest of the UK via the National Grid."

Blue Gem Wind, based at the Bridge Innovation Centre in Pembroke Dock, has been very busy over the last 18 months. Last August they secured a lease from the Crown Estate (which manages the seabeds around the UK), for an area 44 kilometres off Pembrokeshire. This will be where they will site their first wind farm 'Erebus', a 96MW demonstration project which will provide enough green energy for 90,000 homes and is due to be completed in late 2026. The lease enabled them to proceed with scoping and completing the public consultation, surveys and environmental assessments this year, ahead of a formal planning application.

"As 2021 comes to a close, we can take stock as a team on the verge of a very exciting time," said Mike Scott, Project Managing Director at Blue Gem. "We have a challenging mission and a timeline that will see the commissioning of the UK's largest offshore floating wind array within 5 years."

It's ok to be excited about what Blue Gem Wind has planned. Projects like this will form a significant part of our response to the climate crisis. In fact, offshore wind will do more to decarbonise the UK's electricity use than any other technology. But there's even more enthusiasm around what this company's pioneering work could mean for Pembrokeshire. Tim James, Head of Energy Development at the Port of Milford Haven has been working with Blue Gem Wind to see how the Port's Pembroke Dock Marine project can serve and support the emergence of FLOW.

"The UK is already a world leader in offshore wind, with more turbines installed than any other country," said Tim. "Already the sector has a workforce of over 25,000 people, most of them in the east of England. Floating offshore projects in the Celtic Sea off Pembrokeshire will make a huge contribution to the extra 30GW of offshore energy expected by the government by 2030, at which point they predict 70,000 people will be working in the sector. Thanks to Blue Gem Wind and others who follow them, many of those jobs could be right here."

So, what sort of jobs will there be?

"If we can work with the Port to develop a way to mount the turbines on the platforms at Pembroke Port then we can expect the sort of activity in the docks that perhaps hasn't been seen since its shipbuilding days," explained David. "That's going to be a challenge, of course, when you consider the turbines are up to 265m high and their platforms 100m in length!"

"There is also a range of other activity that could be captured here, such as operations and maintenance, that will create new green jobs."

"We feel a stepping-stone approach to developing floating wind in the Celtic Sea is critically important," David continued. "This is the best way to start a new industry: start with small projects, like Erebus, before moving to larger projects. This will give the local supply chain the best possible chance to grow with the sector."



Blue Gem Wind's Stakeholder Manager, David Jones
Credit: Owen Howells

Although the floating platforms are designed to be 'plug and play', there will be a lot of undersea preparation needed to anchor the devices in place. Then there is the electricity cabling. A 50 km subsea cable will be laid from the 'Erebus' site to make landfall between Freshwater West and West Angle Bay. From there the cable will be buried underground to Pembroke Power Station and joined to the National Grid network via a new substation.

Blue Gem Wind is, for now, a small company with big plans. It employs just 30 people but will have to recruit rapidly as the project unfolds. For David, however, this past year has been a very rewarding time. He came to this job after more than a decade working to stimulate the marine renewables industry in Wales at Marine Energy Pembrokeshire (which became Marine Energy Wales).

"I've spent over 10 years promoting Pembrokeshire and Wales as a place ideally suited to developing offshore energy. As we now enter the most important decade in terms of climate action, I'm thrilled that floating wind is on the cusp of taking off in the region."

MEET THE WINDFLOAT®

Erebus will see 6 – 10 giant WindFloat® platforms around 100m wide, positioned around 27 miles off the coast of Pembrokeshire within an area of around 32km².

A huge wind turbine will be placed on each semi submerged platform, with a blade diameter that could be up to 240m (the equivalent of nearly two and a half rugby pitches!) making the total structure's height from sea level twice the height of the London Eye.

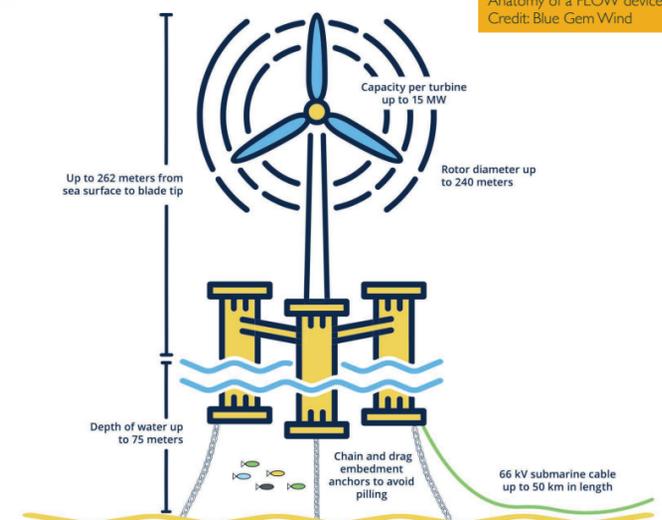
There are currently three WindFloat® platforms deployed in an array off the coast of Portugal. They were manufactured by Principle Power Inc in shipyards in Portugal and Spain.

"The WindFloat Atlantic project in Portugal was a world first and started delivering electricity last year using this platform. It is proving itself already," said David Jones. "Erebus' will be a stepping stone project and we already have plans to follow it with a second, 'Valourous', which will see 18-31 platforms generating up to 300MW of electricity by 2028."

The 'Erebus' wind turbines will provide enough green energy for 90,000 homes per year, more than all the homes in Pembrokeshire.

They will have a minimum operating life of 25 years.

Anatomy of a FLOW device.
Credit: Blue Gem Wind



Floating wind turbines have been identified as a key deliverer of low carbon electricity in the UK government's 2050 net zero targets. Blue Gem Wind is a Celtic Sea pioneer and with Erebus is pushing forwards with Wales' first floating wind farm. Credit: Photo courtesy of Principle Power. Artist: DOCK90

FACING THE TRUTH

When Gareth and Daniel Willington died in a fishing accident, their family struggled to come to terms with the events surrounding their deaths and were unable to move on with their lives. Then they called the Sandy Bear Children's Bereavement service.

Take a good look at this photo. What do you see?



There is a lot more to this photo than Roxanne Willington on a SUP, and according to her mum, Alice, it was made possible by the Sandy Bear Children's Bereavement Charity.

Her name is Roxy. She's 11 and she lives in Sageston, near Carew. If you were asked to guess what sort of things Roxy likes to do, you could point out that, clearly, she loves being in the sea.

For Roxy's mum, Alice, this picture captures one of the most significant moments of her daughter's life so far, matched only by the day in 2016 when she found out that she'd never see her dad and grandfather again, when the sea took both their lives while out fishing.

Roxy Willington has learned more about life in her few short years than most 11-year-olds. She has also learned how to live with death. This, according to her mum Alice, is thanks to the work of Sandy Bear, Wales' only family bereavement charity.

"As I was watching Roxy grow up, she wasn't really coping but I realised she was just mimicking me,"



Alice Willington, left, and daughters Pixie, Roxy and Rae at a family fun day at Carew Castle with Karen Codd from Sandy Bear Children's Bereavement Charity. Sandy Bear relies on fundraising events to ensure it can meet the growing demand for its service.

remembered Alice. "I just thought I had to get on with everything. I was pregnant when it happened, and I just pushed myself to carry on," she recalls. Like Alice, Roxy hadn't come to terms with the death of her father and grandfather.

To understand Roxy's story, we need to turn the clock back to April 28th, 2016. At just after 3am that day, Gareth Willington, 59, and his son Daniel, who was 32, motored out of Milford Fish Docks in their fishing vessel, Harvester. The two highly experienced fishermen were headed to grounds off Ramsey Island, where they were laying lobster pots, their vessel captured on cameras as it passed through the lock. It was the last time they were seen alive. Later that day, their deserted fishing boat was seen grounding on rocks near Abereddidi. Gareth's body was recovered shortly after. Daniel's body has never been found. Roxy was 6 at the time.

"In the days that followed, Roxy was confused, angry and upset," remembers Alice Willington, Roxy's mum.

"She didn't understand what had happened, but she seemed to bottle everything up, carry on with school as normal but then break down back at home."

Alice had known about Sandy Bear, the bereavement service set up by the health board. However, the service had just been suspended due to funding cuts. She was struggling to cope herself and over the following two years found life increasingly difficult, falling victim to a breakdown and unable to work.

Then Sandy Bear reopened. The same team that was at the heart of the service, Anita Hicks and Karen Codd brought it back, determined to fill the much-needed gap left by its absence. Alice called them.

"By now, Roxy was a 9-year-old with lots more questions," she recalled. "I found it hard to talk about it and didn't want to confuse her more." Roxy began having one-to-one and group sessions with the Sandy Bear team and, as Alice recounts, the effect was immediate. "Karen [Codd] told me: 'you need to trust me', and I did. I watched Roxy in the sessions and could see everything clicking into place. Karen was completely honest with Roxy about what had happened. It was almost beautiful the way they explained how Daniel's body was just a vessel, and didn't make him who he was, who she remembered."

"Children need to know the truth," said Karen Codd from Sandy Bear. "There is no one size fits all way of explaining, but for Roxy we needed to get across that the body just carries the special part of us, our personality. How do we know when our work is done? A good way to know is when you mention the person, and your first thought is something nice you remember, instead of 'he's dead'."

Alice was persuaded to do some parent sessions. "I thought I didn't need help, but it saved me," said Alice.

"Just speaking to other parents made me feel so normal again, able to laugh without being judged. Anita and Karen are just amazing, fantastic," said Alice. "I will be friends forever with people I met at Sandy Bear."

Back to that photo.

"Roxy is a different child now," said Alice. "After the accident, she had a phobia of the sea. She swims like a fish in the pool, but always refused to go in the sea. Then this summer she got on a paddleboard and was smiling and laughing. This photo shows that moment. I had to send it to the team. That moment, that was down to Sandy Bear."



Sara Aicken from the Port with PPSA instructors and pupils from Golden Grove School

PORT SPONSORS SAILING QUALIFICATIONS FOR SCHOOL PUPILS

School pupils from Pembroke and St Florence have completed sailing qualifications and gained confidence on the water following sponsorship from the Port.

A total of twenty-four students from Golden Grove School and St Florence VC School spent six weeks with Pembrokeshire Performance Sailing Academy (PPSA) at Llanion Cove in Pembroke Dock, resulting in the presentation of their Youth Sailing Stage 1 certificates.

Richard Owens, Chief Instructor from PPSA, said "The RYA's OnBoard scheme is a fantastic way to introduce young people to sailing and is proven to have a profound and positive effect on their lives. Life skills learned through sailing transfer from the water to the classroom and beyond. These range from confidence, teamwork and leadership to problem solving and adapting to new and different situations."

"A PERFECT DAY THAT ENDS IN DISASTER"

HIDDEN KILLER

DON'T DICE WITH DEATH
THE WATER HOLDS HIDDEN DANGERS



VIRTUAL ANTI-TOMBSTONING EVENT

This year the Port of Milford Haven joined forces with Cardiff based theatre group Bombastic to deliver a virtual educational event to three Pembrokeshire secondary schools in order to discourage young people from tombstoning and offer water safety advice.

Using Bombastic's online teaching software POLI, over 600 Year 7 students from Ysgol Harri Tudur, Milford Haven School and Ysgol Caer Elen took part in the project. With input from the Port, Dyfed Powys Police and Mid and West Wales Fire and Rescue Service, students watched educational videos and participated in interactive activities during the sessions. The project was funded by the Port of Milford Haven and Arts & Business Cymru.

A video can be viewed online at www.youtube.com/watch?v=cc07w2APgEo

DUKE OF EDINBURGH AWARD SPONSORSHIP

The Port has become a new Silver Associate Supporter of the DofE Award enabling young people from Ysgol Harri Tudur and Milford Haven School to take part in activities within the community whilst gaining employability skills for the future.

Over 130 pupils will have the opportunity to participate in the award scheme this year and additional training will be provided to staff to ensure the students are fully supported throughout the challenge. Lauren Williams, Community Engagement Assistant at the Port, said "We are proud to support DofE Wales to help young people learn essential skills for life and work, build confidence and help the community and environment around them."



UNDER THE BRIDGE RETURNS TO MILFORD WATERFRONT

Under The Bridge made a welcome return to Milford Waterfront this summer with over 140 eleven to seventeen year olds enjoying activities during the school holidays.

The programme is a collaboration between the Port and Milford Youth Matters with the aim of discouraging anti-social behaviour in the town by giving young people an opportunity to learn new skills.

Thanks to additional funding from Milford Haven Town Council, Under The Bridge was held nine times over the summer with different activities each week including Total Wipeout inflatables, football, chalk art and dance.



Under The Bridge

SAFETY BRIEFING

KEEP YOUR DISTANCE

The Milford Haven Waterway is a fantastic stretch of water for sailing, power boating, kayaking, the list goes on, however all of this leisure activity coexists with some seriously large commercial vessels and it's important to remember that.

The Q Max LNG vessels that come into the Haven are the same length as three and half football pitches and half as high as the London Eye. Compare that to a 20ft sailing boat and the latter is dwarfed so it's crucial that smaller craft do not get in the passage of an oncoming vessel. There is in fact a nautical alternative to the Highway Code that is in place to reduce the risk of collisions between vessels called the International Regulations for Preventing Collisions at Sea (known as the COLREGS).

Here is some useful guidance to help you stay safe while enjoying the water:

- **Keep a proper lookout** – You must be fully aware of the boating environment, especially in bad weather, restricted visibility, or darkness. Don't forget to look all around – even behind you.
- **Know your speed** – You should continually assess the safety of your vessel's speed. It is easy to assume that a larger vessel is going slower than it is, but it will take much longer to slow down than you think and its manoeuvrability will be affected.
- **Be visible** – At night make sure your navigation lights can be seen. If you think you have not been seen, get out of the way. From the bridge of a large vessel, the captain or pilot may lose sight of you more than a third of a mile ahead. If you can't see the bridge they can't see you.
- **Know the sound signals** – Vessels often use sound or light signals to communicate. If you hear five short blasts, the master or pilot is trying to tell another vessel that they are unsure of its intentions. Check and see if it is for you, if it is make your intentions clear and give way.

“Just because you can see them doesn't mean they can see you!”

Brian Macfarlane, Water Ranger at the Port.

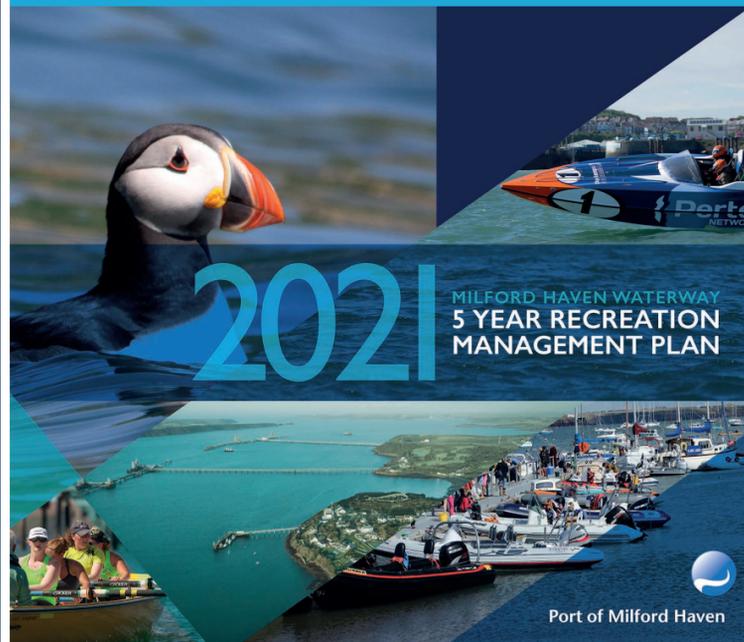
Water Ranger at the Port of Milford Haven, Brian Macfarlane, said “The oil tankers and gas ships that we have on the Waterway are truly enormous and it is everyone's responsibility to ensure they navigate safely. Remember that just because you can see them doesn't mean they can see you, so please bear these tips in mind when you're next out on the water.”

More safety advice is available online at www.mhpa.co.uk/safety-on-the-water



FIVE YEAR RECREATION MANAGEMENT PLAN LAUNCHED

Every five years, the Milford Haven Waterway 5 Year Recreation Management Plan is published. The document is a result of a collaborative approach to planning, monitoring and managing the Haven's recreational opportunities and offers clear guidance as to how the Port actively engages with community stakeholders and partner organisations to ensure people can enjoy a wide range of activities on the water.



The Milford Haven Waterway is renowned for its abundance of marine wildlife and rich natural environment, so it is vitally important that leisure users respect the water. The Port of Milford Haven is responsible for ensuring the diverse mix of commercial and leisure vessels operate safely, abiding by the Bye-laws and Rules of the Road. In the Recreation Management Plan you will find information on the types of activities common on the Waterway and how to enjoy these responsibly, facilities available such as pontoons and slipways, current and future management plans.

Scan the QR code to view the Recreation Management Plan.



AFTWORD

WE NEED TO MAKE A NOISE ABOUT HYDROGEN

A hydrogen strategy that serves this region's economy requires our businesses and agencies to collaborate more closely. It's a global good, for our own benefit.

As businesses, we are used to looking closely at issues that affect our long-term sustainability. We plan ahead, many years ahead, when large infrastructure investments may be needed. We also prepare for the things that might negatively impact our businesses. In the past, it has been possible for many businesses to think in relatively selfish terms. What's affects us? How do we make sure we are ok? What do we need to do to make sure we are doing well in 10 years?

However, the climate crisis has changed that. We all need to expand our vision of what impacts us to take in some existential threats outside our usual operational areas. We need to think not just of our business, but our whole society. We touched on how companies can and do play an important role here, in the last issue.

Recently, a report in the Western Telegraph included some maps showing the areas in Pembrokeshire that might, within 10 years, be subject to regular flooding around our coastlines and waterways. It doesn't make for comfortable reading. For the Port of Milford Haven's areas of operation alone, it is easy to see there will be increasing impact from weather events. However, we won't look at ourselves in isolation and plan for our business. We must work with those in our community who are already being affected, while preparing for the fact that many more homes, and the businesses that operate here, will be affected in future. There will be an impact on the local economy.

We all have a part to play in response to this threat. But much of what the Port has been working on with our partners, such as Pembrokeshire County Council, has been to create economic opportunity out of the deadline. Moving to a zero-carbon economy in the face of climate change could accelerate an exciting revolution in our regional economy and counter

or protect against the economic and physical threats posed by climate change. This issue of OnBoard has looked at the emergence of floating offshore wind and what that means for jobs and inward investment. A global market, in this case energy giant TotalEnergies and their partners Simply Blue Energy, is beating a path to our region to invest thanks to our natural, structural and human assets.

But we cannot rely only on these inherited assets. As also discussed in this issue, hydrogen represents a huge opportunity as a technology that could attract investment and help us through the coming years. However, while south west Wales would be an obvious place to embrace that opportunity, there are many places in the UK and Western Europe equally well suited to its possibilities.

In August, the UK government launched its hydrogen strategy document. It outlines the aim to produce 5GW of hydrogen by 2030, equivalent to the amount of gas consumed by 3 million homes. It talks about the need to support industry to develop sustainable, home-grown supply chains.

And yet, despite emphasising the link between hydrogen production and offshore wind, and despite referencing our nation's potential to be global leaders thanks to the UK's geography, geology and infrastructure, the UK government sees no imminent opportunities for hydrogen production in south west Wales.

This is not their omission, but rather our failure as a region to make a coherent and concerted bid in this arena. We need to do more.

This is a hugely promising sector, potentially able to support over 9,000 jobs and £900m of GVA by 2030 and, if hydrogen takes up a significant position in our energy economy, up to 100,000 jobs and £13bn of GVA by 2050.

Our ability to be part of that economic windfall would help us to build resilience (economic, social and structural) to weather the coming threats. A coastal community that earns dividends from a net zero future can better protect itself from the impacts of climate change it's helping to reverse.

When governments ask which regions can help deliver the hydrogen strategy, let's make sure our collective voice is heard and that we fight to make sure we are at the front of the queue to help. Not embracing – and fighting – to be at the heart of a UK hydrogen strategy is to give up on one of the brightest opportunities for our county.



“A coastal community that earns from a net zero future can better protect itself from the impacts of climate change”



1

COCO'S

A vibrant restaurant serving mouth-watering meals and delicious cocktails in an informal, relaxed city-style venue.



2

COSTA COFFEE

One of the nation's favourite coffee shops renowned for serving a full range of hot and cold drinks, along with a selection of light bites too.



3

CROW'S NEST CAFÉ

A family-friendly café offering a selection of tasty foods including afternoon tea packages made fresh to order 7 days a week.



4

FOAM

Known for serving 'Instagrammable' breakfasts as well as a tasty lunch and dinner menu with uninterrupted panoramic views of the historic Milford Haven Waterway.



5

IMPASTO PIZZA BAR

An essential spot for those seeking the very best of authentic Italian cooking, combining Italian and Pembrokeshire produce to tantalise your taste buds.



6

MADISON'S BAR & RESTAURANT

A 1920s and 30s themed restaurant combining delicious food with a unique dining experience for all.



8

PHOENIX BOWL & PIRATE PETE'S ADVENTURE PLAY

A lively 10-pin bowling centre with a soft play area and fantastic, family-friendly food.



10

SUGAR LOAF

A local deli and bakery serving a range of mouth-watering food including delicious sandwiches, tasty pastries and doughnuts made at Milford Waterfront.



12

THE GALLEY CAFÉ

A local café serving homemade classic dishes with their tremendous value menu including toasties and all-day breakfasts.



14

THE HARBOURMASTER

Bar and restaurant with a large outdoor terrace overlooking Milford Marina serving a variety of dishes and an extensive drinks menu.



15

THE LOUNGE

Serving modern and homemade tasty items on the food menu, washed down with refreshing drinks in a relaxed and friendly atmosphere.



16

THE SCOOP ICE CREAM PARLOUR

Home to delicious ice cream, made at Milford Waterfront, served with waterway views.



17

THE CHEESY COW

Local café serving baked rustic goods, breakfast items, sweet treats and delicious graze boxes for any occasion.



7

MARTHA'S VINEYARD

An original family-run bar and restaurant with a large outdoor terrace overlooking Milford Marina renowned for serving fresh, tasty food with a strong influence from local suppliers.



9

SPINNAKER CAFÉ

Serving delicious and affordable homemade meals with an ever-changing display of freshly baked cakes.



11

TALOUIES

Specialising in homemade light bites, cakes and desserts with a great view overlooking Milford Marina.



13

THE GREEN GENIE

Offering an array of homemade vegetarian and vegan dishes cooked in a relaxed and stylish setting.

Eat

at Milford Waterfront

There's lots on the menu at Milford Waterfront

With a fantastic choice of places to eat, you'll be spoilt for choice. Whether you fancy a freshly made pizza, fresh doughnuts, the best seafood or fancy cocktails, be sure to pay us a visit this summer!

Here are all the places you can eat at Milford Waterfront

