

## Written evidence submitted by Tidal Lagoon Power (REW0029)

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Please find below Tidal Lagoon Power's submission to the Welsh Affairs Committee Inquiry: Renewable Energy in Wales, dated 12<sup>th</sup> February 2021.

Swansea Bay Tidal Lagoon is a world-first pathfinder project that has the potential to open up the opportunity for a fleet of larger tidal lagoons capable of generating strategic large scale renewable energy solutions to support the UK's future energy requirements.

Swansea Bay Tidal Lagoon has an installed capacity of 320MW and will generate electricity sufficient for 155,000 homes. The project was granted a Development Consent Order in June 2015. Developed by Tidal Lagoon Power, the project's major delivery partners include Andritz Hydro and General Electric. Tidal Lagoon Power are developing a fleet of tidal lagoons which have the potential to meet up to 8% of UK electricity demand, as well as progressing a number of potential overseas projects. Each project will exploit the unique opportunities that tidal lagoons offer to catalyse social, economic and environmental transformation. For further information please see our website [www.tidallagoonpower.com](http://www.tidallagoonpower.com).

### **What opportunities are there for renewable energy to aid Wales post-COVID-19 economic recovery?**

As Britain searches for the optimal recipe for recovery from the economic shock of the COVID-19 pandemic, there is a growing consensus about three key ingredients. This sense of shared purpose demands that national bounce-back must create sustainable jobs, it must build long term resilience and it must be environmentally progressive. The importance of fashioning a positive, durable, green legacy from the greatest challenge our nation has faced since World War II is emphasised daily by politicians of all parties, business leaders, academics and interest groups. Tidal Lagoons resoundingly ticks all three boxes. To create jobs to replace those lost, revives and sustains blighted industries, levels up Britain and drives regional development. Crucially, tidal power makes a significant positive contribution towards the UK's de-carbonisation goals and as an overwhelmingly British venture drives delivery of green energy independence.

Tidal Lagoons offer the UK an opportunity to embrace a new infrastructure class at the outset of its development to regenerate South Wales' and the UK's historic industrial heartlands. They offer the opportunity to sustainably build a UK centric manufacturing legacy focused on a programme of UK lagoons with export potential. The UK has the skills, capabilities and track record to build on its existing industrial footprint by fostering growth in each of the areas required to build a tidal lagoon. Swansea Bay Tidal Lagoon has been brought forward as a pathfinder project for UK and international tidal lagoons at full-scale. It has given the UK's engineering, construction, steel and manufacturing industries first mover advantage in a new global market.

With unemployment projected to hit 10%, sustainable job creation is clearly a top priority. Swansea Bay is an infrastructure project that will create 2,200 direct jobs in Wales and across the UK during construction and manufacturing. It is the pathfinder for our tidal power potential. Expansion to a second project between Cardiff and Newport (hereinafter Cardiff) would mean a further 11,000 jobs, a fleet of four Welsh tidal lagoons leads to 33,500 positions and six tidal lagoons across the UK would mean employment for 71,000.

The Hendry Review report includes analysis of the 'valuable and cost competitive' role of tidal lagoons in the electricity system, the value from longevity of operation, and the significant potential value to the UK economy (and regional economies) from industry, jobs, supply chain, regeneration, coastal and flooding protection. The Green Paper 'Building Our Industrial Strategy' recognises the importance of decisions that provide long-term certainty to investors in the renewables sector and realise opportunities in terms of securing jobs and supply chain benefits, illustrated by the success of the offshore wind industry. The Hendry Review report refers to the example of offshore wind in relation to realising the job creation and supply chain opportunities offered by a tidal lagoon industry.

Tidal lagoons are multi-billion pound infrastructure investments. Capital expenditure is typically split four ways:

- ~36% turbines & generators – including turbines, generators, sluices, electricals and other power generation costs;
- ~38% turbine housings – including turbine housings, sluice housings and other civil engineering costs;
- ~18% marine works – including seawall; and
- ~8% other - including design and services.

The UK has the skills, capabilities and track record to foster growth in each of the four areas. At Tidal Lagoon Power our starting ambition has been to ensure that a total of 65% of capital spend for the pathfinder project is on UK content, with half of project spend staying within Wales itself. By readying the UK supply chain and committing to new UK manufacturing facilities, we are on track to fulfil this goal. The oft-cited benchmark here is the North Sea oil and gas industry where around 70% of capital expenditure is through UK-based suppliers. Getting close to, or possibly matching, that level on a global first-of-kind tidal lagoon will deliver a far higher level of UK content than comparative low carbon energy projects, writing Welsh and British industry into the DNA of this new market from the outset.

The challenge for both industry and Government is to create the market conditions required to sustain and grow this industrial opportunity as the sector scales. The Centre for Economics and Business Research estimates that the development of six tidal lagoon power plant in the UK, including the pathfinder at Swansea Bay, would contribute £27bn to UK GDP during construction and a further £3.1bn in each year of operation.

Over the 5 year development of Swansea Bay Tidal Lagoon and its supply chain, 3rd parties have analysed data provided by Tidal Lagoon Power and its partners to estimate the scale of these opportunities.

This evolving work is summarised below:

	<b>Installed capacity</b>  (MW)	<b>Homes powered annually</b>	<b>Investment</b>  (£bn)	<b>Employment @ peak</b>  (during construction & manufacturing)	<b>Employment long-term</b>  (during operation)	<b>Gross Value Added, construction</b>  (£m)	<b>Gross Value Added, operation</b>  (£m, per annum)
<b>Swansea Bay Tidal Lagoon</b>	320	155,000	1.3	2,232 direct jobs	181 direct, indirect & induced jobs	316	76
<b>Cardiff Tidal Lagoon (estimated)</b>	~3,000	1.4m	~8	~11,000 direct jobs	1,000 direct, indirect & induced jobs	1,300	513
<b>Fleet of 4 tidal lagoons in Wales (estimated)</b>	~8,000	3.3m	~20	~33,500 direct jobs	3,014 direct, indirect & induced jobs	4,296	1,368
<b>Fleet of 6 tidal</b>	~16,000	8m	>40	71,000 direct, indirect &	6,400 direct, indirect &	10,404	2,935

<b>lagoons in UK (estimated)</b>				induced jobs	induced jobs		
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**Sources:** CITB/Whole Life Consultants, report to Welsh Government; Miller Research/Semta, report to Welsh Government; Centre for Economics and Business Research, report to Tidal Lagoon Power; CITB/Whole Life Consultants, report to Tidal Lagoon Power; Miller Research/Semta, report to Tidal Lagoon Power.’

### How can the UK Government best support the deployment of renewable generators in Wales?

Ministers are committed to meeting challenging 2050 carbon reduction targets with the Prime Minister, Chancellor and BEIS Secretary all consistently emphasising their importance. The 2019 Conservative election manifesto and last year’s Budget both included support for an accelerated transition to renewables but they focused on weather dependent sources such as solar and wind without recognising tidal’s potential. This approach has drawn criticism for lacking joined up strategic vision and inevitably entails reliance on nuclear, carbon capture and storage (CCS), and possibly hydrogen to plug gaps. Significantly, a recent academic report concluded that technologies such as CCS and hydrogen cannot be relied on to help the UK meet its climate change targets. The report by a government-funded consortium of academics from Cambridge, Oxford, Nottingham, Bath and Imperial College London, criticised ministerial faith that these technologies would contribute substantially to emissions reductions required by 2050.

The Government needs to provide the essential policy support for tidal range energy as an integral part of the UK’s future energy mix. Tidal harnesses UK’s natural coastal geography to help meet zero carbon pledges. The target is a renewables domestic content of 60%. Tidal delivers 84%. Longevity and reliability of supply is guaranteed. Tides rise and fall four times every day regardless of the weather. Unlike solar or wind, tidal has a long-life delivering year-round cheap power. The Swansea Bay project will be zero carbon for 120 years. Swansea will power 155,000 homes with 570 GWh annual output and 156,000 tonnes CO2 savings. Furthermore, the cost and delivery timescales of future nuclear facilities are unknown (and reliant on the French and Chinese), yet officials are pursuing eight new projects. While some argue a solution might be modular nuclear reactors from Rolls Royce, none are expected to be built before 2030. To have the necessary impact on decarbonisation, low carbon generation has to be locked in this decade. Additionally, it should be noted that we are electrifying transport and heat. This leads to a further 20GW hole in the zero carbon requirement.

### How should the UK and Welsh Governments work together to support the development of renewable energy projects in Wales?

The UK and Welsh Government need to work closely together to define policy to support the growth of a new tidal industry. Wales has the opportunity to be a global leader in the development of a new tidal lagoon industry centred in Wales. Governments could choose to finance tidal projects, - by offering low cost debt - for a price at the higher end of the wholesale price band range within 35 year contract structures. In such a case, equity and debt would be fully paid off by 35 years’ time and the assets would be available to future generations at a legacy cost for 85 years of £10 - £20/MWh. Under these proposed structures projects could be financed via Green Bond or RAB. In the case of a Green Bond funding would largely be through a new fixed income debt instrument backed by the Government. Under the RAB model a new asset class would be created incentivizing private support for the public project by providing a secure payback and return on investment. Tidal lagoons could be built around the UK coast offering investors 4% returns and electricity in line with wholesale prices. The custodians of multiple and extremely deep pools of pension and insurance fund and sovereign wealth capital wish to own long dated infrastructure assets. Globally there is a shortage of assets and a vast surplus of capital. The UK is a stable economy that can command low premiums for this type of capital. Thames Tideway Tunnel, a 125 year asset with a guaranteed payment structure via Thames Water bills, was financed with a Weighted Average Cost of Capital of just 2.44%.

The characteristics of a tidal lagoon – low cost operations and maintenance, certainty of tidal resource and therefore steady cashflows, 120 year life, simple period maintenance regime and tried and test technology with an 80 year

operating track record - lend the asset class the perfect qualities for Regulated Asset Base style financing. This will require a quasiGovernment body (The Hendry Review suggested the formation of the Tidal Power Authority which would sit jointly under Treasury and BEIS) to set the level of acceptable return for investors.

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