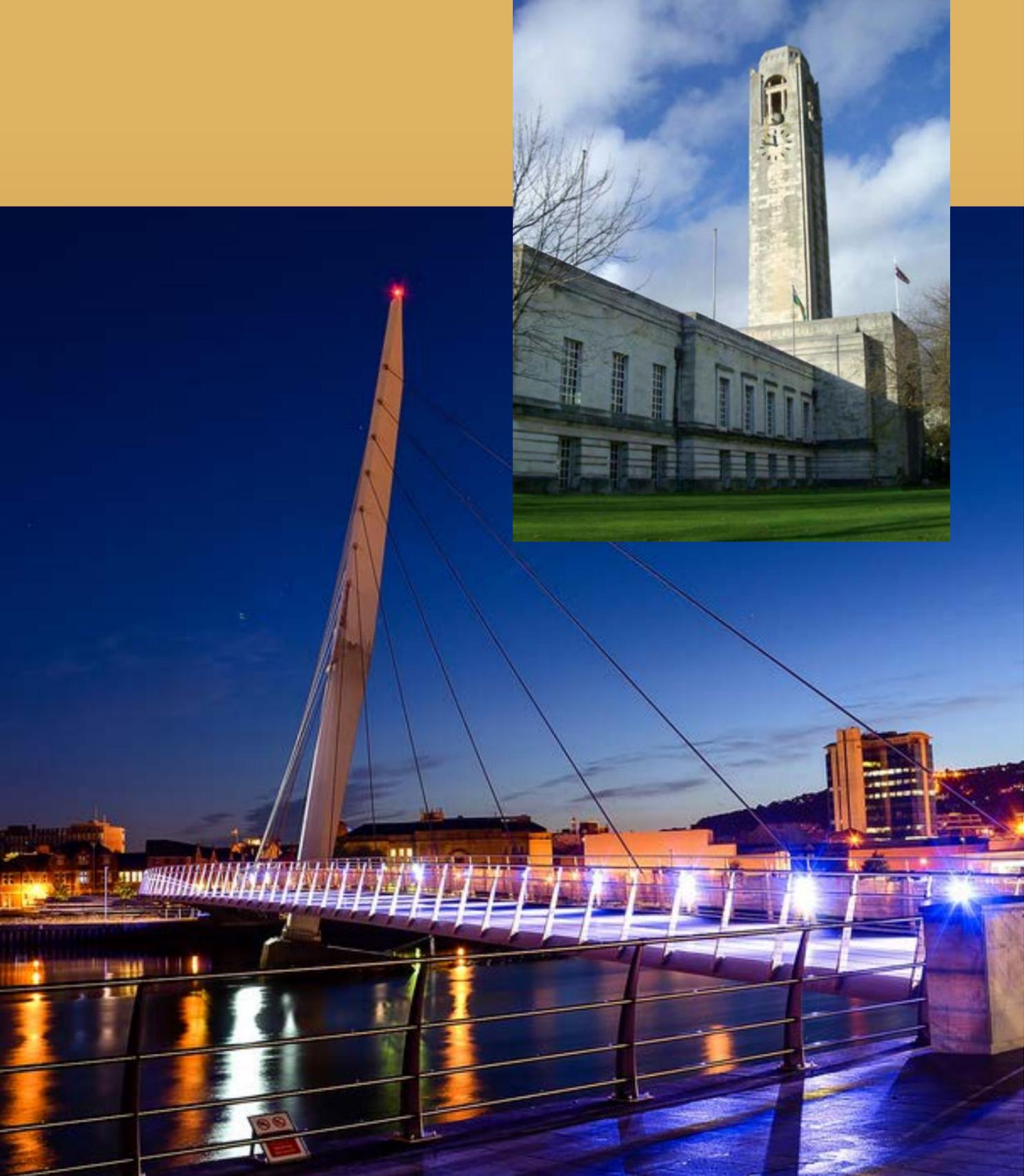


Commissioned by the City & County of  
Swansea on behalf of the Swansea  
Bay City Region

# Dragon Energy Island Swansea Bay Strategic Options Review





## Contents

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### PART A

1.0 Foreword	4
2.0 Terms Of Reference	6
3.0 Executive Summary	8

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### PART B

4.0 Methodology	14
4.1 Tidal Lagoon Task Force – Market Engagement	15
4.2 Prior Information Notice (Pin)	16
4.3 Pin Responses – Full/Part	16
4.4. Interviews/Reviews	17
4.5. Interviews/Responses	17
4.6. Expression of Interest	21
5.0 Options Review	23
6.0 Conclusions & Recommendations	33
Appendices	35



## 1.0 Foreword

Following a strongly supportive Hendry Review in 2017, setting the context for a strong tidal industry to develop across the UK, the government determined in June 2018 that the pathfinder tidal lagoon proposal did not meet the necessary value for money criteria to secure subsidy support.

At this point the Swansea City Region leadership, in discussions with Welsh Government, determined that there may be the possibility to re-configure the legacy project, with alternative technical options, as well as revised funding solutions, to deliver a viable project.

The commercial context for this determination included the retention of a potential offer of financial support, "in principle", from Welsh Government. It was understood that this offer would take the form of co-investment alongside private sector investment, and need to stand scrutiny in the normal fashion, respecting value for money and public procurement provisions.

In August 2018 the City Region established the Tidal Lagoon Task Force, a group made up of stakeholders and experts in their respective fields, with the intention of providing oversight and expertise to consider options for a re-formatted project.

This report was commissioned by the City and County of Swansea (CCS), on behalf of the Swansea Bay City Region. The intention of this work was to support City officials, and the Tidal Lagoon Task Force, to determine the residual level of appetite in the market for a re-formatted Tidal Lagoon project, specifically from the large corporates Hendry had referenced, who had the proven track record to deliver a large scale project of this nature.

Over the last 5 years Holistic Capital have conducted strategic due diligence on over 250 high value projects, throughout the UK, on behalf of HMG, which gives a wide-ranging experience of capital projects, upon which to support the City Region and Task Force.

The scope of this initial report was determined by an agreed set of terms of reference, which are set out within the body of the report, and which were used to address certain specific aspects of the project on behalf of the key stakeholders within the Local, Regional, and National Government.

The short timeframe for producing the output from this initial report, has necessitated a strategic level assessment, based on industry experience, typical financial benchmarks and project delivery processes.

The conclusions drawn, and commercial opinions expressed, rely upon the validity of the data, as presented. Should this be demonstrated to be incorrect at any time, we reserve the right to re-appraise the outputs from this report.

**Paul Marsh**

March 2019





## 2.0 Terms of reference

The terms of reference were established and approved by the Task Force in August 2018, and set out the key principles below.

This was not intended to be an exhaustive scope, and was subject to further definition between the parties as work progressed:

### Key Principles

For all parties to evaluate options for delivery of the Swansea Bay Tidal Lagoon and associated Lagoon Technologies that could be utilized across Wales and the UK.

Task Force members may contribute to the development of an alternative business model, based on the Holistic Capital report published in July 2018 of which the key recommendations are:-

- A new approach to procuring the lagoon by bringing on board well established construction partners to provide the confidence that a project of this magnitude can be delivered.

- A new construction model using a single construction company, rather than two, to make the construction simpler and cheaper.
- Funding the project without the need for UK Government financial support through Contract for Difference. This includes a Welsh Government Bond issue plus introducing an opportunity for the lagoon to sell energy produced directly to customers through a 'direct supply' arrangement. This has the potential to significantly improve revenue streams.
- A new operating model which includes creating an energy company to distribute the electricity direct to consumers so that the lagoon becomes both an energy generator and supplier. This has the potential to dramatically change the income and retention of revenues which makes the project more affordable.

Additionally, the Task Force will evaluate alternative models against the following criteria

- The new proposal must be delivered within the timescale of the City Deal
- It must remain below the 350MW threshold to retain the decision making within the devolved authority of the Welsh Government.
- All models will be formally and independently stress tested.
- Ideally revised proposals should not require further permissions or support from the UK Government.

### Conduct of the Review

This review could not have been conducted without the support of Swansea City Region, City and County of Swansea and the members of the Tidal Lagoon Taskforce.

Whilst respecting the opinions developed by all parties, we have attempted to produce overall an objective review of the commercial aspects of this major project, which has been derived from a combination of our experience in conducting such reviews on over 250 projects in the recent past, but most significantly upon the factual evidence provided by all contributing parties.

## 3.0 Executive Summary

The Dragon Energy Island Project represents a completely new approach, to build upon the natural tidal energy production opportunity in Swansea, as well as delivering a world leading integrated renewable energy hub in Swansea Bay.

The Welsh Government was the first parliament in the world to declare a Climate Emergency and the Dragon Energy Island project has enormous potential for the Welsh Government to lead the way, and to address these critical global concerns with positive action

This review recommends that the City Region, supported by Welsh Government, work in partnership with a suitably procured private sector partner, who will invest alongside the public sector, to deliver this globally significant renewables opportunity, and to create a new and globally scalable industry for Wales.

This review concludes that there is the potential opportunity for the City Region to work in joint venture with a suitably procured private sector partner, on the basis of joint investment, to deliver the new Dragon Energy Island project, within the timeframe of the City Deal, without the need for subsidy.

This approach is fundamentally different from the previous proposal to build a stand-alone power plant, funded largely by government subsidy

The major opportunity for Wales is clearly to deliver this integrated project, and to use this as a platform to deliver similar projects in other locations not only across Wales and the UK, but using the IP and skills developed, along with local supply chain partners, to do so Internationally.

The integrated Dragon Energy Island proposal, was developed through the Task Force review process, and builds upon the natural elements of local tidal range energy potential, but critically supplements these with the addition of a large development of new floating modular commercial plus residential accommodation, within the new lagoon.

The introduction of the mixed use development component to the scheme works to bridge the overall funding requirement for the power plant element of the project.

In addition to the new mixed use development, the Task Force have identified a significant number of additional complementary elements that allow for the creation of a truly integrated renewables hub.

A selection of these potential additional elements are set out below:

- New 'Dragon Energy' homes demand available as an 'anchor' for the power plant.
- New production plant to service anchor modular homes requirement within Dragon Energy Island development (1000 units/year), as well as the Welsh Housing Association sector and Local Authority Housing (4000 units/year).
- Consider the use of the electricity generated to produce production of pure hydrogen & pure oxygen for storage/onward sale (significant revenue increase opportunity)
- Integration with 'Homes as Power stations element of the City Deal, within the residential element of the project.
- Potential to aggregate the public energy demand across the City Region.
- Develop a 'circular economy' approach, eg. potential for turbine rental not purchase.
- Consider adopting proprietary large-scale mobile caisson technology
- Align the requirements of large data-centre requirements, with the potential private wire supply and potential for under water construction.
- Potential commercial/education building uses.
- Consider the use of battery storage technology to improve revenues and efficiency of the power plant.



The Strategic case for this integrated form of project clearly aligns very well with the ambitions of the Wellness of Future Generations (Wales) Act, as well as certain specific elements of the Swansea City Region City Deal (ie. Homes as power stations).

The next steps recommended within this review are for the City Region (supported by Welsh Government), to develop the necessary further detail around the scope, to independently determine the outline economic and commercial metrics of the project, then to ultimately progress the financial and management cases for the project.

It is envisaged that these elements will be developed by existing resources within the City Region governance structure, supported as required by suitable external resources, in clear stages, set against the key milestones within this review;

- 2019** Project visioning – 3 months
- 2019** Partner procurement – 6 months
- 2020** Detailed scheme design and permitting – 18 months
- 2021** Delivery (in phases)

The soft-market testing exercise has shown that there remains a strong appetite for a large scale integrated renewables project in Swansea, working with leading corporates, with a suitable track record, as recommended by Hendry. It has also indicated that there are significant capital and financing savings that could be adopted for a new project.

The key outputs delivered from the options review process are that if we adopt an integrated project approach, then this has the potential to be enhanced by the introduction of modular residential accommodation, within the formed lagoon, and that the core power generation project has the potential for significant (30%) cost savings.

The combination of reduced costs of one component, with the additional revenue from another, have the potential to significantly improve the viability of the Dragon Energy Island integrated renewables project, and provide the opportunity to deliver a flagship Wellness and Future Generations Project for Wales.

The amalgamation of these two components, together with the potential set out in the significant innovations set out above, create the opportunity for the Swansea City Region to deliver a flagship renewables project, which has the potential to deliver a quantum shift in the regions economic output.

At its core, the energy production element relies on a simple form of electricity generation, consisting of a series of turbines, which are rotated by the tidal movement of the sea. The innovation associated with this technology is connected with the delivery of this solution at industrial scale, and the development of the necessary supply chain partners required.

It is also un-equivocally recommended that the project should receive the full support of local, regional and national government stakeholders, to ensure the potential of this exceptional project is brought forward to provide affordable new homes and to generate clean power for future generations.

The critical success factor to this project, like many other large-scale infrastructure projects, rests not solely with the ability to construct the proposed project, but with the ability to secure the necessary level of capital to fund the project.

The options review has identified the opportunity to allow the market to deliver the cost savings that have been indicated through the PIN process, together with the introduction of the floating residential component, to provide the double bottom line benefits of reducing costs and adding revenue to the integrated project.

The options review process has delivered a strong message from the market that was demonstrated very clearly the following:

1. There is a clear **DEMAND** from credible financially robust organizations to re-format the opportunity into a financially viable project (as recommended by Hendry).
2. Strong evidence to suggest that significant **SAVINGS** can be made against the initial capex budgets.
3. There is opportunity to introduce a wide range of **INNOVATIONS** to aid the project viability.

Whilst there were strong positive outcomes from the PIN process, there was also a limited scope of innovation demonstrated, which allows significant further opportunity to improve the projects viability, and ability to act as a regional/national economic catalyst.

The public sector has the opportunity to lead the process of developing innovation around the project, by developing an inspiring vision for the re-formatted project, and then attracting a suitable co-investment partner to deliver the project.

We have recommended that a staged approach to the progression of the project be adopted, to ensure that value for money considerations are preserved, as well as providing sufficient control on the direction/scope of the project, and to ensure the delivery of the necessary social and commercial outputs.

The outputs from the options review would indicate a very strong case for the Public Sector to take the initiative with the Swansea Bay project, as it will be required to play a pivotal role in the funding, scoping and the likely energy purchase from the project, if the project is to be progressed.

It is also considered clear that the significant wider socio-economic benefits will feed into the macro financial infrastructure of the public sector elements of the region as well, through improved employment, demographics, health and wellbeing.

The next steps to progress the Dragon Energy Island Project provide the opportunity to deliver an integrated renewables project, which aligns with almost all of the objectives of the Wellbeing of Future Generations (Wales) Act, as well as the City Deal, and will require a commitment to move forward by the key stakeholders at regional and central government level.

The framework set out within this options review document, we believe, sets out a clear route-map to deliver this project.

**The key strategic question to be considered by local, regional and national stakeholders, is whether the ambition to deliver this project aligns sufficiently with the many competing areas to deploy limited public sector resources, and will secure the necessary financial and political support to continue to develop the significant potential of Dragon Energy Island.**

