Justification Report for Tidal Lagoon & Tourism

1. **Combination:** Tidal Lagoon & Tourism
2. **Basin selected:** Atlantic: Location. Within the environs of the lagoon.
3. **Concept** Large Scale, Tidal Lagoon with tourism centre built on the tidal wall.
4. **Basin Suitability:** Suitability is due to presence of tidal range. In addition to this they are expecting 100,000 visitors per year. Tidal Lagoon is seeking joint ventures with multiple parties to gain extra revenue streams. The wall is large enough to accommodate visitor centre building.
5. **MUS or MMP**: The concept will be multiple use of space.
6. **Description**

6.1 **Technical** (Rating 5)

Due to their solid infrastructure and large scale, tidal lagoons are highly suitable for adaptation into a tidal lagoon and tourism combination. It can be considered a 'married' combination of technologies, with construction of the first pilot project from Tidal Lagoon Power due to commence in Swansea Bay in 2016. This project will have a generating capacity of 320MW.

By utilising well established technologies, largely taken from the hydroelectric and tidal barrage industries as well as from coastal engineering, tidal lagoons have proved to be a relatively simple concept. The Swansea Tidal lagoon has been proposed to be manufactured from a sand-core causeway approximately 9.5 km long, containing an 11.5m2 body of water.

Energy is generated when water is allowed to pass through a series of low-head bulb turbines contained within a concrete turbine housing, capable of producing 16MW/h. As the tide rises, water is prevented from passing through the turbines by wicket gates, which open once the difference in water level on each side of the lagoon wall is suitable to generate the maximum amount of power. This lagoon can be expected to operate for up to 120 years, and the components and construction materials can all be sources or manufactured locally. This includes the turbine housings, sluice gates, rails, flood doors, electrical controls, hydraulics and all concrete components.

A pathway and maintenance route will be located on the top of the lagoon wall, which will enable access to the general public. This is highly encouraging for a multitude of tourism activities including sailing, cycling, running and fishing. In this sense the combination can be seen as a multiple use of space installation. The current leading project for this combination is Tidal Lagoon Swansea Bay, which intends to commence construction in 2016 as its first commercial level installation. As part of its proposals, it intends to construct a visitor centre on or near the lagoon wall in order to promote awareness of the technology and demonstrate the benefits of renewable energy on not only the planet, but also the local economy and environment.

6.2 **Socio-economic** (Rating 5)

Anticipated investment for these components is estimated to be in excess of £500m. During peak construction, an estimated 1,900 FTE (full time equivalent) jobs would be created or supported, covering a range of skill levels. Through a combination of the generation of renewable, sustainable energy, marine environment regeneration, providing new sources within the economy through aquaculture, the hosting of sporting events on a local, national and even international scale, as well as the provision of a valuable and informative tourism centre, this project is set to contribute hugely to the region and make it internationally renowned.

6.3 **Environmental** (Rating 3)

Tidal Lagoon has a big impact and changes the existing marine environment. If managed probably it can have a low level of positive impact. This is due to its ability to offset 320MW of fossil fuel generation. There is some concerns over

- Habitat destruction
- Large visual impact
- Change in benthic community and sediment transport

6.4 **Financial** (Rating 5)

Combination with tourism could produce a profitable project, due to:

- 70,000-100,000 visitors per year) in Swansea will generate approximately £76 million to Wales in GVA.
- Income from tidal energy is predictable and consistent.
- long generation life of the plant will ensure continuous income for many years,

6.5 **Short or Long Term Commercial Viability** (Rating 3) Tidal Lagoon and Tourism is commercial viable in 1-5 years.

6.6 **Overall rating 21**.

7. Key threats/challenges to be solved

- A lack of success as a tourism activity
- High investment costs
- Guaranteeing government subsidy
- Environmental damage during construction
- Public acceptance
- Operational problems caused by the combinations are not researched

The sustained success of any and all related tourism activities depends on the accessibility and promotion that this aspect receives from not only the operating company, but also the local council and businesses that seek to promote it. As the project is of such a large scale, and is also a world first, it is sure to draw in a large number of visitors upon opening. However, maintaining that popularity will be a challenge.

The main stream for investment return will derive from the energy harvesting activity. Tourism has been built in the business model for the Visitor Centre and has a supporting role potentially contributing to the local economy by increasing visitor numbers in the wider region.

8. Customer/societal problem that can be solved by combining the sector

- Supply of sustainable, secure and renewable energy
- Increased tourism revenue and visitors
- Attract attention, crowds and a boost in the local economy for the area.
- Local supply chain is bolstered.

9. Suggested Companies

9.1 Tidal Lagoon

- Tidal Lagoon Power
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9.2 Tourism

- Tourism Swansea Bay
- Visit Wales Company