Tidal Lagoon development in the Severn Estuary
Devon and Severn IFCA Briefing Note (Number 1) *Summary*

Below is a summary of the D&S IFCA Paper Devon and Severn IFCA Briefing Note (Number 1). Please see the full document on the IFCA members' page on the website for more information and a detailed evidencing of the IFCAs current position.

What is a Tidal Lagoon?

A tidal lagoon is a man-made enclosure created in a tidal area. The enclosure wall houses water turbines which are used to generate electricity. The lagoon is used to create a difference in the height of the tide (known as 'head') between the inside and outside of the enclosure. Once sufficient head has been created, sluice gates are opened and water flows through the turbines, generating electricity.

Where are the planned development sites?

Tidal Lagoon Power is currently actively developing a Tidal Lagoon in Swansea Bay. Three further lagoons have been proposed for the Severn Estuary (Cardiff, Newport and Bridgwater Bay). These planned developments are significantly bigger than the Swansea Bay lagoon. These three lagoons sit within the Severn Estuary European Marine Site. Various features and sub-features of the site relate to the fish assemblage and supporting habitats so that extensive work will be required to meet the requirements of the Habitats Directive. Although only the Bridgwater Bay site sits within the D&S IFCA district because of the potential for the lagoons to impact physical and biological processes in the whole estuary all three projects are of interest.

In what ways could tidal lagoons affect fish?

Potential impacts on fish be largely split into those that are direct (fish strike through turbines, barrier to migration) and those which are indirect (change/ loss of habitat, water quality, tidal cycles). Clupeid fish (shad, herring and sprat) are particularly sensitive to passage through turbines whilst habitat change could lead to (amongst many other issues) reduction or loss of bass, sole, whiting nursery areas.

Do we have good fish and fisheries baseline data?

The IFCA believes that insufficient data exists to sufficiently form a baseline for the Severn Estuary and extensive additional sampling is needed over a number of years in order to estimate natural variation and to be able to detect changes caused by the development of Tidal Lagoons.

Which fisheries may be impacted?

The Severn Estuary is an extremely important area for recreational sea angling with boat and shore marks extending throughout the inner and outer estuary. Traditional gill and trammel net fishing, herring fishing, shrimp netting, longlining and some potting also occurs. These fisheries are often small-scale and temporally sporadic, resulting in the exact levels being extremely hard to estimate (see D&S IFCA 2015) but they have socio-economic significance in terms of their heritage value. The IFCA believes that possible far-field effects on the fish populations and fisheries of the whole Bristol Channel must be considered.

How will the IFCA engage in tidal lagoon issues?

Despite its concerns, the IFCA will endeavour to work with Tidal Lagoon Power and their contractors wherever possible in order to ensure that proper consideration is given to impacts on fish, habitats and fisheries in the Bristol Channel.

Comment 1: Tidal Lagoon Power must make every effort to provide specific details of the size and placement of lagoons as soon as possible in the process as estimating potential effects will be largely dependent on final design.

Comment 2: Indirect impacts on fish populations through habitat change/ loss and changes to tidal cycles which could affect important nursery and feeding areas are likely to be as important as direct impacts of damage to fish caused by the turbines.

Comment 3: The importance of recreational sea angling from boat and shore on BOTH sides of the estuary must be acknowledged and taken into account for lagoon developments on either side. Recreational sea angling has great socio-economic importance and this should not be downplayed or underestimated simply because it is hard to measure.

Comment 4: The lack of obvious, large-scale or industrial fisheries is NOT because of a lack of fish in the estuary; rather it is because of the macro-tidal conditions and the highly dynamic nature of fish utilisation of the Estuary. Fisheries in the Severn Estuary are often small-scale, seasonal and recreational in nature, making them hard to detect and quantify. The fishing intensity also shows inter-annual variation depending on the abundance of certain species. However netting, longlining and other methods employed often have importance from a heritage perspective and the extreme environment of the Severn has resulted in unique methods of fishing.

Comment 5: Tidal Lagoon Power must instigate an Ecosystem Approach to assessing impacts of these developments on fish and fisheries. Damage to nursery and adult grounds in the Severn Estuary may have impacts on fishing throughout the Bristol Channel and therefore scoping and EIA work must include these areas. D&S IFCA believes a wide-scale tagging programme is necessary to look at the movements of certain fish species between the Severn Estuary and Bristol Channel.

Comment 6: Tidal research schemes relating to the Bay of Fundy in Canada should be referred to and best practice applied in the Severn Estuary wherever appropriate. Links between Tidal Lagoon Power and the Acadia research group are encouraged. TLP should be clear on the limited applicability of environmental research carried out at La Rance and Tidal Lagoon Swansea Bay on new developments in the Severn Estuary.

Comment 7: Tidal Lagoon Power must endeavour to commission new research wherever gaps in knowledge exist and factor in the time for this research to develop and produce answer into the timeframe of the development of sites in the Severn Estuary. Insufficient data exists on the fish and fisheries of the Severn Estuary in order to rely solely (or heavily) on modelling work, although D&S IFCA does see value in modelling in the broader scheme of work.