

## Environment

One of the reasons for Looe's success as a tourist destination is its natural environment, its accessible beaches and clean bathing waters. Its coastline and rivers combine to produce an ecosystem which supports a wealth of biodiversity.

Looe is rightly renowned for its diverse environment. The challenge for the project is balancing a flood defence scheme which protects the town from frequent and severe flooding and damage over the next 50 to 100 years, with protecting the environment.

A significant amount of environmental work has been carried out for the project to date. This article provides a summary of some areas of interest, as well as outlining some potential mitigation and enhancement ideas which are being explored.

## Background

Looe is fortunate to both contain and be surrounded by a number of environmental designations. These include, but are not limited to, listed buildings, a local nature reserve, an Area of Outstanding Natural Beauty and protected and notable species and habitat<sup>1</sup>.

Furthermore, the mouth of the Looe River marks the boundary to the Whitsand and Looe Bay Marine Conservation Zone (MCZ) which extends from south of Portnadler Bay across to Rame and is designated for a number of habitats and species.

To better understand the baseline environment and to help inform any future Environmental Impact Assessment (EIA), extensive baseline environmental surveys have been undertaken over the last couple of years.

These include but are not limited to:

- Hydrodynamic Modelling (including Water Quality).
- Wave Modelling.
- Water Framework Directive Walkover Survey.
- River Condition Assessment Surveys.
- East and West Looe Electric Fishing Surveys.
- eDNA Surveys.
- Intertidal Surveys.
- Subtidal Surveys.
- Stalked Jellyfish Survey.
- Seagrass Surveys.
- Underwater Noise Survey.
- Acoustic Doppler Current Profiler (ADCP) Monitoring.
- Terrestrial Preliminary Ecological Appraisal.
- Bat Surveys.
- Heritage Walkover Survey.
- Contaminant Analysis.
- Landscape Viewpoint Surveys.

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<sup>1</sup> Further details on the environmental designations within and around Looe can be found on the Cornwall Environment Viewer [here](#).

- Traffic Surveys.

Some photos from the various surveys are shown below:



### **Environmental Options Appraisal**

The findings of the baseline surveys which have been carried out to date are being used to help inform the Environmental Options Appraisal which is currently being undertaken to support the Outline Business Case.

The Environmental Options Appraisal provides a high-level assessment of each of the proposed options for the project for a variety of environmental topic areas. These include Heritage, Noise, Landscape and Marine Environment to name just a few. Each topic will provide a score based on potential impacts during both construction and operation. These scores will be combined to provide a total score for Environment for each option and therefore an indication as to which options would be more or less favourable. The outcomes of this exercise will feed into the Outline Business Case along with other subject areas such as Economics and Engineering.

### **Environmental Impact Assessment (EIA)**

EIA is a systematic process to identify, predict and evaluate the environmental effects of projects.

The purpose of EIA is to:

- Provide information for decision-making on the environmental consequences of projects.
- Promote environmentally sound and sustainable development through the identification of appropriate enhancement and mitigation measures.

Due to the existing designations and environmental conditions, it is likely that the majority of options proposed for the project would require an EIA, as well as potentially a Harbour Revision Order and a Marine Licence. The requirement for EIA would be determined following the Outline Business Case and confirmation of a preferred option.

### **Seagrass**

The Whitsand and Looe Bay MCZ protects nine habitats and their associated species as well as offering specific protection to seven species of conservation importance.

One of the most notable habitats protected within the MCZ is Seagrass, which has been identified as one of the largest beds in Devon and Cornwall<sup>2</sup> and is listed by Department for Environment, Food and Rural Affairs (DEFRA) as 'maintain in favourable condition' as a general management approach.

Due to its proximity to Looe, there is understandably some concern over any potential impacts of the project to this bed. While this is a legitimate concern, extensive baseline data has been collected to gain the best possible understanding of the environment. This data will be used to help inform the Environmental Options Appraisal as part of the Outline Business Case.

A number of historic datasets are readily available, however. To understand more recent baseline conditions the following work has been carried out:

- Estimating sediment inputs from the East and West Looe Rivers.
- A detailed drop-down video survey of the seagrass beds.
- A diving survey of the Seagrass bed.

In total over 500 points were surveyed using a 25m lattice for the drop-down video survey. This represents double the resolution achieved by the Environment Agency in 2019.

The below photos are from the diving surveys of the Seagrass bed carried out in August 2021.



## **Water Environment**

### ***Sediment Transport***

Should a tidal barrier option be progressed, sediment from the Looe River would still be discharged to the sea when the barrier is open in all but predicted flooding events. Any sediment held up due to a barrier closure would flush again naturally when the barrier opens in the following ebb tide.

Should an option with breakwater structures be progressed, there would likely be some local changes to the flow regime and wave climate. Sediment samples have been taken in the vicinity of the harbour together with some numerical flow modelling.

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<sup>2</sup> Cornwall Wildlife Trust (2020). Looe Bay Super Seagrass. Available online at: <https://www.cornwallwildlifetrust.org.uk/news/looe-bay-super-seagrass> [Last accessed 13/03/2023].

Further work is now being carried out to assess the potential impacts of the project in more detail. This includes:

- Estimating sediment inputs from the East and West Looe Rivers.
- Determining what local scour/accretion effects could occur around any new structures - and then if this would impact (positive or negative) on the seagrass habitat.
- Determining if an option with breakwater structures was progressed whether increased wave reflection would affect the sediment mobility/seagrass habitat.

### ***Tidal Levels***

The project team has also carried out an information gathering exercise on tidal levels, tidal and river flow, and the movement of sediment along the river and the coast as well as carrying out ground investigations. This has included inspecting rock slopes near the river mouth under Hannafore Road.

A tide gauge was installed in the harbour to monitor water levels – here is a link to a film about the gauge <https://youtu.be/TSrAFef9zNA...>



### ***Water Quality***

The Environment Agency tests the water quality at East Looe from May – September. Water quality has improved in recent years, and it is now classified as good.

However, pollution caused by Combined Sewer Overflows (CSO's) into Looe's bathing waters has been identified as a problem by South West Water (SWW) in the Fowey-Looe-Seaton Drainage and Wastewater Management Plan. Multiple spills were reported in the period 2019-2021. (You can read more [here](#))

The project has the potential to reduce the impact from CSO discharges by protecting the ageing sewerage system and risks from flooding.

By reducing the risk of flooding and the risk of pollution caused by CSOs, the project would help mitigate the risks identified, and meet the aims of the following:

- SWW Storm Overflows Discharge Reduction Plan.
- Environment Act 2021.
- SWW Drainage and Wastewater Management Plan.
- SWW Vision 2020-2050.
- Government's Ten Point Plan for a Green Industrial Revolution. A high density of blockages have been identified by SWW in Looe.

### **Mitigation and improvement opportunities**

The project will embrace the 'mitigation hierarchy' with regards to environmental impacts. This centres around avoidance in the first instance, followed by minimisation, rectifying, reducing and then offsetting.

In order to achieve a successful flood defence scheme that meets the needs of the project brief, it may not always be possible to avoid environmental impacts. In these instances, the remaining elements of the mitigation hierarchy would be adopted to ensure impacts are reduced as far as possible when balanced against the overall need for the project.

### ***Carbon***

The design team are actively exploring ways to reduce carbon in construction and operation of the project in line with PAS2080 (the global standard for managing infrastructure carbon).

This includes:

- **Build less** - for example considering using existing buildings to store materials for operation instead of building new ones.
- **Build clever** – for example looking at lower carbon alternatives to traditional Portland cement in concrete.
- **Build efficiently** – for example using modern methods of construction to reduce waste.

### ***Enhancement example***

In addition to reducing carbon, opportunities are also being explored to provide environmental enhancements for the project.

A series of reef cubes supplied by a local Cornish company, ArcMarine, are currently being trialled off Banjo Pier. The purpose of these reef cubes is to explore ways in which the project can lower the carbon footprint of the project and boost marine biodiversity.

Each reef cube is made from a special low-carbon, marine-friendly concrete substitute, with nooks and crannies designed to create an ideal home for marine wildlife such as seaweeds, barnacles and limpets, as well as larger species such as lobster and crab.



You can view a film about the reef cubes : <https://youtu.be/BbwjUpsd1YI>

If you would like any further information on the environmental work undertaken to date please email [LooeFloodDefence@wsp.com](mailto:LooeFloodDefence@wsp.com) .