The Moors at Arne Project, Coastal Management Project

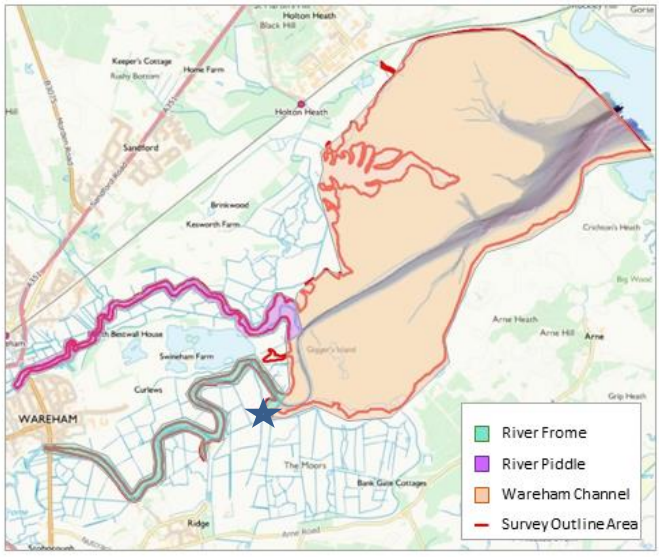
Navigation and Siltation FAQ's

Jan 2021

Will the River Frome remain navigable?

The River Frome is navigated by many users for both pleasure and commercial use. From the 1800's to the present day the alignment of the river has remained broadly static, due to the embankments which line the riverbank. The project design is expected to have no adverse effect on the navigability of the River Frome for its users.

River Frome at Wareham Quay



Bathymetry Survey Data - Autumn 2019

Using industry standard computing, river currents and water levels have been modelled both with and without the project. This considers any changes that would result from the project being constructed.

The existing and historic river bed silt levels and ground levels have been gathered from a number of sources including: historic mapping, LiDAR (aerial flown surveying) and bathymetry (underwater surveying from a boat).

The work has used UK best practice methods and has been checked by specialists to assure quality. The results show that very minor changes may occur near Turners Cove ★ (less than 0.4 knots in currents and less than 5cm in water level) with smaller, unmeasurable changes elsewhere on the river.

As a practical check, the bathymetry surveys in the River Frome, River Piddle and Wareham Channel will be repeated each spring and autumn from now until approx. 5 years after project completion to monitor for any notable siltation changes. Poole Harbour Commissioners have agreed to review the data and jointly agree if there is any action that may be required from notable changes in river silt.

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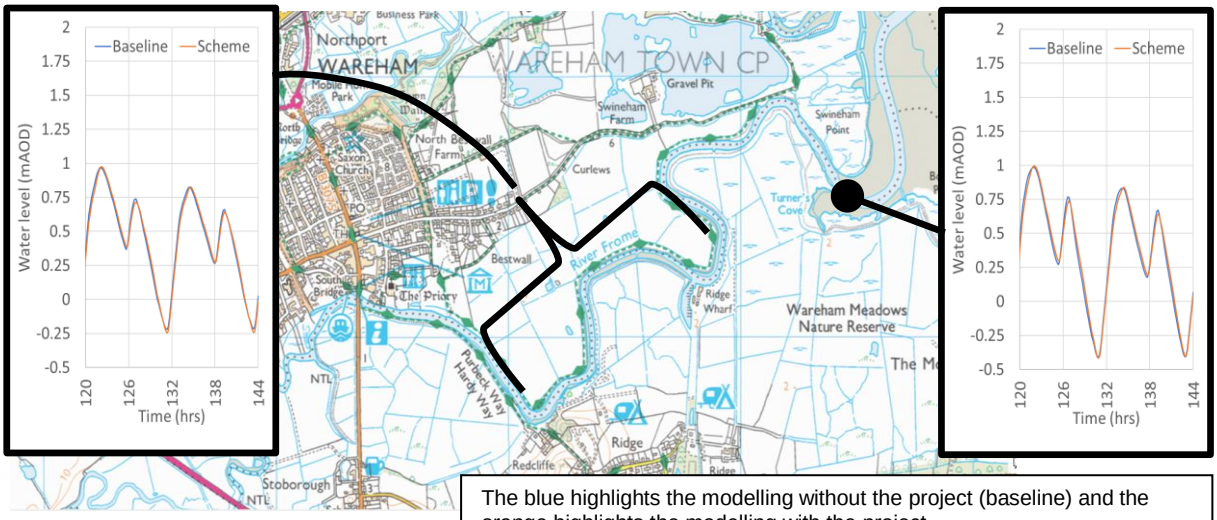
What impact will the project have on water levels in the River Frome?

The computer modelling assessed any changes to tidal levels as result of the project being constructed. The modelling shows no measurable impacts on the River Frome tide levels.

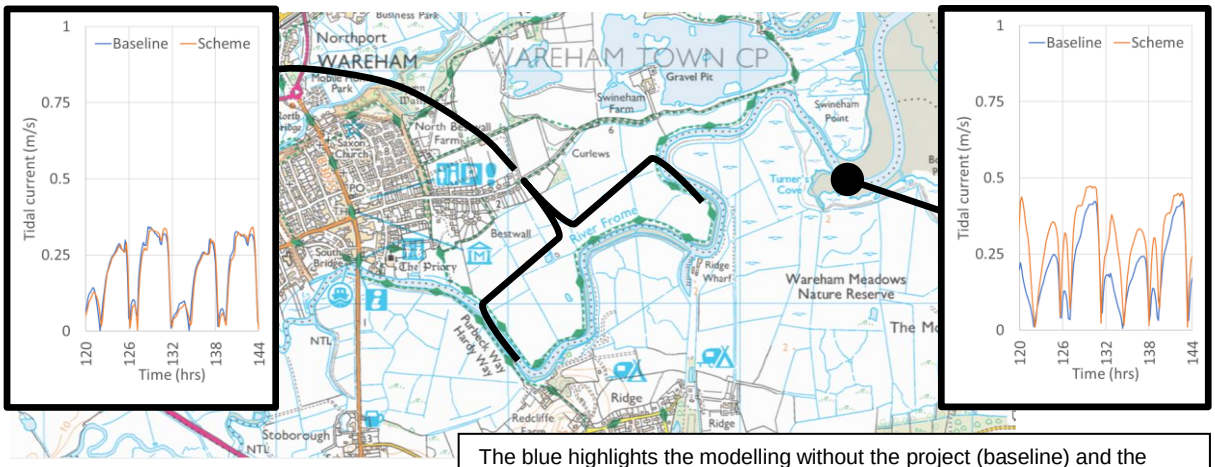


The blue highlights the modelling without the project (baseline) and the orange highlights the modelling with the project.

What impact will the project have on currents within the River Frome?

Computer modelling is also used to measure any predicted current changes due to the project along the River Frome system. The majority of the River Frome is predicted to receive no measurable impact on water currents from the project.

At the Turners Cove proposed breach location there will be some localised changes in the tidal currents due to water entering and exiting the intertidal area of the Moors at Arne. This modelled impact is minimal: the change is predicted to be less than 0.2 metres per second (approx. 0.4 knots).



The blue highlights the modelling without the project (baseline) and the orange highlights the modelling with the project.

Why is a breach needed at Turners Cove?

View of current Turners Cove Outfall

The Moors site is very wide (approx. 3km) and the tidal range in Poole Harbour is very small (approx. 1m between high and low tides on average). There needs to be 3 breach locations across the harbour frontage to bring sufficient saline water across the site to make the habitat changes. Turners Cove is the best location to bring saline water to the western part of the site and to feed the saline lagoons.

Currently at Turners Cove there is an existing flap valve that is the outfall of the Furzebrook Stream into Poole Harbour. The flat gradient of the Moors means that this location is still the best place for the Furzebrook to discharge. The open breach will allow saline water to enter at high tide, and for that water and the Furzebrook Stream to both discharge at low tide.

What impact will the project have to siltation in the River Frome, including the construction of the project?

No siltation impacts affecting navigation on the River Frome are expected as a result of the project, including its construction.

During the construction, the new tidal embankments and site features on the existing moors will be created first and then the three proposed breaches will be opened to the tidal water. It is not expected that this method of habitat creation will lead to

outflow of silt into the Frome and the wider Harbour. The contractors with monitor this during the construction of the project.

When the project has been completed the indication is that incoming sediment at high tide would naturally settle within the realignment site to create the features such as mudflats and saltmarsh. Typically intertidal areas accumulate sediment until the saltmarsh rises above the tidal range. If monitoring demonstrates an adverse siltation change in the River Frome linked to the project, then this will be addressed.

There is a natural sediment transport regime within all rivers. The River Frome is subject to natural and seasonal changes of sediment flow and therefore siltation within the river system. High sediment inflows to the river can occur during high rainfall within the catchment. As the speed of the water reduces, sediment drops to the river bed. This can create a 'jerky conveyor' of silt movement within the river. The natural changes in siltation are unlikely to be impacted by the project.

Have any mitigation measures been proposed to ensure the navigability of the River Frome following the completion of the project?

It is common for monitoring to be put in place after the works are completed to confirm that the study area has changed as predicted. The project will continue monitoring over a period of approx. 5 years after the completion of the works. No siltation impacts affecting navigation on the River Frome are expected as a result of the project. If monitoring demonstrates an adverse siltation change linked to the project, then this will be addressed in consultation with Poole Harbour Commissioners.

Environment Agency bathymetry survey boat

The Environment Agency is also part of a national coastal monitoring programme funded by DEFRA. Locally the monitoring is based at the Channel Coast Observatory, Southampton University. The Regional Coastal Monitoring Programme collects and analyses coastal data, including beach topography, Lidar, bathymetry, hydrodynamics and aerial photography to aid planning of beach maintenance and coastal defence projects. This coastal monitoring will include the Moors at Arne site and wider Poole Harbour, and will continue to provide information beyond the commitment of the project monitoring.