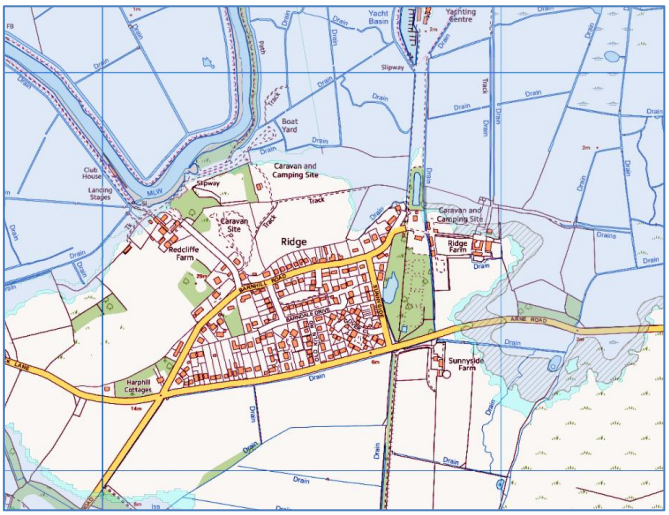
The Moors at Arne, Coastal Management Project

Flood Risk FAQ's

Jan 2021

What is the flood risk from tidal rivers and the sea?

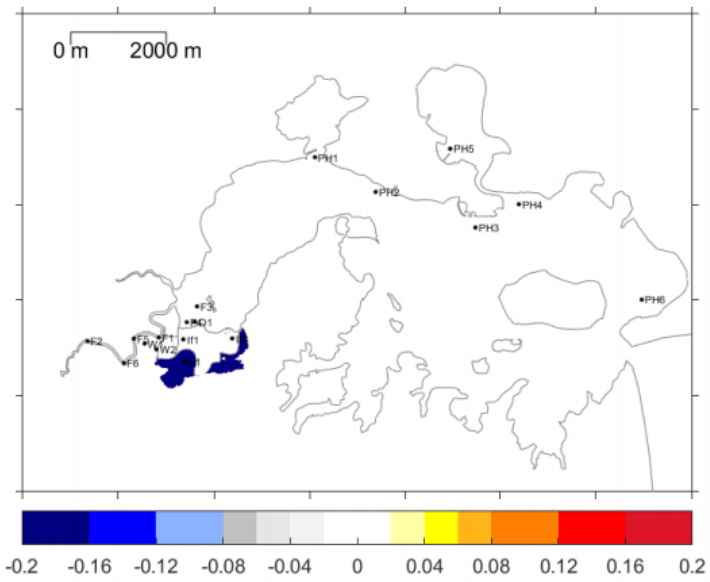
Existing



The existing flood risk from the River Frome and the sea (Poole Harbour tide) is shown here and **is available online at GOV.UK:** **https://flood-warning-information.service.gov.uk/long-term-flood-risk**

In Ridge this flood risk currently affects 1 property and 1 business. All other properties are not affected as they are situated higher than the floodplain.

Impact of the project

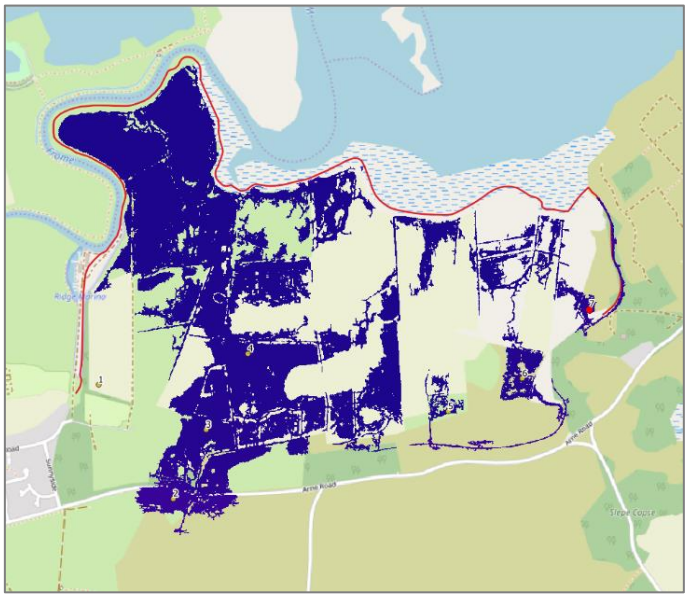


The map shows the impact of the project on the existing flood risk – and has considered the whole of the Poole Harbour area. The white colour shows no impact (ie water level changes of less than 2cm).

The dark blue colour shows a benefit (reducing flood risk) to the area of land behind the new embankments. This includes the 1 property that was shown within the risk area for the existing situation (above).

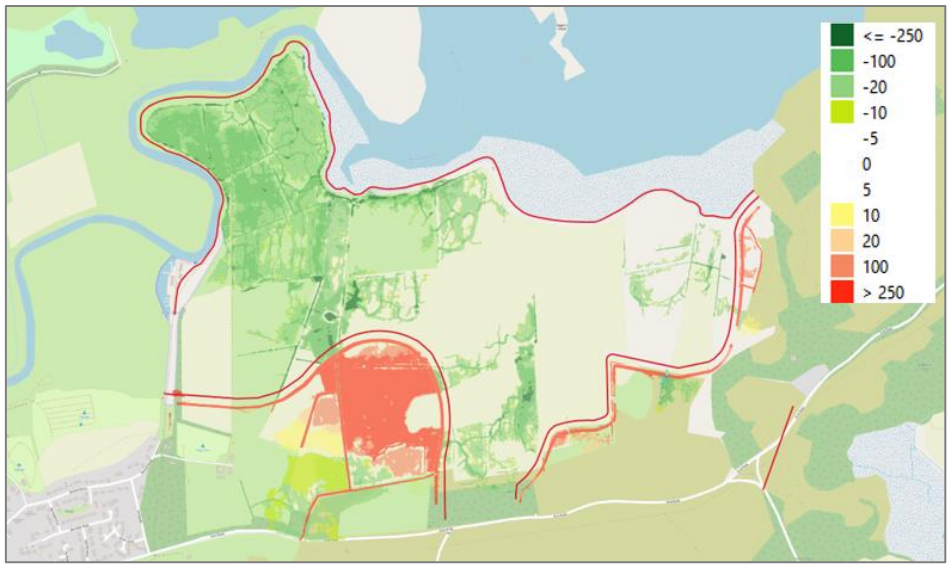
What is the flood risk from non-tidal rivers?

Existing



The existing flood risk from the Furzebrook Stream is shown here. There are no properties at flood risk from this small watercourse.

Impact of the project

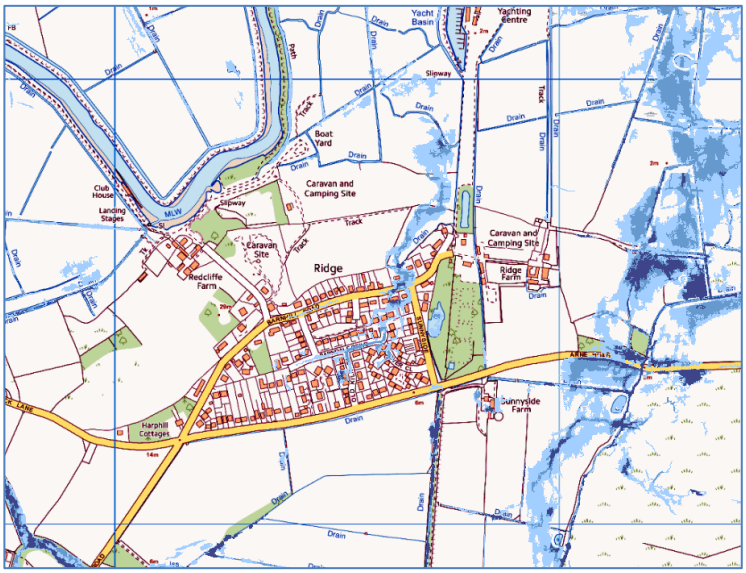


The map shows the impact of the project on the existing flood risk. The colours show the increase in water level in mm in the scenario when there is extreme rainfall in the Furzebrook catchment occurring at the same time as the highest astronomic tide.

Although an area of land behind the new embankment has an increase in water level, in some places over 100mm, this does not spread to the neighbouring property, and only impacts the project's new freshwater habitat area.

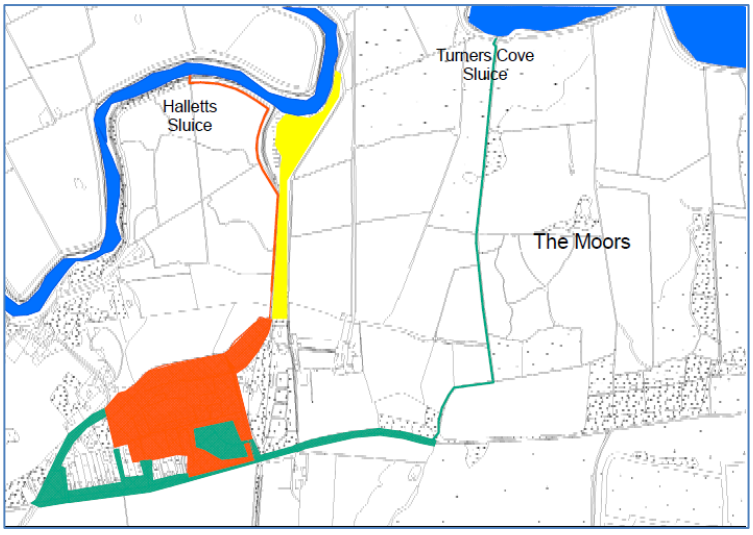
What is the flood risk from surface water?

Existing



The existing surface water flood risk mapping is shown here, and **is available online at GOV.UK:** https://flood-warning-information.service.gov.uk/long-term-flood-risk,

In Ridge there is an overland route for rainfall through the centre of the settlement. This route flows out to the meadows north of Ridge, and to the west side of the Ridge Wharf causeway. The Furzebrook Stream's surface water flood risk also affects the Arne Road.



The below ground drainage systems are shown here. This information came from CCTV surveying of the drains in Ridge.

Drainage from the orange coloured area outfalls in open ditches to the River Frome at Halletts Sluice. Drainage from the green coloured area outfalls in an open ditch along the Arne Road to the Furzebrook Stream. Drainage from the white area is by soakaways.

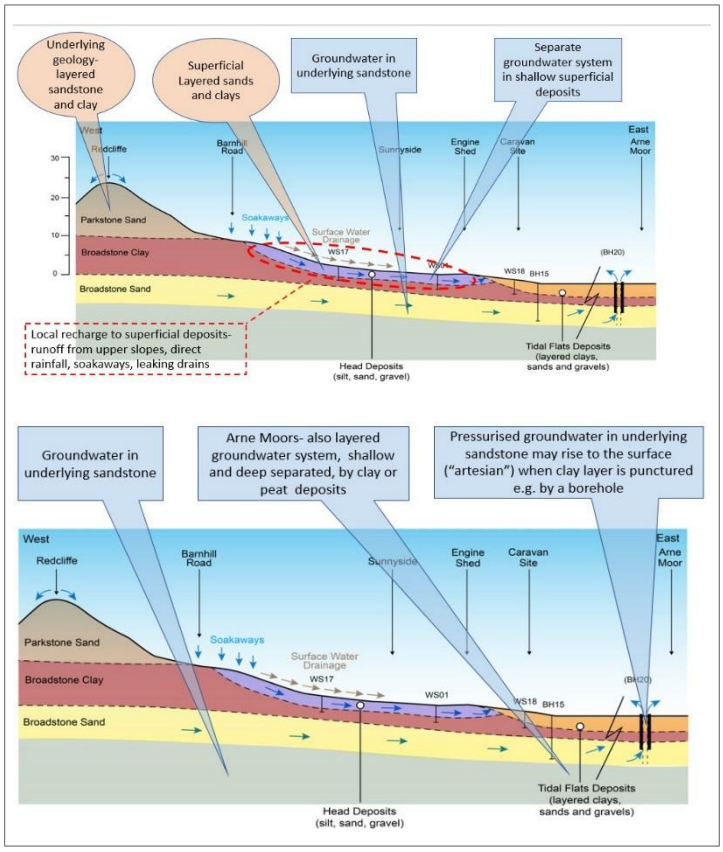
Impact of the project

The project will have no impact on the surface water at Ridge because:

- orange area - the river levels at Halletts Sluice are not affected by the scheme (see Navigation FAQ)
- green area – Ridge is circa 5m higher than the Furzebrook Stream and the open ditch would spill out at low level. The surface water assessment has also shown no impact of the project to the Arne Road.

What is the flood risk from groundwater?

Existing



The diagram shows the findings of the groundwater investigation.

Water levels in boreholes were monitored for several months and assessed with the soils information from the borehole logs.

The groundwater system at Ridge (purple) is separate from the groundwater system at the Moors (orange and yellow). The groundwater within Ridge is a 'perched' system, ie it sits higher up and separate from the main water table in the deeper rock and comes from rain falling on the sandstone Redcliffe area.

Groundwater at the Moors is a deeper system, coming from rain falling on land far to the south. There is also perched groundwater where rain has fallen directly on the land and is prevented from seeping downwards by thin layers of clay.

Impact of the project

The project will have no impact on the groundwater flood risk for Ridge.

The project will not affect the inflow of groundwater, as this comes from rain on Redcliffe and higher Ridge.

The project will not affect the drainage of groundwater from Ridge, as this is the same pathway as the orange area shown in the surface water map. The groundwater flow is intercepted by the open ditches along Barnhill Road and Sunnyside, and it then flows with the surface water.

The ditch to the east of Ridge Wharf causeway will intercept groundwater emerging in that local area, and this flow is managed by the project's design with a flap valve through the new main embankment.

The water levels in the boreholes at Ridge Farm and Bank Gate Cottages will be monitored from now, through construction and for circa 5 years after the project completion, to check for any effects that might be thought to be caused by the project.

What affect will the project have on the sewage pumping station on Barnhill road?

The pumping station at the lower end of Barnhill Road, operated by Wessex Water is outside of the mapped floodplain for the River Frome. Any existing pressures on the sewer network from surface water and groundwater would not be made worse by the project.

How will flow in drainage ditches and the Furzebrook Stream get from the landward side of the new embankment out into Poole Harbour?

There will be flap valves built into the new embankments to allow water to pass through to the intertidal area at low tides. These flap valves are non-return, so that the tide cannot travel back through the embankment.

What consideration has been given to different sources of flooding acting in combination?

The effects of a flood can be worse when different sources occur together, or in close succession, which can be called 'compound flooding'.

The project's Flood Risk Assessment has taken compound flooding into consideration. The combinations of model runs were chosen by reference to Defra publication FD2308/TR1 'Joint Probability: Dependence Mapping and Best Practice'. This gives the assessment standards for appropriate combinations of extreme tidal levels and extreme river levels. The assessments have been carried out for current flows, and also for the increased flows predicted in 100 years' time with climate change influences.

There is also academic work ongoing to understand the impacts to low-lying coastal regions around the country of the flooding which arises from storm surges plus tides and/or waves, fluvial discharge, and/or rainfall runoff sources. As this work progresses it may eventually feed into future assessment standards.

Who are the Risk Management Authorities (RMA's) for different sources of flood risk?

The Environment Agency is the RMA for main rivers and the sea.

Dorset Council is the RMA for ordinary watercourses, surface water and groundwater.

Wessex Water is the RMA for sewage issues.