

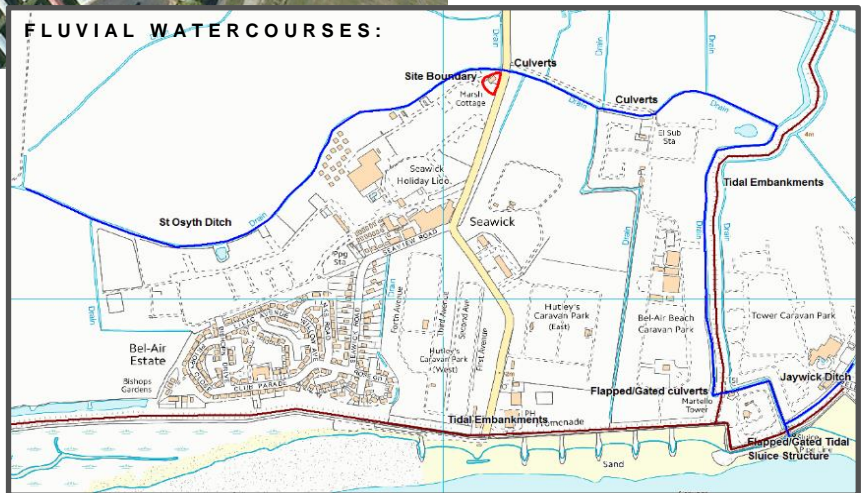
## Marsh Cottage – Fluvial mapping Assessment

Seawick Holiday Park, Seawick, Essex, CO16 8SG.

<b>Project:</b>	Marsh Cottage, Seawick
<b>Location:</b>	Seawick, Jaywick, Essex CO16 8SG
<b>Client:</b>	Park Holidays Limited
<b>Brief:</b>	Undertake a hydraulic modelling exercise to determine fluvial flood risk in response to Environment Agency comments as part of a planning application for a holiday caravan park.

### PROJECT

Enzygo were instructed by Park Holidays to undertake a hydraulic modelling exercise in response to Environment Agency comments as part of a planning application for additional caravans on an existing holiday caravan park. The Site is shown to lie within Flood Zones 2 and 3a, however the flood outline is dominated by tidal flooding, as such, the Environment Agency required demonstration of the fluvial flood risk from the St Osyth Ditch, which bounded the development Site to the north.



Through consultation with the Environment Agency, an existing model was not available for the St Osyth Ditch. The St Osyth Ditch has a flapped outfall to the north Sea, which passes under a formal tidal defence embankment to the south east of the Site.



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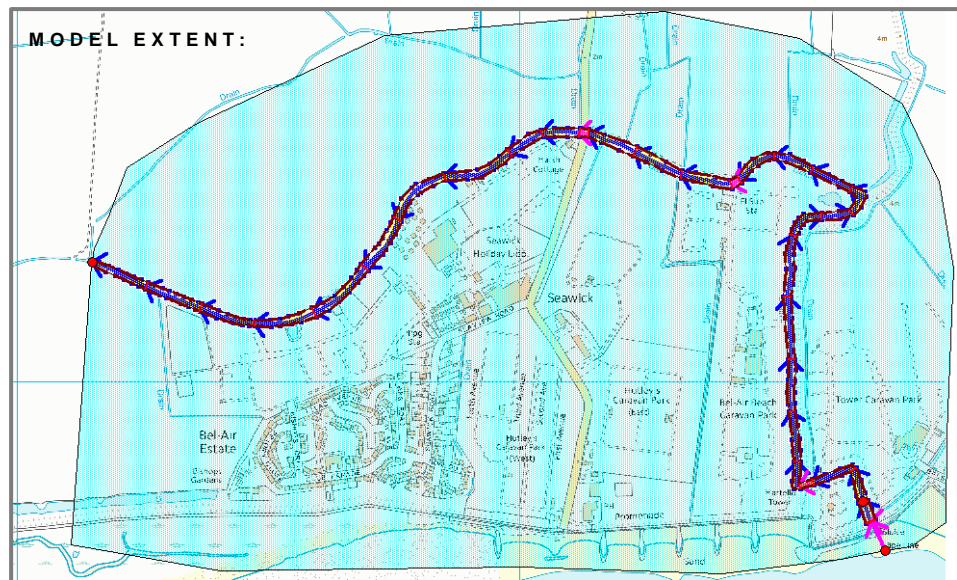
## WHAT WE DID

Enzygo was tasked with undertaking hydraulic modelling of the St Osyth Ditch to derive the fluvial flood outline and understand how fluvial flood risk is influenced by in-combination impacts with the tide, both for the present day and when climate change allowances are considered.

## MODELLING

Enzygo constructed a 1D2D linked hydraulic model of the St Osyth Ditch using Estry TuFLOW software and a bespoke in channel topographical survey, undertaken as part of this project. The model covered an overall extent of 1.7km<sup>2</sup>, reach length of 2.6km and comprised a total of 31 cross sections and 4 culvert structures. Hydrological inputs were derived using industry standard techniques and tidal curves were taken from the Colne and Blackwater tidal model, which were updated to include up to date tidal levels.

The modelling exercise considered a number of scenarios to ensure fluvial flood risk to the Site was fully understood including fully working tidal flap gates, failure of the tidal flap gates, sensitivity analysis of input hydrology and culvert diameters.



## FLOOD MAPPING

Flood mapping was completed to show the extents and depths of flooding at, and around, the Site. The mapping showed that the fluvial flood outlines was significantly reduced when compared to the tidal outline, as shown on the Environment Agency Flood map for Planning.

All modelled scenarios showed that fluvial flood risk to the Site was minimal, even with tidal flap gate failure, which was considered a fluvial worst-case scenario.

## WHAT WE ACHIEVED

The hydraulic model and results were submitted to the Environment Agency for review who accepted the results. The aim of the exercise was not to challenge the Flood Map for Planning, as tidal sources will still provide the greatest flood risk to the Site, but to understand the significance, and risk, associated with the St Osyth Ditch. The modelling work demonstrated that the proposed development Site was not located within Flood Zone 3a and that the proposed additional caravans, which are classified as 'highly vulnerable' use, are appropriate.



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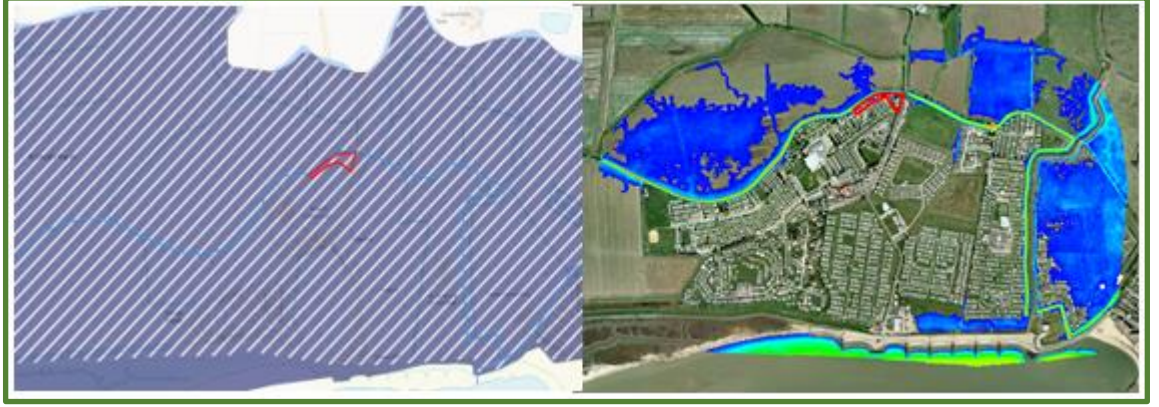
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# CASE STUDY

Marsh Cottage, Seawick | Case Study

Before: Environment Flood Map for Planning

After: Fluvial Flood Outlines



## FURTHER WORK

Further development proposals are now being considered for the Site, and neighbouring Site, and the client have asked Enzygo to undertake this work, for which, the developed TuFLOW model can be further utilised.



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