NOTE TO FILE

JBA Project Code	2016s5134
Contract	New Salts Farm Road, Shoreham
Client	Tully De'Ath Consultants
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1 Introduction

JBA Consulting was appointed by Andrew Picton from Tully De'ath to prepare a flood risk modelling report to support the assessment of flood risk to New Salts Farm Road, Shoreham.

The above referenced site was identified as a potential strategic development site for residential purposes within Adur District Council's emerging 2016 Local Plan. Hyde Housing Association Ltd have proposed to develop the agricultural area between New Salts Farm and the Hasler Estate to provide a new residential area in five phases.

A hydraulic model was required to refine the understanding of current and future flood risk to the site and identify the effect of possible mitigation measures that could be implemented within the site's existing drainage system known as the Lancing Brooks.

2 Hydraulic modelling

The model was development by InfoWorks ICM based on open LiDAR data and river sections were taken from the 1D Lancing Brook ISIS Model.

The Figure below shows the extent of the model 2D domain and 1D channel elements.

The model was run for a range of baseline conditions for the following return periods:

- 100-year (1% AEP)
- 1000-year (0.1% AEP)
- 100- year (1% AEP) + 20% climate change
- 100-year (1% AEP) + 40% climate change

In February 2016 new climate change guidance was published by the Environment Agency (Flood risk assessments: climate change allowances) to support the assessment of flood risk in line with National Planning Policy Framework (NPPF) which sets out how the planning system should help minimise vulnerability and provide resilience to the impacts of climate change.

The climate change allowances are predictions of anticipated change for peak river flow by river basin district and peak rainfall intensity.

They are based on climate change projections and different scenarios of carbon dioxide (CO_2) emissions

to the atmosphere. There are different allowances for different epochs or periods of time over the next century.

To inform the Flood Risk Assessment we have, in line with Table 2 of the updated climate change guidance, applied the a 20% and 40% uplift to account for the "Central" and "Upper End" respectively to represent the anticipated changes in extreme rainfall intensity in small catchments for the 2080s epoch (2070 to 2115)

https://www.gov.uk/guidance/flood-risk-assessments-climate-change-allowances

2.1 Scenario testing

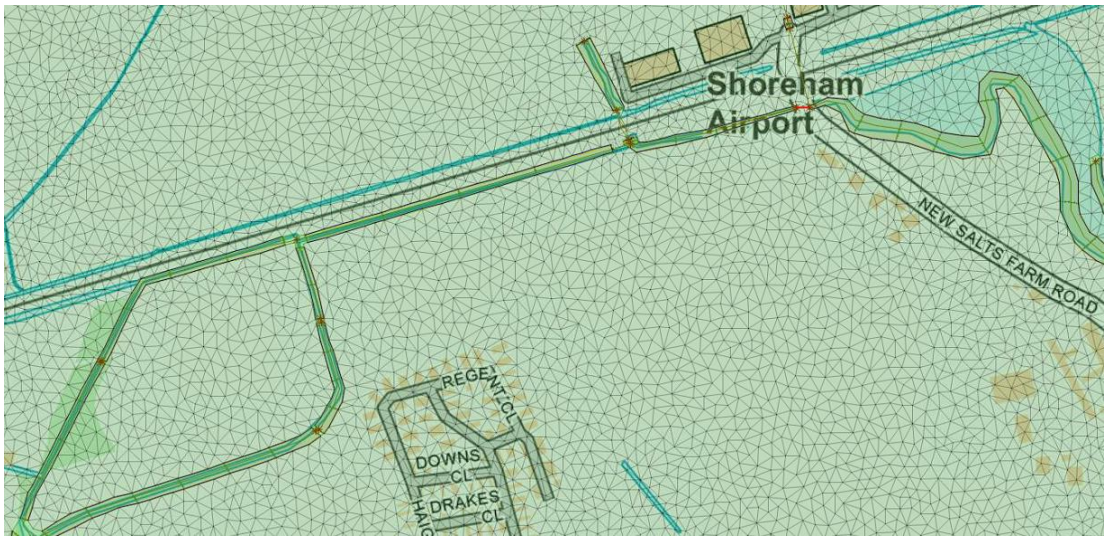
The model was then used to test various scenarios. These scenarios were:

- **Baseline:** This is considered to represent the existing topographic situation.

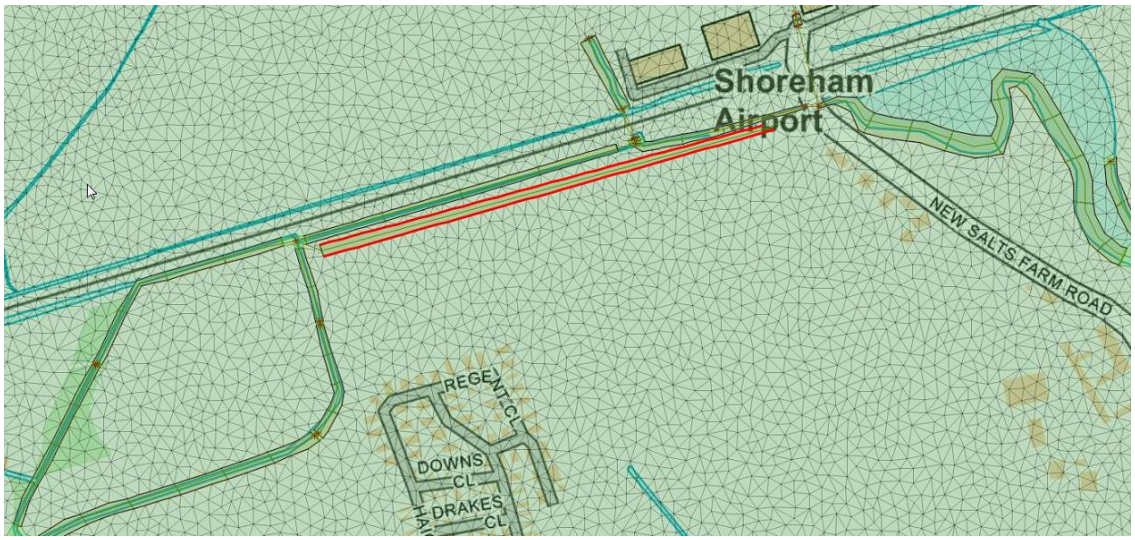
The Figure below shows a section of the baseline model between New Salts Farm Road and Windsor Way.

- **NSFR V1**: Increase the size of the bridge under New Salts Farm Road from a 950mm circular culvert to a 3700mm(w) by 1000mm(h) rectangular culvert
- **NSFR V2:** Increase the size of the bridge under New Salts Farm Road from a 950mm circular culvert to a 4000mm(w) by 1500mm(h) rectangular culvert

The Figure below highlights (in red) the bridge under New Salts Farm Road that is amended in scenarios NSFR V1 and NSFR V2



- **Swale:** Using a 'corridor' of land to provide a new channel (highlighted in red on the figure below) which connects the ditch towards the western end of the site and flows back into the existing channel on the eastern boundary of the site just upstream of the bridge.



- **Tide lock:** Re-run the above scenarios assuming the outfall is tide locked for the duration of the event.

3 Results

The results of the model were converted into .shp files and then represented within maps produced in ArcGIS v10.4. Two versions of the maps were produced:

- Version 1: Raw depth data
- Version 2: Hazard and depth maps which excluded flooding with a Hazard less than 0.575m in line with the national updated Flood Map for Surface Water Guidance