

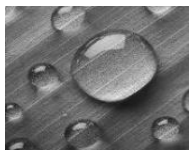
ELEMENTS ENERGY

Cilybebyll Hydro

**Flood Risk
Assessment**

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**Hydropower Consultancy &
Development**



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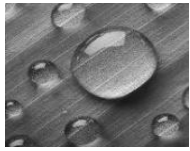
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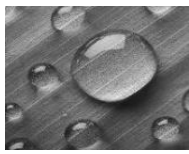
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1. INTRODUCTION

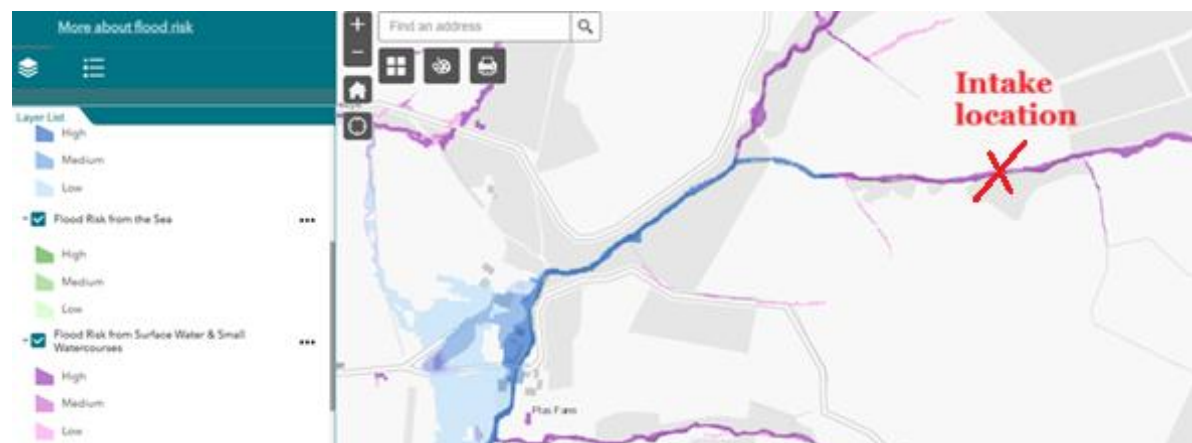
This document presents a drainage and flood risk assessment for the installation and operation of a micro hydro scheme on the River Clydach at Plas Farm, Cilybebyll, Pontardawe. This is the second hydro project at the site and it shares its powerhouse with Plas Farm Hydro.

2. FLOOD FLOWS

The Low Flows Enterprise Model was used to calculate flows. In summary the the 1 in 100 average flow is $0.353\text{m}^3/\text{s}$. The 1 in 1000 average flow is $0.652\text{m}^3/\text{s}$. The scheme has been designed with expectation of well above calculated flows as climate change may lead greatly higher and more frequent flood flows, with exceptionally high peak flood flows.

3. FLOOD ZONE

The scheme is located within the low risk flood zone.

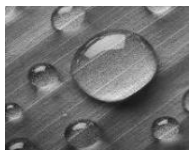


The intake is within the high flood risk zone (being within a small watercourse)

Please note the powerhouse is part of a separate planning application and thus not covered by this flood risk assessment. The pipeline is outside of the flood risk zone.

4. FLOOD PROTECTION

The new weir is to have an elevation (i.e. crest level of Coanda screen) of 205.5 mAOD. The wing walls joining the northeast and southwest banks are both to be at an elevation of 205.6 mAOD. These levels allow flood flows to pass over within the bounds of the weir without causing any increased flood risk upstream of the weir. Backfilling of bed material immediately upstream of the intake weir will further offset the risk of a build-up of flood waters behind the structure.



The intake structure can be completely submerged without adverse effect. The structure has a very low profile and is structurally reinforced to ensure that high waters will not cause damage to the structure or the integrity of the weir.

5. FLOOD RISKS RESULTING FROM THE PROPOSAL

The intake weir only impounds a negligible volume of water, therefore a failure of the structure would not cause any flooding what so ever. A pipe burst would not cause flooding as the volume of the intake and pipe is designed around a flow of just 0.059 m³/s the close proximity of the pipeline would mean that pipe burst would discharge back to the watercourse and the volume would not be any greater than that abstracted from the watercourse itself so downstream flood would not be caused.

6. CONCLUSION

Given the above information, the development of the proposed scheme at Plas Farm, Cilybebyll is unlikely to alter flood risks in any manner, and the systems is designed appropriately given the new age of climate change related flood risk.