PORTHMADOG

STRATEGIC FLOOD RISK ASSESSMENT

CPF 5160
Client: Anglesey and Gwynedd Joint Planning Policy Unit (JPPU)

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Document Control Sheet

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1. Introduction

1.1 YGC have been commissioned by the Anglesey and Gwynedd Joint Planning Policy Unit (JPPU) to ascertain whether there may be any potential development sites for housing in the Porthmadog/Tremadog area with regards to flood risk.

1.2 JPPU provided YGC with the "Afon Glaslyn & Tributaries at Porthmadog Flood Risk Study" which was produced for Natural Resources Wales (NRW) by JBA Consulting in January 2014. This report provides information on the risk of flooding in the area including extents, depths and velocity of potential floods. See Appendix 1 for full report. YGC were also provided with all relevant GIS datasets.

1.3 The majority of Porthmadog is identified as being within a C1 flood risk zone Technical Advice Note 15: Development and Flood Risk (TAN 15) and national guidance states that Local Development Plans (LDP's) should not allocate land for housing in these areas. (See Appendix 3 for TAN 15).

2. Producing the Porthmadog Flood Maps

2.1 Using data received from NRW and imported into ArcMap GIS software onto a raster and OS map combined with a shapefile for the UDP area it was possible to create flood maps to illustrate the flood risks to Porthmadog for a number of different scenarios. With Climate change estimations there is now a need to ensure that new development does not increase flood risk to an area or is not at flood risk in the first instance.

Using scenarios for present day climate for a defended and undefended (by sea defenced) flood scenario we can estimate how flooding events will impact Porthmadog. Comparing these to maps of defended and undefended flood scenarios with a 20% increase for climate change estimations it is possible to see how future flood events compare.

Within Porthmadog there is also a risk of tidal and fluvial flood risk. These have also been incorporated into the flood maps.

As well as sources of flooding there are also risks of flooding form breaches/ failures of the defences and blockages of the main river (Glaslyn).

For each scenario the data set was imported into ArcMap onto a base map made up of a number of different maps:

Master Map Annotation
Master Map Areas
OS 50k Raster
OS 250k Raster
OS Miniscale Raster

These enabled the most amount of detail to be displayed. Knowing that development should not be in areas where flood depths are greater than 0.25m the maps were created so that there were two visible areas- those where development could possibly take place and those areas where no development should be carried out. This was done by adjusting the classification of the data set to display two values (0-0.25 and 0.26- maximum depth).

Adjusting then the transparency of the data set allowed the user to clearly see the defined areas.

By importing a polygon of the UDP area it allowed the user to clearly see which areas within the UDP could be developed.

2.2 See Appendix 2 for all Flood maps and see below for the full list of maps created:

Tidal
- Defended + Climate change
- Defended present day
- Undefended + Climate change
- Undefended present day
- Defended and undefended + Climate change
- Defended and undefended present day

Fluvial
- Defended 100 year + Climate change
- Defended 100 year present day
- Undefended 100 year + Climate change
- Undefended 100 year present day
- Defended and undefended + Climate change
- Defended and undefended present day

Failure of Defences
- Breach of defenced
- Townward
- Traeth
- Main Cob
- All
- Door Failure- All

Blockage of River
- Glaslyn 100% blockage

3. Conclusions

3.1 After analysing the flood maps and following a meeting on the 20th of October 2015 between NRW officers, YGC officers and the JPPU Team Leader it was agreed that no suitable locations were identified as potential land for housing within the UDP. To comply with TAN 15, there needs to be no risk to the development or any increase risk elsewhere. If a development was to go ahead in the proposed area it would reduce the amount of flood storage, an investigation would be needed on its impact on third party property and land, it is likely if the development was to increase flood water by 5mm at any other location, it would face objection. In addition to flood risk at the development, to comply with TAN 15, safe access and egress would also need to be considered, this cannot be achieved in the proposed location without increase the height of all road to and from the area.