



**OPW** Oifig na  
nOibreacha Poiblí  
Office of Public Works

# Map Update Report

## MR029 Drogheda



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# 1 Map Review Programme

The Map Review Programme is the process that the OPW follows to update predictive flood mapping to continue to provide the best available flood risk information to as wide an audience as possible. The Flood Maps have been developed from detailed engineering analysis and modelling. There is always some uncertainty with regard to the accuracy of predictive flood models; however, the detailed models used have been developed using the best available modelling techniques, tools and data at the time of production.

The OPW is committed to providing the best available flood risk information to as wide an audience as possible. Updates and revisions to the Flood maps will be prepared as appropriate. Updates to the Flood Maps are considered when one of the below criteria are met:

- A change in the physical conditions since the Flood Map was produced. Examples of potential changes include new infrastructure, a new development, a culvert or bridge upgrade, land raising, channel realignment, etc.
- An error has been identified in the survey. Errors in the survey may include a channel missing or a channel misaligned, or an error in the surveyed levels used.
- Completion of an OPW-funded Flood Relief Scheme or Minor Works Scheme.
- Evidence presented by a recent flood event that calls into question the published Flood Map.
- The completion of a Strategic Flood Risk Assessment, supported by hydraulic modelling, which produces flood maps that are materially different to the OPW published Flood Map.

The Flood Map Review Programme covers Flood Maps produced by the National Catchment Flood Risk Assessment and Management Programme (CFRAM) and other projects that produce detailed productive flood mapping as published as Flood Maps on [www.floodinfo.ie](http://www.floodinfo.ie). The CFRAM Programme was the principle vehicle to deliver on Ireland's commitments under the EU Floods Directive (2007/60/EC). The EU Floods Directive also requires that the Member States review and if necessary update the flood maps on a six-yearly cycle; the Map Review Programme is the process that satisfies this requirement.

The review of Indicative national mapping datasets such as the outputs of the National Indicative Fluvial Mapping study and the National Coastal Flood Hazard Mapping is not considered as part of the Map Review Programme.

## 2 Flood Map Review Request

### 2.1 Summary of Flood Map Review Request

A flood map review request was received which noted that a watercourse near Drogheda that had been included in the CFRAM study was no longer in existence. During the CFRAM project, the watercourse was shown crossing the M1 motorway, before flowing northwards into the River Boyne east of the M1 Bridge on the River Boyne (Mary McAleese Boyne Valley Bridge) see Figure 1-1. The flood map review request indicated that the watercourse was intercepted by the drainage associated with the M1 motorway.

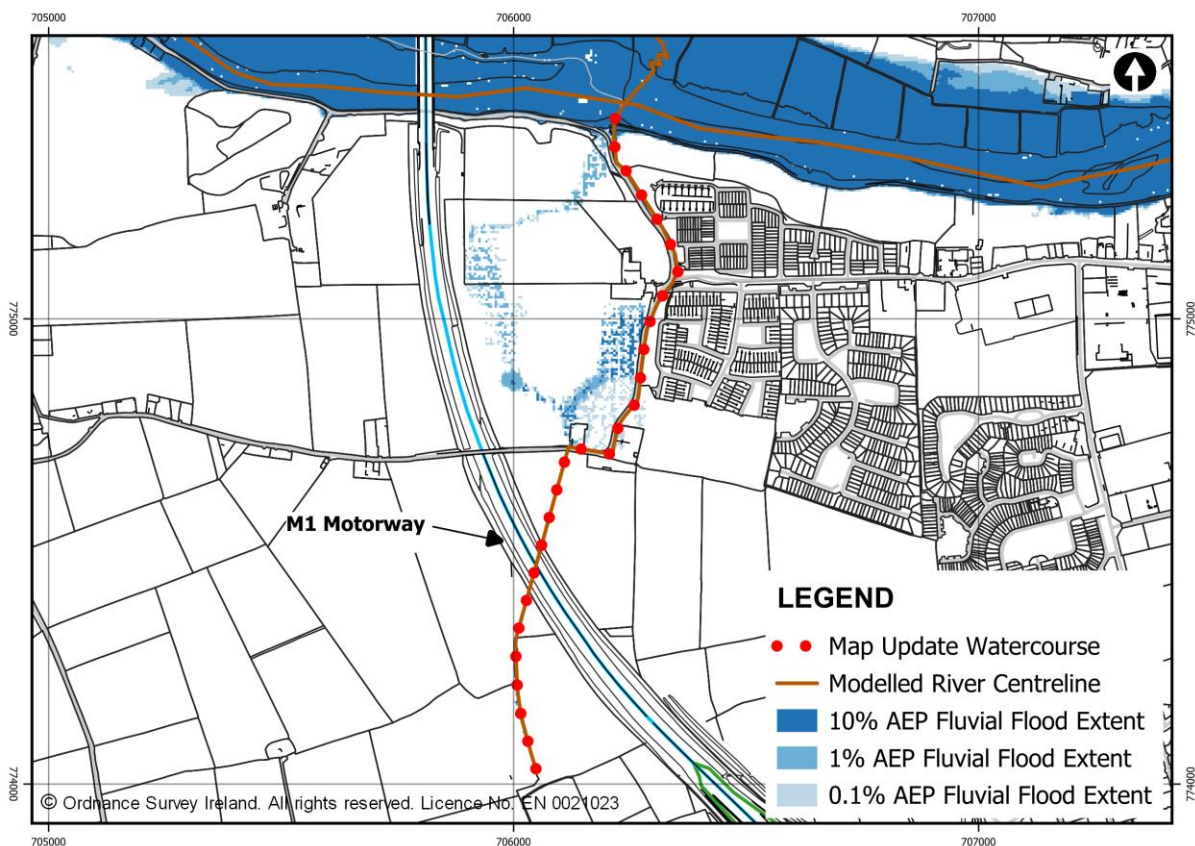


Figure 2-1; Overview of Map Update Watercourse



## 2.2 OPW Site Visit

A site visit was undertaken by OPW engineers, which confirmed that the watercourse on the eastern side of the M1 is a dry non-functioning channel. The flow from the catchment upstream of the motorway has been incorporated into the motorway drainage.

The previous route of the watercourse on the eastern side of the M1 can still be seen, however it is now a dry non-functioning channel, see Figure 2-2. Only the most downstream reaches of the watercourse still convey flow.



*Figure 2-2; Photos from walkover survey demonstrating dry channels east of M1*



## 2.3 Outcome of Map Review Request

The OPW will only carry out a Map Review when the information provided supports one of the criteria described in Section 1.

In this case, a physical change to the watercourse has occurred which has diverted the watercourse. Therefore, an update of the Flood Maps is considered appropriate in this case.

# 3 Flood Map Update

## 3.1 Hydrology and Hydraulics Analysis

The process of updating the Flood Maps to account for the now diverted watercourse requires an understanding of its interaction with the River Boyne. The 1% AEP flows are shown in Figure 3-1 for selected nodes. The flow in the River Boyne at the confluence is approximately 559.7 m<sup>3</sup>/s, while the flow in the Map Update Watercourse is approximately 1.5 m<sup>3</sup>/s at the confluence. The Map Update Watercourse represented just 0.3% of the overall flow in the River Boyne. Removal of such a small amount of flow would be imperceptible if the hydraulic model was updated to reflect this.

Although the flow in the watercourse is insignificant, the watercourse itself could act as a pathway for flood waters from the River Boyne. Both Figure 3-1 and Figure 3-2, show the 1% AEP water levels of the Map Update Watercourse. Figure 3-2 shows that the slope of the Map Update Watercourse is significant and there is limited ingress possible for flood waters from the River Boyne. The elevation of the 1% AEP water levels is over 15 m just 400m from the confluence with the River Boyne. The 1% AEP levels in the River Boyne are approximately 4.28 mAOD at this location.

The most extreme event considered by the CFRAM study is the High End Future Scenario (HEFS). The water level predicted by River Boyne in this location is 8.55 mAOD. Figure 3-3 uses LiDAR data to illustrate the change of elevation in the area. The navy contour shown on Figure 3-3 estimates the 0.1% AEP HEFS flood extent with the Map Update Watercourse removed; the navy contour is only shown near the confluence with the River Boyne and is not shown on the watercourse itself.

Given that the flood flows associated with the Map Update Watercourse are negligible and the long profile and LiDAR analysis indicates that the watercourse does not permit floodwater ingress from the River Boyne, there is no need to re-run the hydraulic model with the watercourse removed.

The flood extents associated with the Map Update Watercourse can simply be clipped from the existing extents without any loss in accuracy. Therefore, the removal of the watercourse from the mapping does not require re-modelling.

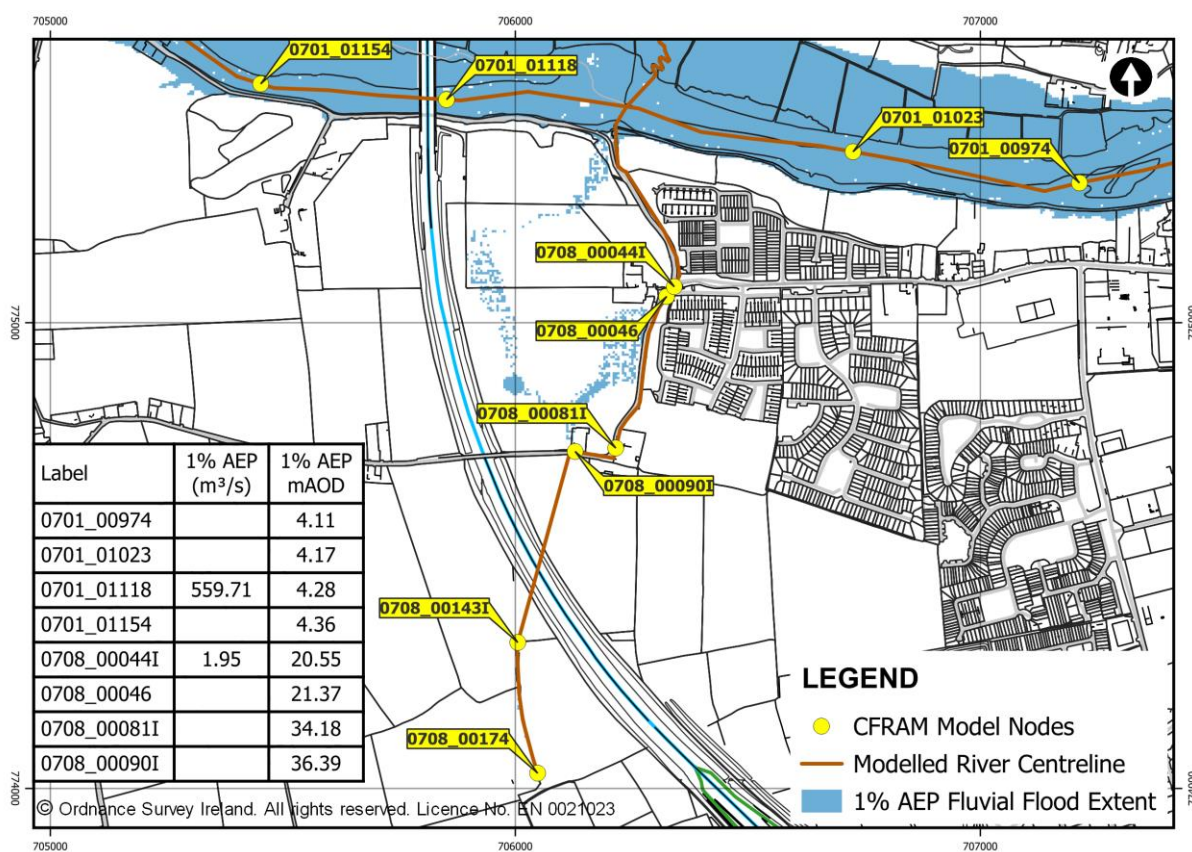


Figure 3-1; 1% Model Node Results

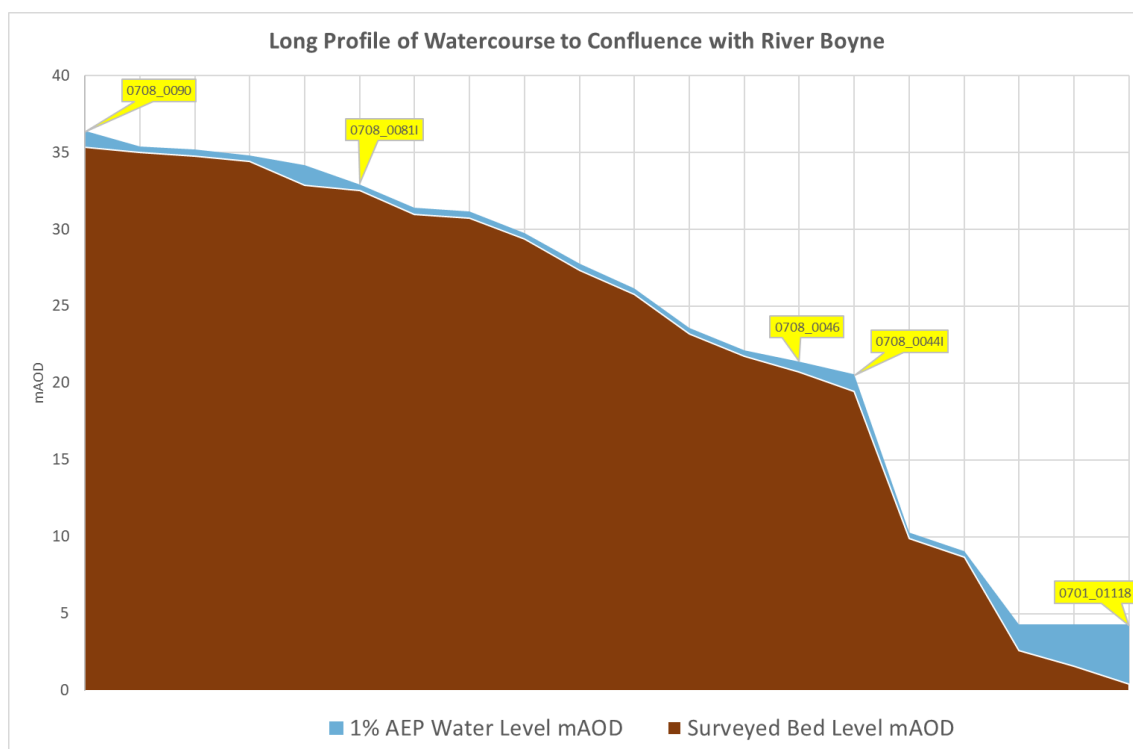


Figure 3-2; Long Profile of Map Update Watercourse

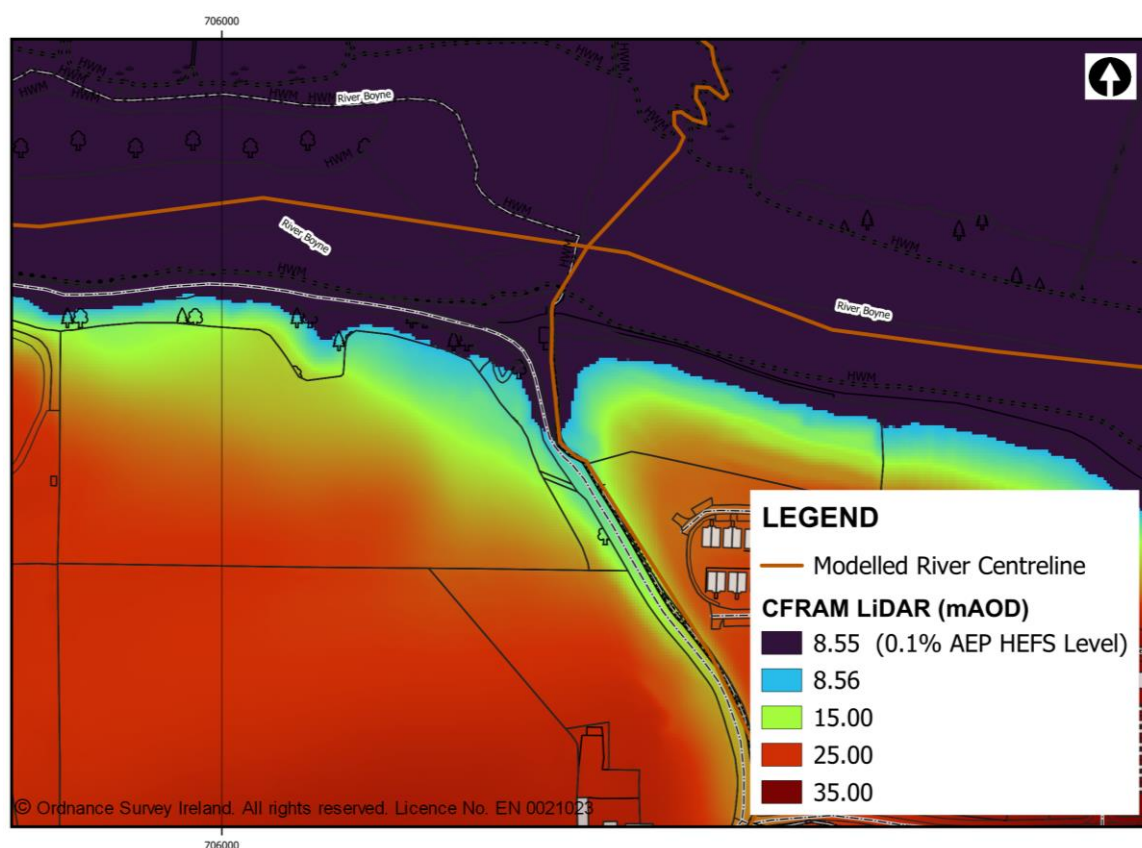


Figure 3-3; LiDAR Overview

### 3.2 Area to be removed from Flood Extents

Using the HEFS flood level in the River Boyne and LiDAR, a polygon has been drawn which creates a boundary between flooding associated with the River Boyne and the Map Update Watercourse. This is shown in Figure 3-4 with the current 10%, 1% and 0.1% AEP fluvial flood extents. All flooding showing within the hatched area is to be removed from the Flood Maps.

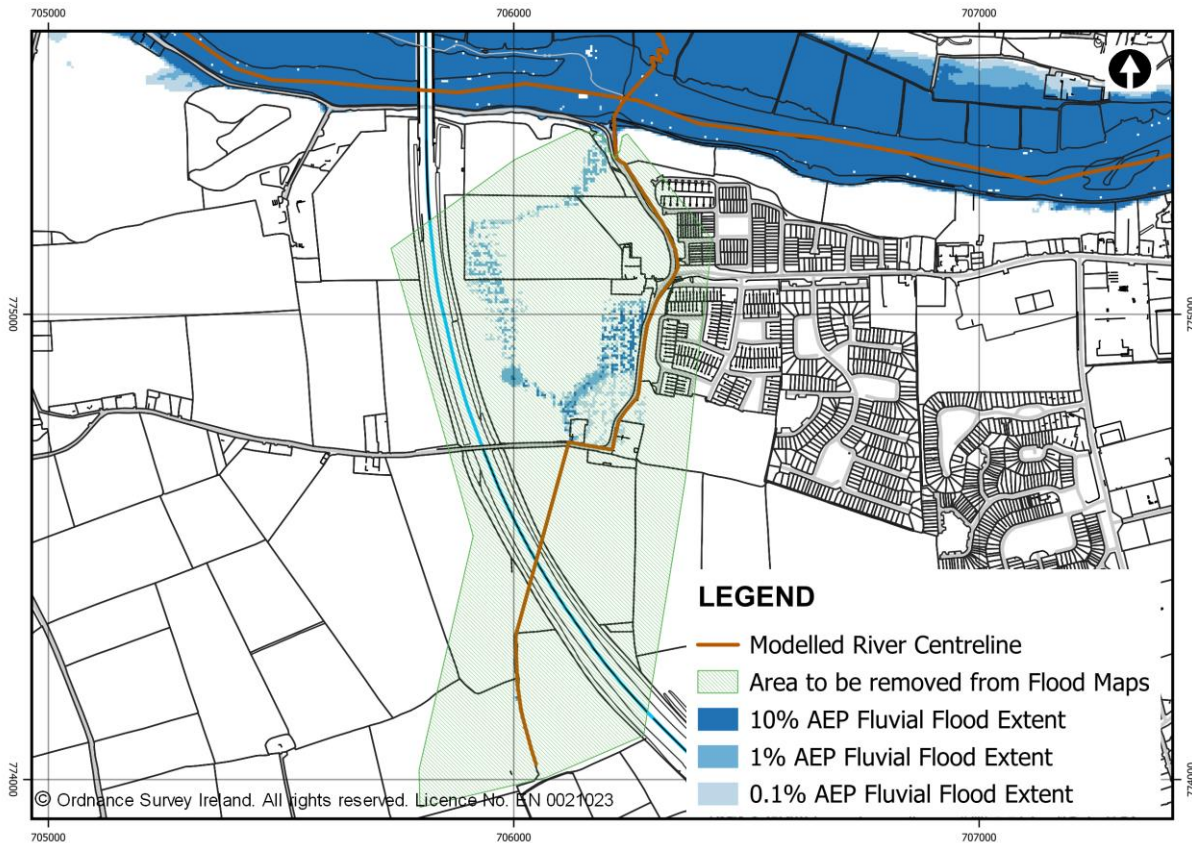


Figure 3-4; Area to be Removed from Flood Maps

### 3.3 Conclusion

The Maps have been updated to reflect the diversion of the watercourse into M1 Drainage network. An analysis of the hydrology, hydraulics and gradient of the Map Update Watercourse has indicated that its removal would not have a material effect on the flood extents in the River Boyne. The updated flood map is shown in Figure 3-5.



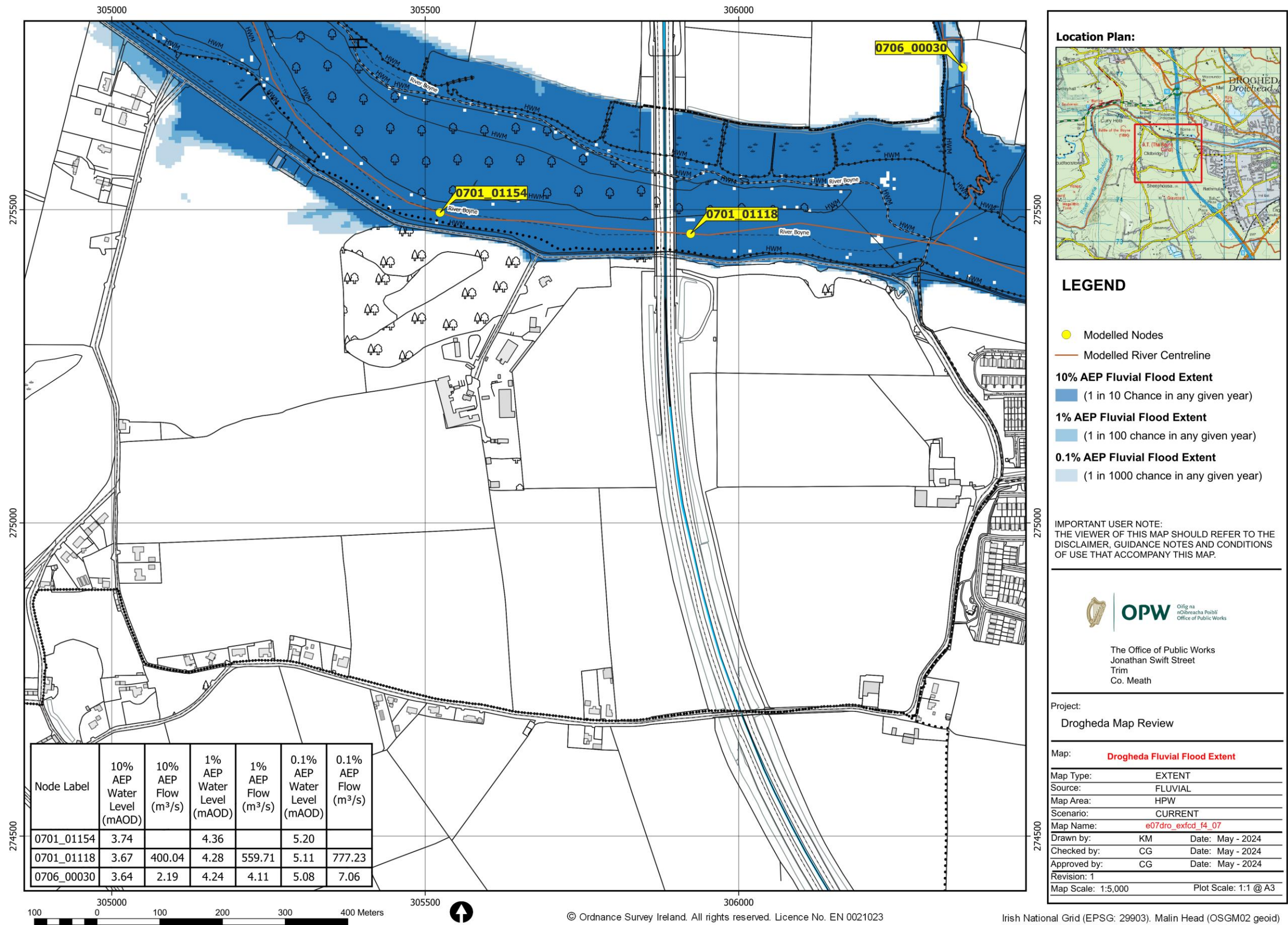


Figure 3-5; Updated Flood Map