

## **Geological Survey Ireland Overview and Groundwater Flooding Programme**

**Joint Oireachtas Committee**

**Weds 26/11/2018**

### **Overview**

As outlined to the committee in May, Geological Survey Ireland (GSI) is a Division of the Department of Communications, Environment and Climate Action (DCCAE) and is Ireland's national geoscience organisation. It is made up of almost 100 staff, most of whom are geoscientists and technical specialists and it operates from a custom built office in Beggars Bush, Ballsbridge. GSI carries out its role as a key knowledge centre and data repository with a library, archives and extensive digital data holdings. It provides an extensive advisory service, particularly to local authorities, and has statutory roles as a National Archive and consultee in relation to planning in areas such as Windfarm Development, County Development Plans and Foreshore Licences. In addition to supporting government and local authorities, GSI provides data and advice to industry and researchers and acts as a project partner in relation to all aspects of Irish geoscience, especially in European projects.

### **Main Programmes**

In addition to geological mapping of Ireland's bedrock and subsoil, GSI carries out a number of major initiatives, including **INFOMAR** Ireland's national seabed survey and marine mapping programme, **Tellus**, a national environmental mapping programme consisting of both airborne surveys and ground sampling and initiatives in Geohazards, business development and research.

**GSI** has an extensive **GROUNDWATER** programme which has been instrumental in developing the groundwater protection schemes risk assessment methodology and providing the national maps to enable planning and licencing authorities to carry out their function with respect to groundwater protection. The Groundwater Programme collaborates with Irish Water, Environmental Protection Agency, National Federation Group Water Schemes, Local Authorities and the Office of Public Works, as well as other state and non-governmental organisations. In addition, through the provision of data and expertise, it supports the implementation of the Water Framework Directive, the Drinking Water Regulations and Nitrates Directive.

### **Groundwater Flooding**

In the area of Groundwater Flooding, GSI has developed expertise particularly in understanding complex karst systems including turloughs as they can be important conduits for pollution. In 2016 the **Programme for a Partnership Government** under the area of **Climate Change and Flooding**, contained the following objective: (in relation to) *"Turlough Systems: We will provide resources to the OPW to commission studies into individual problematic (prone to flooding) Turlough systems, if requested by a local authority or another relevant State agency."*

GSI have been tasked with gathering historic and new information to deliver on this objective and initiated a new dedicated groundwater flooding project in response. GSI are also working with and supporting researchers at Trinity College Dublin, specifically in the area of modelling the behaviour of complex Turlough systems such as those in the Gort lowlands, building on previous studies.

Primary objectives of the project are to:

- 1) Liaise with key stakeholders and provide technical input into proposed flood protection schemes.
- 2) Rapidly install a temporary/exploratory network in order to maximise data collection (60+ monitors have been installed to date).
- 3) Establish a permanent monitoring network to provide long-term quantitative flooding data.
- 4) Develop a methodology for improving Groundwater flood hazard maps and real-time monitoring of groundwater flooding.
- 5) Develop modelling and analysis methodology for estimating Groundwater flood frequency, that is the likelihood of flood events.
- 6) Assess likely impact of climate change on GW flooding.

In Q1 2019 GSI will deliver new Groundwater Flood Maps to the OPW as required under 2<sup>nd</sup> implementation cycle of the EU Floods Directive.

### **Progress since last meeting in May, 2018**

Since the last joint Oireachtas Committee meeting, the Geological Survey groundwater flooding programme has been focussed on installing and maintaining monitoring equipment at groundwater flood sites while also developing a national groundwater flood map.

- The monitoring sites will offer real-time data feeds from priority flood sites and were selected based on consultation with local authorities in the affected counties.
- The flood map will be the first predictive groundwater flood map for Ireland. It will provide not just the likely extent of groundwater flooding, but also the probability of a given flood occurring at specific sites. This advance in groundwater flood mapping has been made possible due to the availability of satellite imagery data from the Copernicus Programme which allows for systematic remote sensing data collection at sites affected by groundwater flooding.

### **Ballycar**

In relation to the flooding at Ballycar, the turlough is included in the Geological Survey's flood mapping operations. The turlough, as well as some other flood prone areas along the Western Railway Corridor is being monitored using Copernicus satellite imagery. This monitoring technique, which was described in the last Joint Oireachtas Committee meeting, is still being developed but preliminary data for Ballycar turlough is available to the OPW or Irish Rail if requested.

The Geological Survey has been invited to take part in the technical sub-committee meetings regarding the flooding Ballycar Turlough and will attend the next meeting on the 17<sup>th</sup> of December in Ennis.