# LIMERICK - COUNTY GEOLOGICAL SITE REPORT

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| **NAME OF SITE** | **Knocksouna** |
| Other names used for site | Kilmallock warm spring group, Knocksouna group |
| **IGH THEME** | **IGH1 Karst, IGH16 Hydrogeology, IGH7 Quaternary** |
| **TOWNLAND(S)** | **Knocksouna** |
| **NEAREST TOWN/VILLAGE** | **Bruree** |
| **SIX INCH MAP NUMBER** | **47** |
| **ITM CO-ORDINATES** | **556300E 627745N (Spring Number 7, the main ponded one)** |
| **1:50,000 O.S. SHEET NUMBER 73** | **GSI BEDROCK 1:100,000 SHEET NO. 17** |
| **GIS CODE LK022** | |

**Outline Site Description**
The Knocksouna site includes a series of warm water springs and a high, bedrock crag to their north.

**Geological System/Age and Primary Rock Type**
The bedrock at the site is of Mississippian (Lower Carboniferous) limestone, while the springs may date back to Neogene times, when much of Ireland's karstic geology developed. The streamlined nature of Knocksouna Hill is a result of glacial action during the Ice Age (Pleistocene).

**Main Geological or Geomorphological Interest**
The springs at Knocksouna occur along a roughly east-west line at the foot of Knocksouna Hill, where twelve individual springs emerge through the alluvial floodplain of the River Loobagh over a distance of about 700m.

The hill is composed of a well jointed, dolomitised Waulsortian 'Reef' limestone which has been planed, streamlined and sculpted by ice during the Ice Age. Southwards in the same field the land is underlain by oolitic limestones with a similar bedding orientation. The contact between the two bedrock units is obscured by deep glacial till and alluvium in the area of the springs.

The springs became known to the scientific community in the 1980s, and the temperature of each of the springs was taken every week for three weeks in February 1982. The range of temperatures of the central part of the system (springs 4-10) varies by less than 1$^{o}$C from winter to summer, having a mean of 15.6$^{o}$C at spring No. 4. It would appear that little mixing of warm and cold waters occurs here and that spring No. 4 represents an almost undiluted sample of the warm water. The maximum observed temperature was 16.6$^{o}$C, recorded at spring No. 12 in May 1982 at a time when the water table was very low.

The springs never dry out, and discharge of the entire warm spring system at Knocksouna is estimated as more than 20,000 litres per minute (28,800m$^{3}$ per day) since, in addition to the above springs, water can be seen bubbling up in the river channel itself. The magnesium content of the Knocksouna springs is far higher than at any other measured spring in Munster, consistent with the dolomitised local limestone.

**Site Importance – County Geological Site**
As unusual and relatively unique warm springs, this locality deserves recognition as a County Geological Site. The site is among a group of warm springs located in Munster that share a location on the eastern margin of the Mississippian (Namurian) basin where normal limestone groundwater undergoes deep circulation and returns to the surface *via* fault or fracture zones.

**Management/promotion issues**
The springs are located on private farmland, and are accessible with the owner's permission only. Land drainage in the locality may affect the hydrogeology slightly.

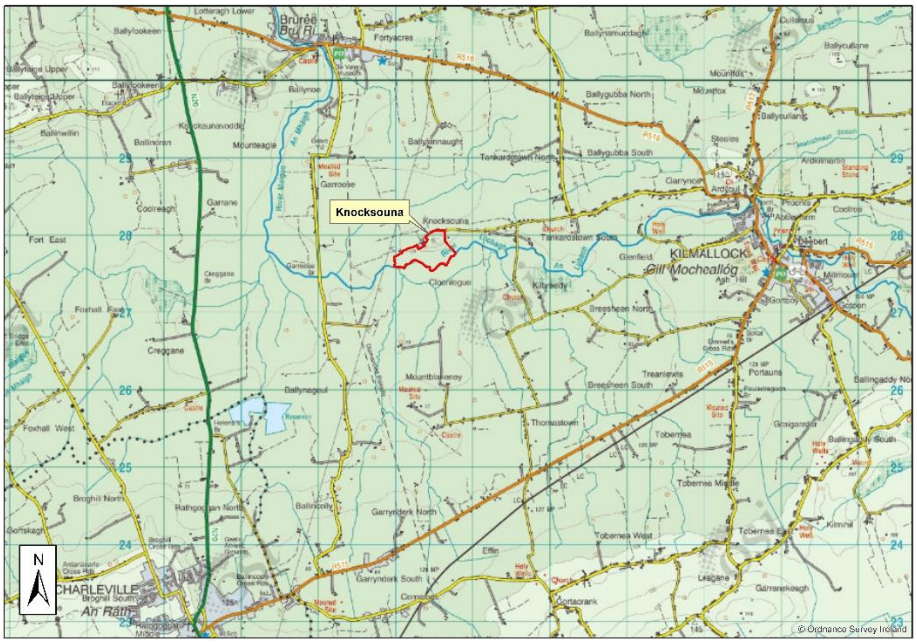
The pool where Spring Number 11 emerges at Knocksouna.

Spring Number 7, in the centre of the group.

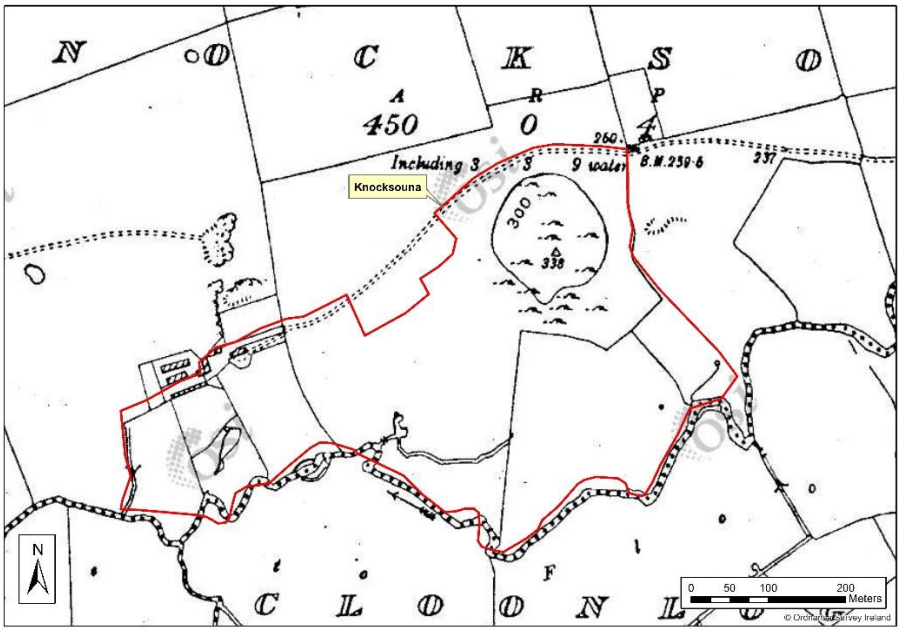
Ice-moulded bedrock on Knocksouna Hill.

The Loobagh River, where springs also emerge.

*Meehan et al.*, 2021. Geological Survey Ireland.





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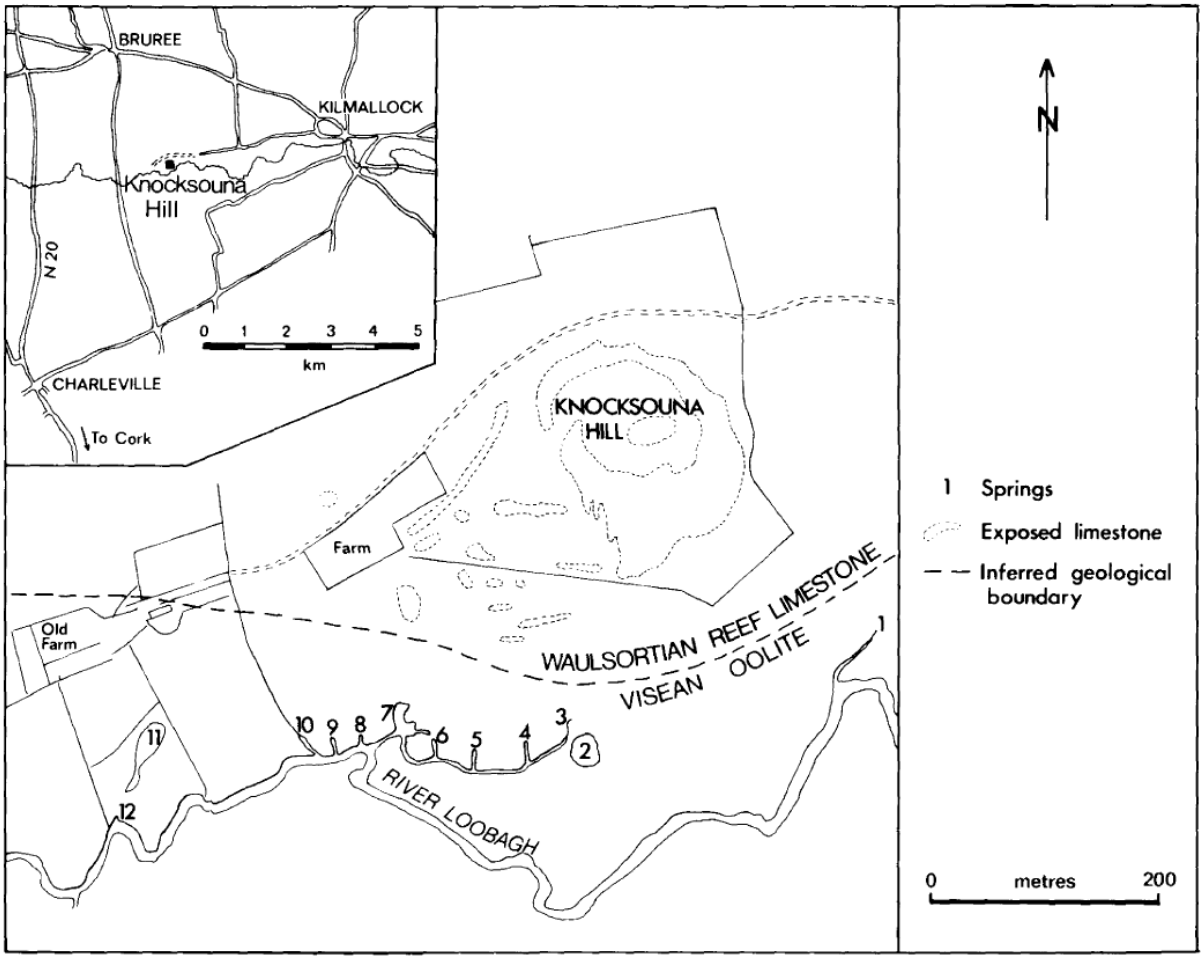


The twelve individual springs at Knocksouna.