

## CORK - COUNTY GEOLOGICAL SITE REPORT

<b>NAME OF SITE</b>	<b>Lady's Well, Mallow</b>
Other names used for site	Mallow Spa, St. Patrick's Well
<b>IGH THEME</b>	<b>IGH16 Hydrogeology</b>
<b>TOWNLAND(S)</b>	<b>Spaglen</b>
<b>NEAREST TOWN/VILLAGE</b>	<b>Mallow</b>
<b>SIX INCH MAP NUMBER</b>	<b>33</b>
<b>ITM CO-ORDINATES</b>	<b>556280E 598600N</b>
<b>1:50,000 O.S. SHEET NUMBER</b>	<b>80</b> <b>GSI BEDROCK 1:100,000 SHEET NO.</b> <b>21</b>
<b>GIS CODE</b>	<b>CK059</b>

### **Outline Site Description**

A warm spring situated in the grounds of a local landmark historical building.

### **Geological System/Age and Primary Rock Type**

Lady's Well spring is situated on massive, impermeable Mississippian (Lower Carboniferous) Waulsortian reef limestone. The warm waters originate in Devonian Sandstones underlying the local Carboniferous limestones.

### **Main Geological or Geomorphological Interest**

Average water temperatures at Lady's Well are in the order of  $19.5^{\circ}\text{C} \pm 2.5^{\circ}\text{C}$ , with an average discharge rate of 617 litres/min. These temperatures are notably warmer than average groundwater temperatures in Ireland, that are in the order of  $9^{\circ}\text{C}$ - $11.5^{\circ}\text{C}$ . The subsurface geological structure of the strata at Mallow is of particular influence on the siting of natural spring. Several major ENE- WSW trending thrust faults traverse the region, such that the entire lithological sequence comprises a stack of several thrust slices of Devonian Old Red Sandstone, Mississippian (Lower Carboniferous) limestones and Mississippian (Namurian) Sandstones. Both the local geology and geophysical surveys suggest that the thrust faults provide channel-ways for the rising warm waters.

The warm waters have their source at a depth of around 1,100 m with a temperature of about  $33^{\circ}\text{C}$ . The rapid ascent of the waters (warmed at depth) is such that it reaches the surface before it can cool sufficiently. Water chemistry is typical of Irish Lower Carboniferous limestone groundwaters. At the surface, the warm waters dilute with cold surface waters. The hydrochemistry (calcium bicarbonate type, similar to local groundwater in limestone aquifers) suggests the groundwater aquifer is likely to be the impermeable reef limestone which overlies (faulted contact) younger Namurian Sandstones, both lithologies being separated by a thrust fault. The Spa House (built 1828) hosts St. Patrick's Well, or the 'medicinal spa'. Bedrock exposures in the low cliff to the rear of the Spa House comprise pale or purple micrites, which are locally dolomitised. In 1857, water was piped from the spa house across the road to a watering place specially constructed for the townspeople known as the Dogs Heads.

### **Site Importance – County Geological Site**

An important County Geological Site in terms of its historical significance as a 'mineral water' spa that drew visitors from the late eighteenth century. Of geological importance, the site is among a group of warm springs located in Munster that share a location on the eastern margin of the Namurian basin where normal limestone groundwater undergoes deep circulation and return rapidly to the surface *via* fault zones.

### **Management/promotion issues**

This is an excellent site in terms of hydrogeology. The Spa House is the property of Cork Council. An information board in the public park to the south of Spa House would be of benefit to the public by communicating aspects of the cultural heritage of the local warm springs, Spa House and water pumps and how the local geology influences and controls the occurrence of the natural warm springs.



Lady's Well spring to the north of Spa House.



Gated entrance to Spa House.



'St. Patrick's Well' medicinal spring in Spa House.

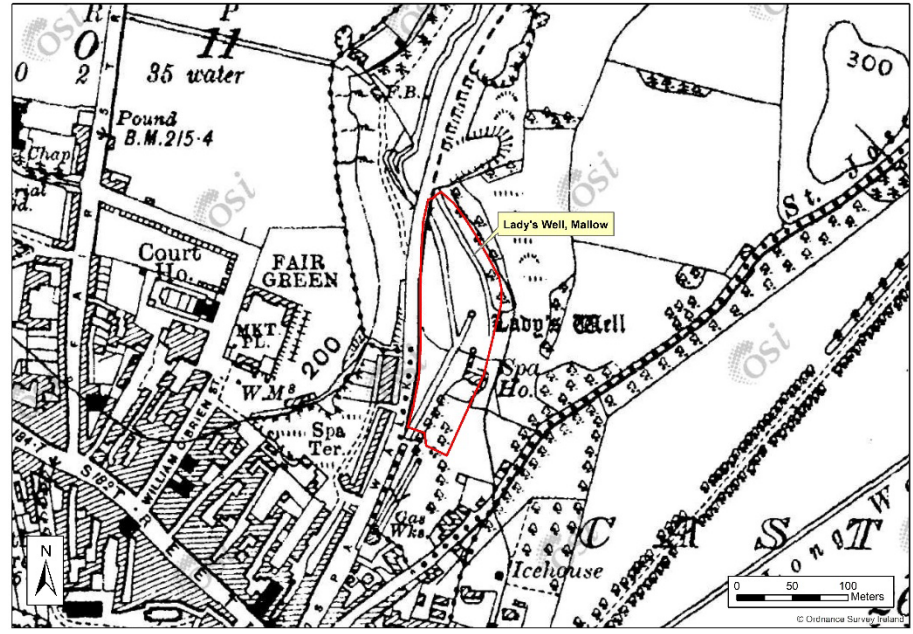
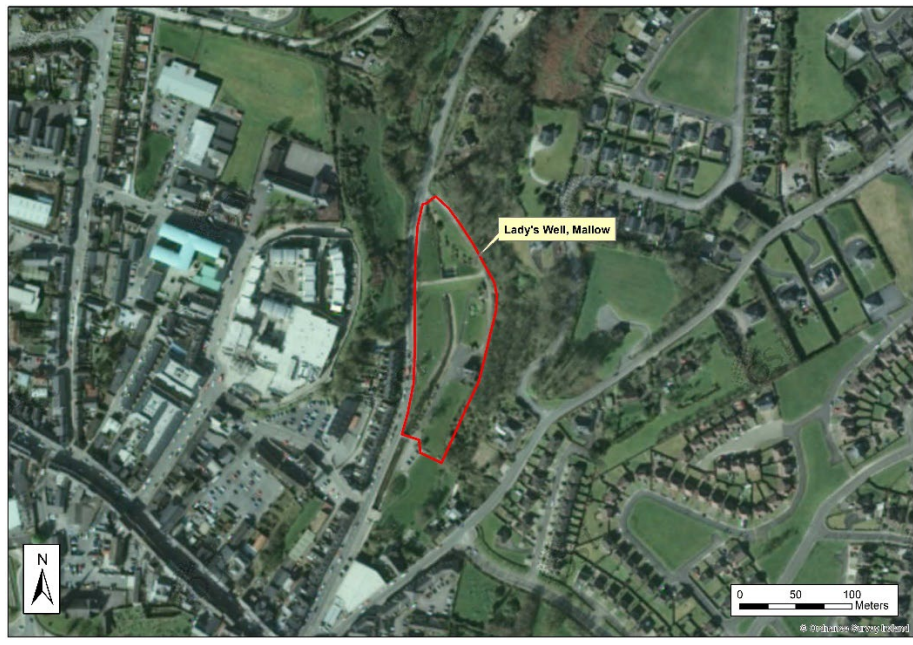
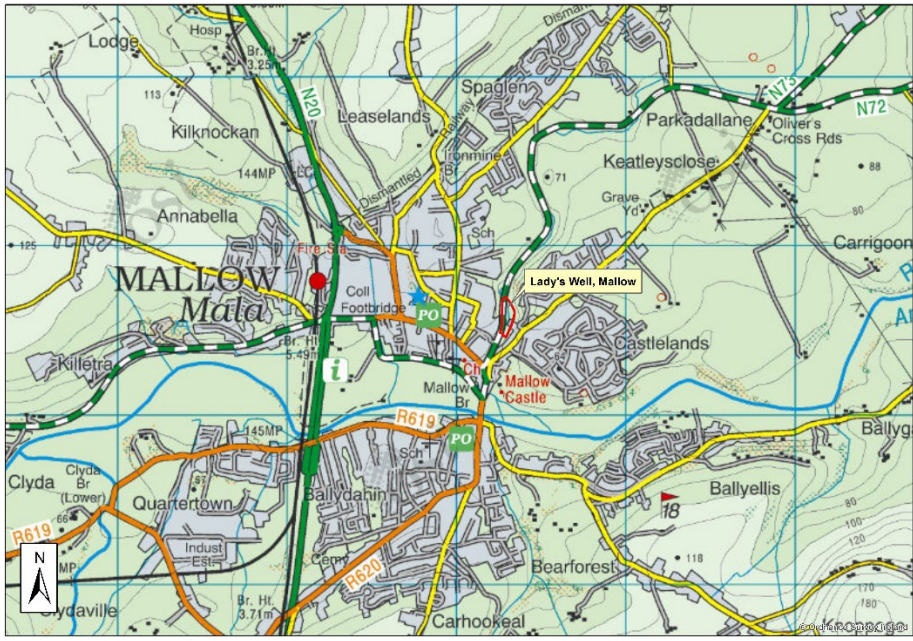


Micrite outcrops to rear of Spa House.



The Dogs' Heads at Spa Terrace (N72) on the opposite side of the N72 road.





Hennessy et al., 2023. Geological Survey Ireland.