

NORTH DONEGAL - COUNTY GEOLOGICAL SITE REPORT

NAME OF SITE	Carndonagh Well Field
Other names used for site	Tiernaleague Borehole, Carndonagh Waterworks Intake and Pumping Station
IGH THEME	IGH16 Hydrogeology
TOWNLAND(S)	Churchland Quarters
NEAREST TOWN/VILLAGE	Carndonagh
SIX INCH MAP NUMBER	11
ITM CO-ORDINATES	E646170E 946440N (Pumping Station)
1:50,000 O.S. SHEET NUMBER 3	GSI Bedrock 1:100,000 Sheet No. 1
GIS Code ND044	

Outline Site Description

The Carndonagh water scheme and well field, 1.5km northwest of Carndonagh, abstracts groundwater from a locally important sand and gravel aquifer.

Geological System/Age and Primary Rock Type

The Carndonagh Tiernaleague Water Supply Scheme abstracts water from a locally important sand and gravel aquifer that extends from Carndonagh town north to Trawbreaga Bay. The sands and gravels were deposited towards the end of the last major Ice Age between 15,000 to 14,000 years ago. The gravel is overlain by peat in places. The source area is underlain by fine to coarse grained metamorphic rock with some marble beds (Dalradian Supergroup), with some areas of metadolerite (deformed igneous rock) near Carndonagh town.

Main Geological or Geomorphological Interest

The Carndonagh Tiernaleague Water Supply Scheme comprises two infiltration galleries and two boreholes. The main well field includes the two infiltration galleries and the pump house. The well field is enclosed by 2m high fencing and is secured by a locked gate. The boreholes are located around 500m east of the well field. The Carndonagh Tiernaleague Water Supply Scheme consists of a main infiltration gallery which is supplemented by gravity feed from a second, older infiltration gallery. These abstract between 1440m³/d in the summer and 1680m³/d in the winter. During the summer months, the abstraction is augmented by pumping from the sump in the original infiltration gallery (Gallery 2) and the two boreholes (drilled in 1999). The total abstraction from the additional sources is c.240m³/d. The sump, into which Gallery 1 drains, is located beneath the pump house. A pipe connects the two galleries to allow drainage from Gallery 2 into Gallery 1. Groundwater is pumped from the main pump house (Gallery 1 sump) to a reservoir. This water supplies Carndonagh Town, the rural area to the south, and the Malin Head area to the north. In the vicinity of the infiltration galleries, the main water-bearing gravel layer is relatively thin (just over 5.0m thick). The gravel is considered by very permeable due to the minor proportion of fines material and the high percentage of gravel-sized clasts, or larger (70-90%). The main surface water features in the area are the Rivers Donagh and Glennagannon, which flow northwards across the gently sloping area, to discharge into Trawbreaga Bay.

Site Importance – County Geological Site

This important County Geological Site is the main water supply system for Carndonagh town, the rural area to the south of Carndonagh, and the Malin Head area to the north.

Management/promotion issues

The groundwater vulnerability is categorised as ‘extreme’ over much of the aquifer due to the thin layer of overlying, unsaturated material (<3 m in thickness). Where this material is considered to be thicker, the vulnerability is categorised as ‘high’. On-site wastewater treatment systems, leaky underground sewers, spreading of fertilisers, and diesel/oil spills pose a threat to the water quality at the well field.



Carndonagh well field, looking east from gates.



Pump house (housing sump for Gallery 1) at Carndonagh well field, looking west.

