

Water Framework Directive Groundwater Monitoring Programme

Site Information

Collon



This monitoring point is part of the Collon PWS. There are 3 boreholes with an average abstraction rate of 1,300m³/day. Groundwater is abstracted from sand and gravel aquifers and possibly also a fractured bedrock aquifer. The Mattock River may be hydraulically connected to the wells.



Louth

August 2011

SITE INFORMATION					
Site Name:	Collon	County:	Louth		
RBD:	ERBD	EU Reporting Code:	IE_EA_G_010_15_004		
Easting:	300240	GWB Name:	Wilkinstown		
Northing:	281688	GWB Code:	IE_EA_G_010		
Site Use:	Drinking Water (PWS)	Drinking Water Code:	2100PUB1007		
Hydrometric Area:	7	Water Level Monitoring Network:	Level	Flow	
Townland:	Collon		N	N	
Ownership:	Louth Co Co				
Water Quality Monitoring Network:	Surveillance	Operational (Point)		Operational (Diffuse)	
	N	N		Y	
Site Comments:	Adjacent to Mattock River, in village of Collon. Land use around Collon is grassland and tillage.				
SITE DIRECTIONS					
Location and Access Information:	From N51 in Slane turn onto N2 towards Collon. In the village turn right on the R168 towards Drogheda and after about 200 meters turn right. The wells are located at the bottom of the drive. PW1 is behind fencing on the left-hand side. PW2 is behind the gate to the GAA on the right-hand side. PW3 is at the wastewater treatment plant on the right-hand side.				
Additional Comments:	Main well PW3 enclosed in a concrete chamber approximately 1m high, and 1.5m x 2m in plan view. The chamber is covered by securely-locked galvanised steel lids.				
WELL INFORMATION					
Monitoring Point Type:	Borehole	Abstraction Rate (m³/d):	1300	Ground Elevation (m OD):	105
Borehole Log Available:	Y	Total Drilled Depth (m bgl):	21	Depth to Bedrock (m bgl):	>21.3
Top of Casing (m agl):	-0.11	Upper Casing Diameter (mm):	200	Lower Casing Diameter (mm):	150
Final Borehole Depth (m):	---	Upper Casing Bottom Depth (m bgl) :	1.5	Lower Casing Bottom Depth (m bgl):	21.3
Screen Interval (m bgl):	1.5-5.2; 15.2-18.3	Screen Type (PVC,Steel,other):	steel	Screen Slot Size (mm):	---
Grout Type (cement,bentonite):	---	Grouted above (m bgl):	---	Grout Volume Injected (m³):	---
Gravel Pack Interval (m bgl):	---	Gravel Pack Volume (m³):	---	Open Hole Interval (m bgl):	---
Potential Yield (m³/day):	---	Comments on Monitoring Site:	Well details shown for PW3 (main production well). Abstraction rate shown is for entire PWS, individual wells not metered. PW3 drilled in April 2001. PW1 and PW2 drilled in March 1983. PW1 and PW2 may pump from both S&G and bedrock aquifers. PW3 pumps from deep, confined S&G aquifer, but may also induce flow from Mattock River due to shallow screen interval. High transmissivity estimate for PW3 may reflect influence of river.		
Specific Capacity (m³/d/m):	55.3				
Static Water Level (m bgl):	artesian (winter)				
Scheme Name:	Collon PWS	Number of Abstraction Points in the Scheme:	3	Source Report Available	Y
Source Report Info:	Draft source protection report by GSI in progress (latest draft July 2010).				
Scheme Summary:	There are 3 boreholes in the Collon PWS; PW1 and PW2 operate on a duty standby basis and PW3 operates on a continuous basis.				

HYDROGEOLOGY								
GEOLOGY	Soil:	Deep poorly drained mineral (AminPD)					Subsoil Permeability:	Low
	Subsoil:	Tills (diamictons) (TLPSSs)						
	Bedrock:	Ordovician Volcanics						
HYDROGEOLOGY	Aquifer Category:	Pl and Lg	Vulnerability at Monitoring site:	High		Flow Regime:	Poorly productive; S&G	
ZONE OF CONTRIBUTION	Estimated ZOC Size (km²):	1.41	ZOC Delineated By:	GSI		Recharge Estimate (mm/yr):	>190	
	ZOC Delineation Comments:	Delineated by GSI on the basis of topography, recharge estimate and abstraction rate (adding 50% safety margin, 1995m3/d). Influence from river not yet quantified, nor how far the gravels extend away from wells. Without river influence, ZOC=3.8 km2 for recharge of 190 mm/yr. With influence of river, ZOC estimated to be 1.41 km2. Upward groundwater flow from the deeper part of the geological sequence is suggested by artesian conditions, which indicates that two groundwater systems are present and being pumped: sands/gravels and fissured bedrock aquifer.						
Groundwater Vulnerability within ZOC (% area):	Extreme (X)	Extreme (E)	High	Moderate	Low	High to Low	Unclassified	
	17.53	27.3	18.84	26.97	9.37	0	0	
HYDROCHEMISTRY								
Hydrochemical Signature:	Ca-HCO3		Additional Water Chemistry Information:	During the monitoring period: The average nitrate concentration was 19 mg/l NO3 and the maximum nitrate concentration was 28 mg/l NO3. The average ammonium concentration was 0.03 mg/l N and the maximum ammonium concentration was 0.16 mg/l N. The average molybdate reductive phosphorus (MRP) concentration was 0.02 mg/l P and the maximum MRP concentration was 0.072 mg/l P. The average chloride concentration was 20.9 mg/l Cl and the maximum chloride concentration was 25 mg/l Cl.				
Alkalinity (mg/l HCO3):	Average:	Range:						
	173	128-240						
Hardness (mg/l CaCO3):	Average:	Range:						
	196	163-269						
Conductivity (uS/cm):	Average:	Range:						
	440	349-676						
Monitoring Record Period:	From:	To:						
	1993	2010						
RISK ASSESSMENT								
Pressure (e.g., Nitrates, Phosphates, Abstractions):	---			Typical Contaminants:	---			
Risk Category:	At risk, high confidence			GWB Status:	Good			
Impact Potential within ZOC (% area):	Extreme:	High:	Moderate:	Low:	Negligible:			
	0.00	44.23	20.40	9.30	26.06			
OTHER INFORMATION								



Site Location



Pump House



Sampling Location

Data Summary Sheet - July 2011

Disclaimer: The data in this document are based on the best available information and understanding at time of writing. Neither the Environmental Protection Agency, nor the individual bodies supplying data for this document and accompanying maps will be responsible for any loss or damage from the use or interpretation of these data.

Rock Unit Geology Map: GSI, 2009

Aquifer Type Map: GSI, 2009

Groundwater Vulnerability Map: GSI, 2009

Soils & Subsoils Type: Teagasc, 2007

Recharge Map: GSI, 2009

Impact Potential Map: EPA, 2009

Risk Assessment Map: EPA WFD Risk Assessment, 2006

Groundwater Body Status: EPA WFD Status Assessment, 2008

Water Quality Data: EPA WFD Monitoring, 2008

Groundwater Threshold Values

Groundwater threshold values for selected parameters:

Nitrate - General Chemical Test/ Drinking Water Test (37.5 mg/l N03)

Ammonium - Drinking Water Test (0.175 mg/l N) / Surface Water Test (0.065 mg/l N)

Molybdate Reactive Phosphorus (MRP) - Surface Water Test (0.035 mg/l P)

Chloride -Saline/Intrusive Test (24 mg/l) / Drinking Water Test (175 mg/l Cl)

Electrical Conductivity -Saline/Intrusive Test (800 μ S/cm) / Drinking Water Test (1,875 μ S/cm)

Further information on groundwater threshold values is contained in the Groundwater Regulations (S.I. No.9 of 2010).

General Downgradient Distances

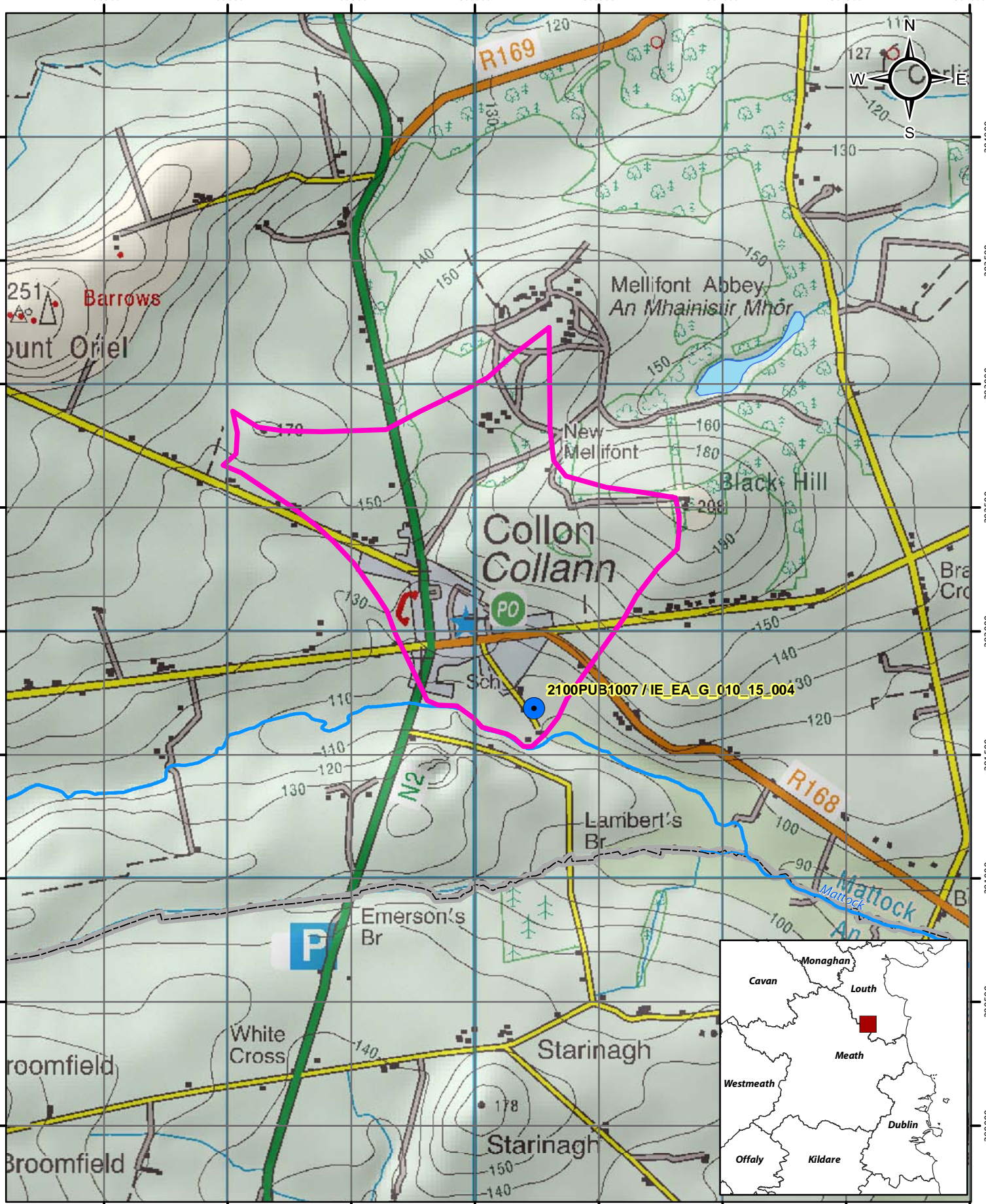
General Downgradient Distances (XL) applied to boreholes sourced in bedrock aquifers are constrained to estimate approximate limits based on data at the GSI. In some cases they may be higher or lower depending on local conditions.

Rk, Rkd, Lk	225 m
Lm	150 m
LI, PI	60 m

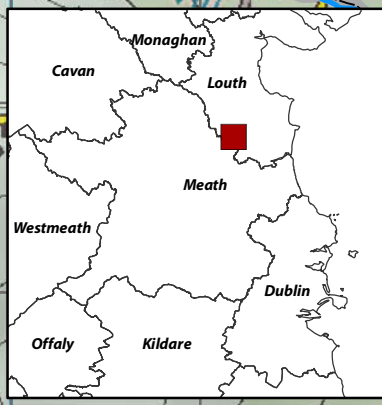
It is assumed that groundwater downgradient of a spring cannot flow back up to the spring, however a precautionary 30m buffer is generally applied which allows for instances where pumping under dry weather periods may induce a drawdown or where the ground may be sloping toward the spring from the downgradient side.

Version 0:	Prepared by	GSI	Date:	15/06/2010
Version 1:	Prepared by	CDM (HM)	Date:	Feb 2011
Version 2:	Prepared by		Date:	
Version 3:	Prepared by		Date:	
Version 4:	Prepared by		Date:	




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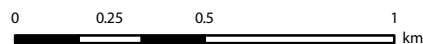
2100PUB1007 / IE_EA_G_010_15_004

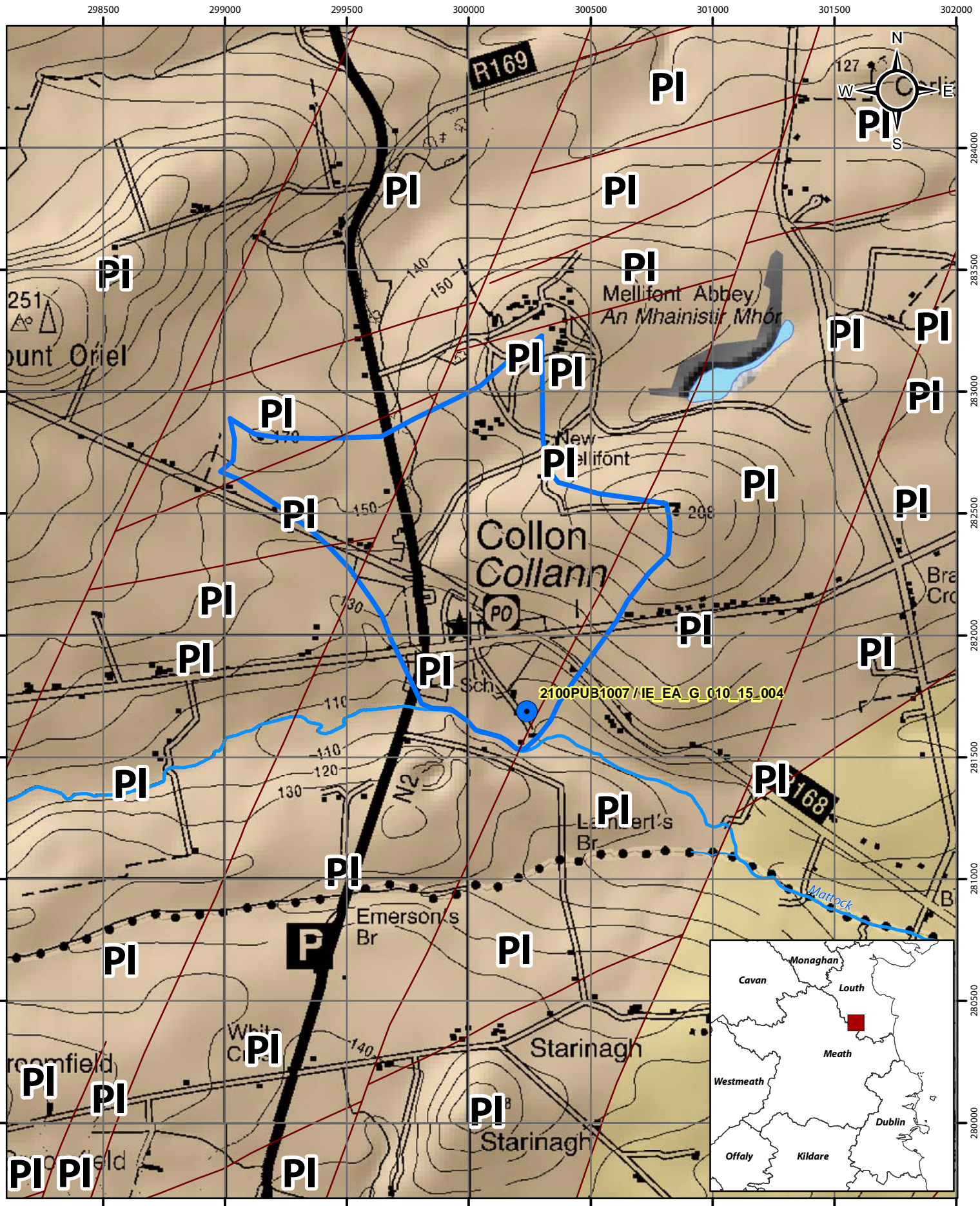


Location Map for Collon








-  Abstractions
-  Zone of Contribution
-  River

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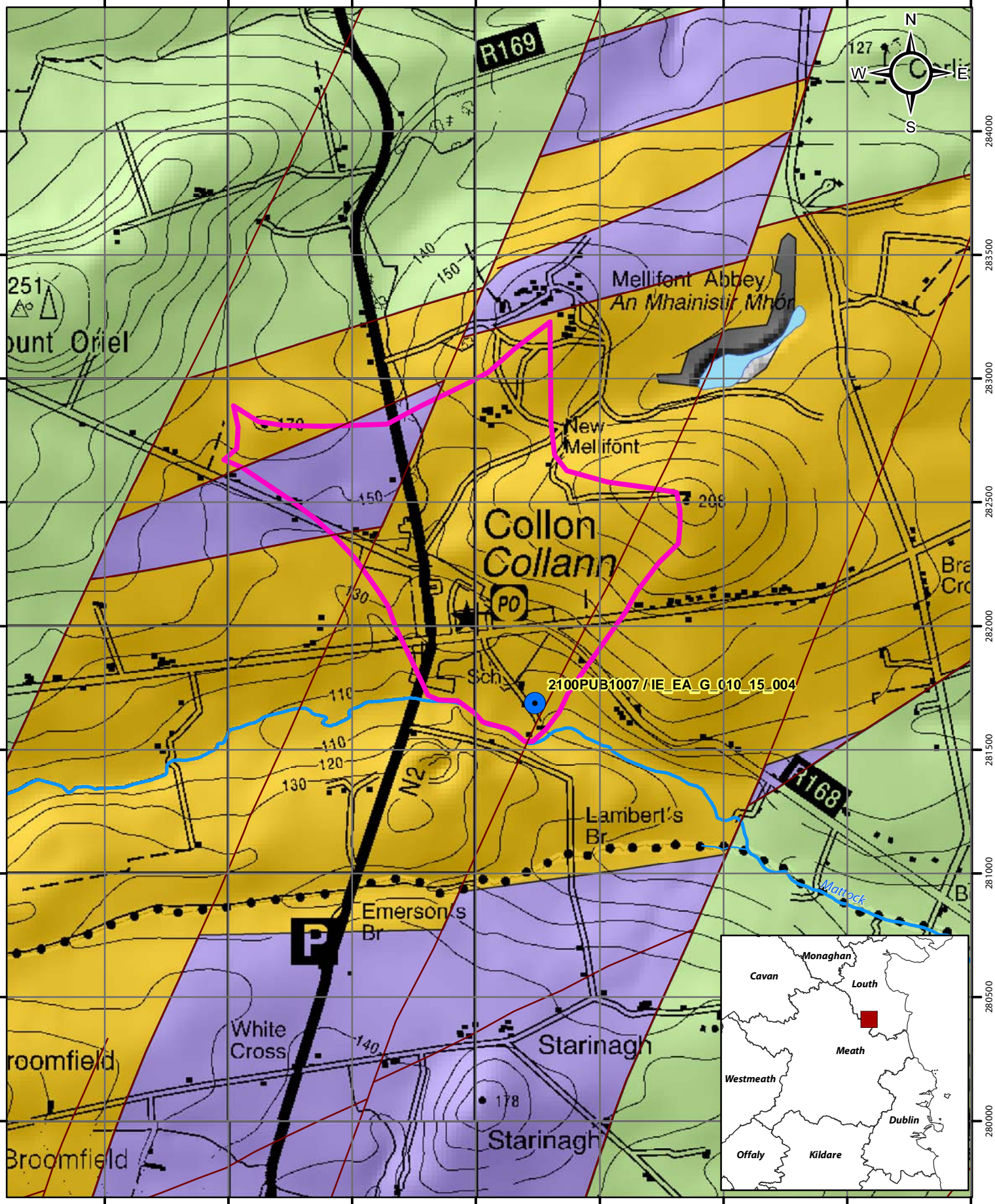




Aquifer Category Map for Collon

- | | | | | | |
|---|----------------------|---|------|---|-------|
|  | Abstractions |  | Lake |  | Fault |
|  | Zone of Contribution |  | PI | | |
|  | River |  | Pu | | |

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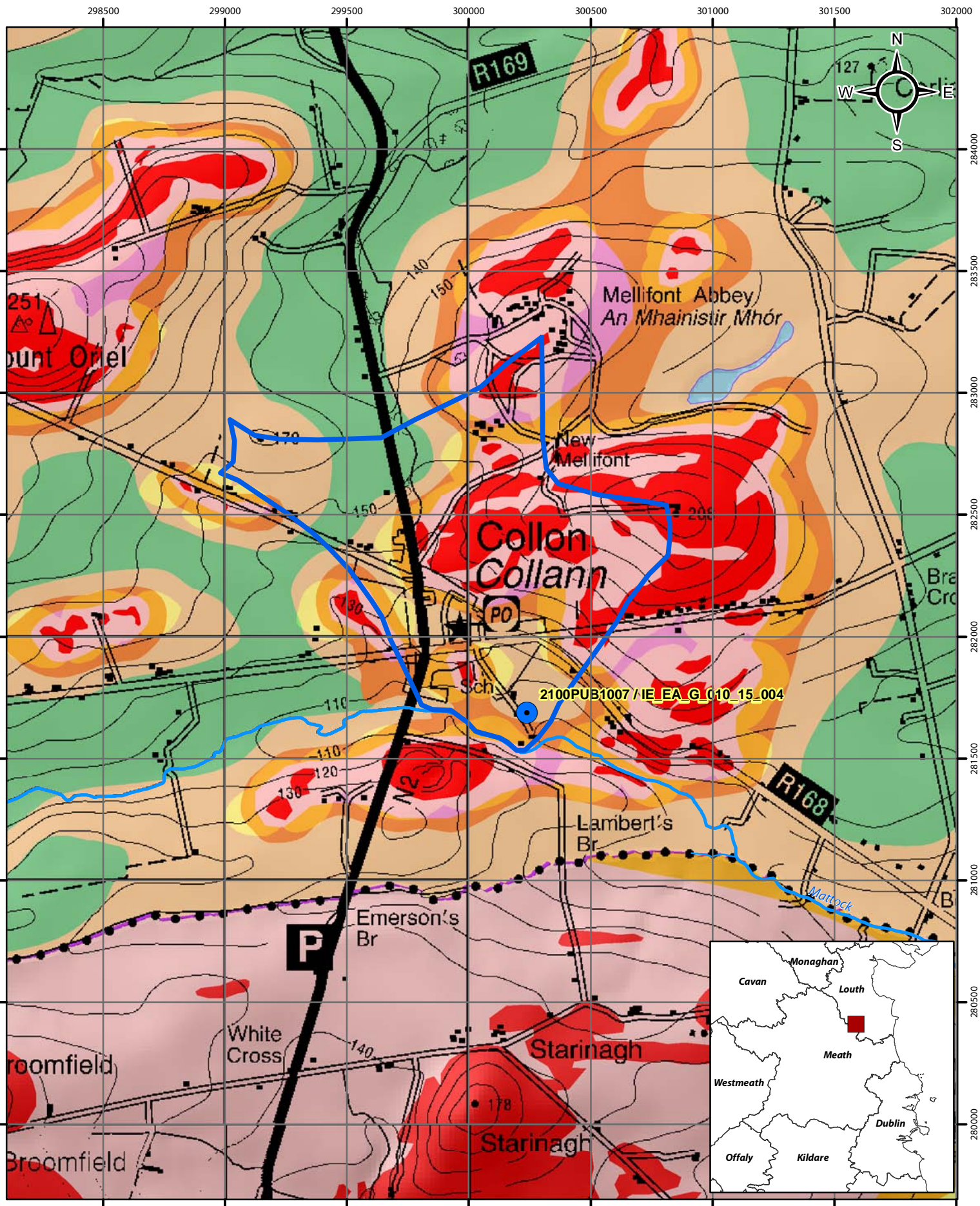


Bedrock Map for Collon

- Abstractions
- Zone of Contribution
- River
- Lake
- Ordovician Metasediments
- Ordovician Volcanics
- Silurian Metasediments and Volcanics
- Fault

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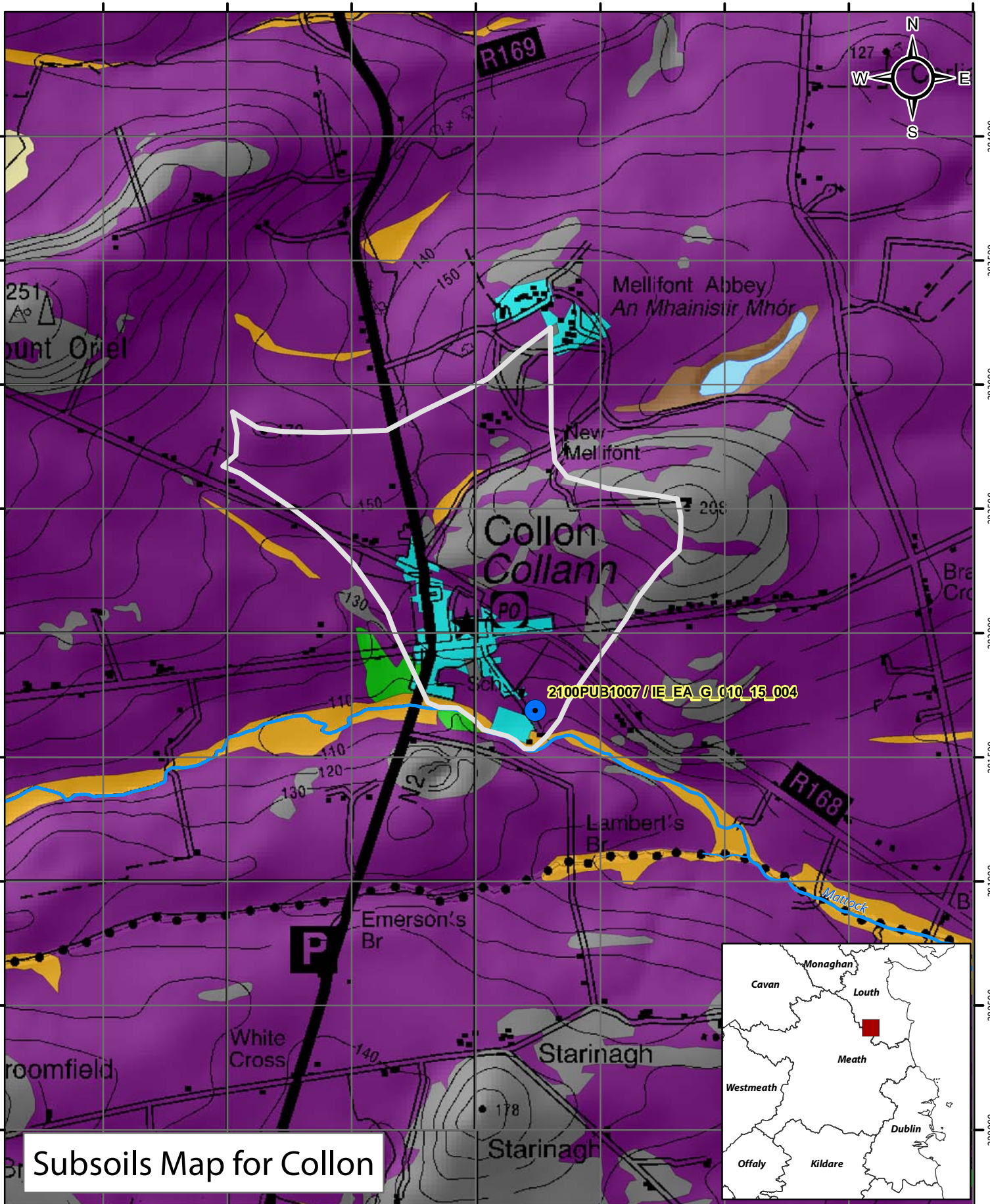
0 0.25 0.5 1 km



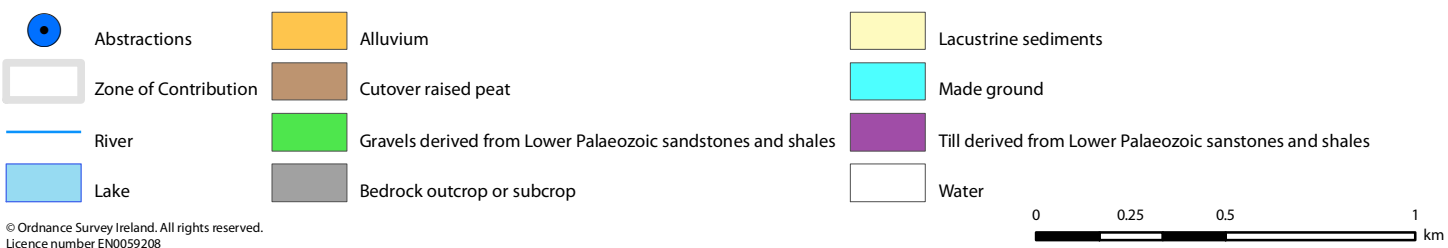
Groundwater Vulnerability Map for Collon

- | | | |
|----------------------|--------------------------------|--------------|
| Abstractions | X (Rock near surface or Karst) | M (Moderate) |
| Zone of Contribution | E (Extreme) | L (Low) |
| River | H (High) | Lake |

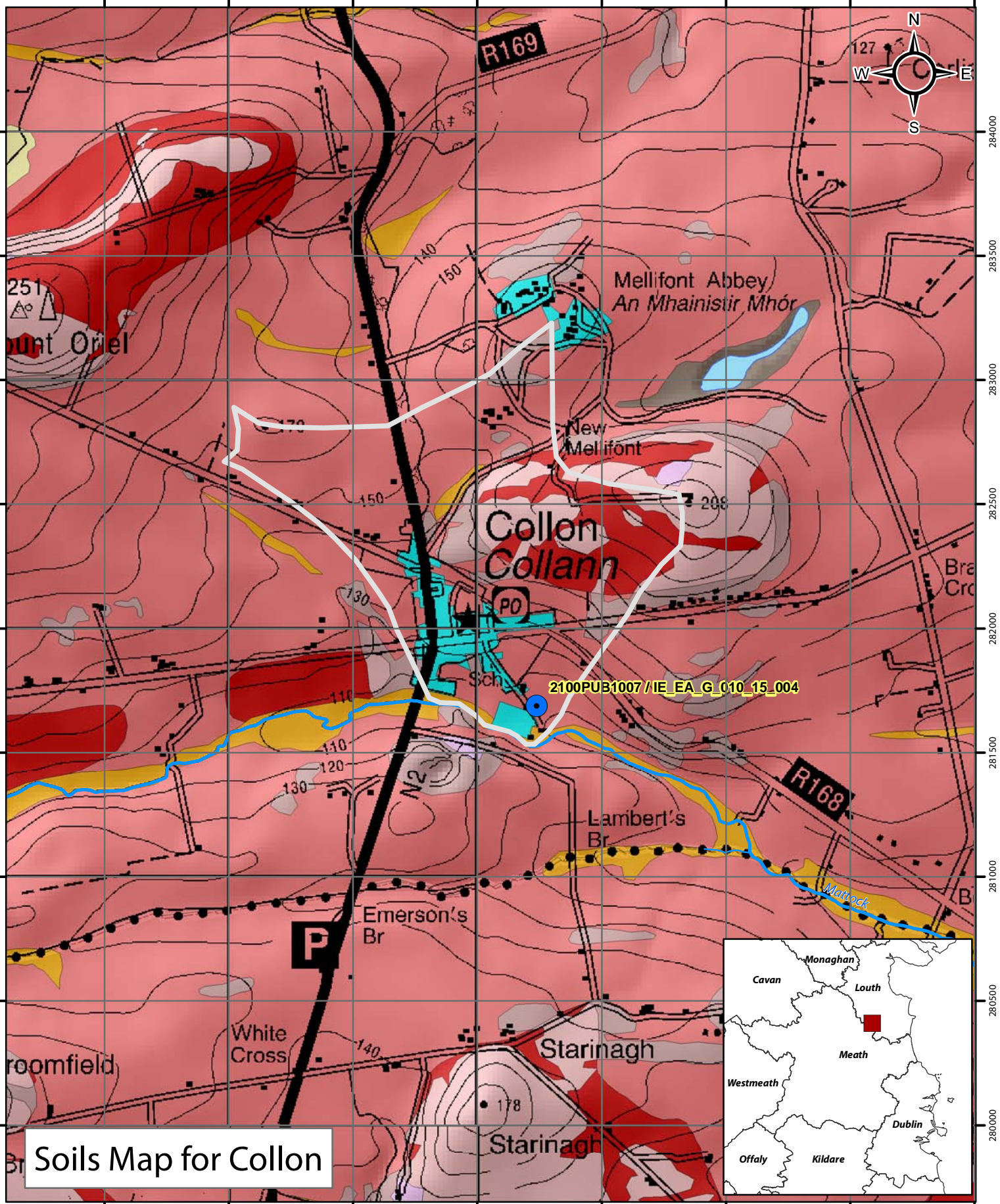
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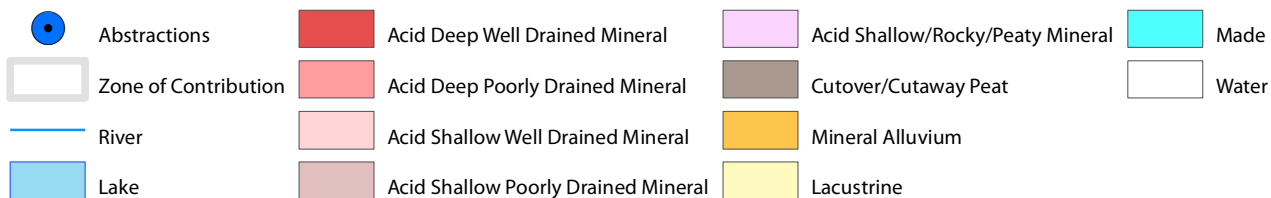
Subsoils Map for Collon



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Soils Map for Collon



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0 0.25 0.5 1 km