

## Water Framework Directive Groundwater Monitoring Programme

### Site Information

### Calry



This monitoring point is a spring that was previously used as the Calry public water supply.



Sligo

**August 2011**

SITE INFORMATION					
Site Name:	Calry		County:	Sligo	
RBD:	WRBD		EU Reporting Code:	IE_WE_G_0042_21_001	
Easting:	176087		GWB Name:	Carrowmore East	
Northing:	338733		GWB Code:	IE_WE_G_0042	
Site Use:	Monitoring Only		Drinking Water Code:	---	
Hydrometric Area:	35		Water Level Monitoring Network:	Level	Flow
Townland:	FORMOYLE			Y	Y
Ownership:	Sligo County Council Public Water Scheme				
Water Quality Monitoring Network:	Surveillance		Operational (Point)		Operational (Diffuse)
	Y		N		N
Site Comments:	Open land, blanket peat.				

SITE DIRECTIONS	
Location and Access Information:	Located 6km northeast of Sligo Town on a minor road at the southwestern base of Keelogyboy Mountain. From the intersection of N16 and R286 follow R286 due east for c. 600 m until you come to a Y-junction. Keep left at Y-junction. Follow this road east Road eventually turns north c. 5.3 kms after Y-junction, keep on road in the direction of Keelogyboy Mountain. As the road rises sharply, take the 2nd dirt road to the right and park. The site is located a walk up the hill.
Additional Comments:	---

WELL INFORMATION					
Monitoring Point Type:	Spring	Abstraction Rate (m³/d):	---	Ground Elevation (m OD):	---
Borehole Log Available:	---	Total Drilled Depth (m bgl):	n/a	Depth to Bedrock (m bgl):	---
Top of Casing (m agl):	---	Upper Casing Diameter (mm):	---	Lower Casing Diameter (mm):	---
Final Borehole Depth (m):	---	Upper Casing Bottom Depth (m bgl) :	---	Lower Casing Bottom Depth (m bgl):	---
Screen Interval (m bgl):	---	Screen Type (PVC,Steel,other):	---	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:	There is no abstraction but an overflow value of 400m³/day is used to estimate the ZOC.		
Specific Capacity (m³/d/m):	---				
Static Water Level (m bgl):	---				
Scheme Name:	Calry	Number of Abstraction Points in the Scheme:	0	Source Report Available	N
Source Report Info:	---				
Scheme Summary:	This public water supply is no longer in use. It went off line in 2009. The spring is heavily influenced by surface water.				

HYDROGEOLOGY							
GEOLOGY	Soil:	Poorly drained mineral soils with peaty topsoil (AminPDPT)				Subsoil Permeability:	n/a
	Subsoil:	Tills (diamictons) (TNSSs)					
	Bedrock:	Dinantian Upper Impure Limestones					
HYDROGEOLOGY	Aquifer Category:	LI	Vulnerability at Monitoring site:	Extreme	Flow Regime:	Poorly productive	
ZONE OF CONTRIBUTION	Estimated ZOC Size (km²):	0.2	ZOC Delineated By:	CDM (HM)	Recharge Estimate (mm/yr):	750	
	ZOC Delineation Comments:	It is considered that shallow groundwater discharges at the spring, and is topographically driven; groundwater divides coincide with surface water divides. Hydrochemistry suggests shallow groundwater. ZOC based discharge rate of 400m³/d (overflow). Recharge is likely to be very high as the majority of rainfall in the ZOC is focussed on the spring. However the ZOC boundaries are uncertain, particularly the western and southern edges.					
Groundwater Vulnerability within ZOC (% area):	Extreme (X)	Extreme (E)	High	Moderate	Low	High to Low	Unclassified
	2.76	97.24	0	0	0	0	0
HYDROCHEMISTRY							
Hydrochemical Signature:	Ca-HCO3		Additional Water Chemistry Information:	During the monitoring period: The average nitrate concentration was 2 mg/l NO3 and the maximum nitrate concentration was 5 mg/l NO3. The average ammonium concentration was 0.022 mg/l N and the maximum ammonium concentration was 0.045 mg/l N. The average molybdate reductive phosphorus (MRP) concentration was 0.008 mg/l P and the maximum MRP concentration was 0.038 mg/l P. The average chloride concentration was 13.1 mg/l Cl and the maximum chloride concentration was 18 mg/l Cl.			
Alkalinity (mg/l HCO3):	Average:	Range:					
	213	141-320					
Hardness (mg/l CaCO3):	Average:	Range:					
	210	143-279					
Conductivity (uS/cm):	Average:	Range:					
	403	261-560					
Monitoring Record Period:	From:	To:					
	2007	2010					
RISK ASSESSMENT							
Pressure (e.g., Nitrates, Phosphates, Abstractions):	---		Typical Contaminants:	---			
Risk Category:	At risk, low confidence		GWB Status:	Good			
Impact Potential within ZOC (% area):	Extreme:	High:	Moderate:	Low:	Negligible:		
	0.00	0.00	0.00	0.00	100.00		
OTHER INFORMATION							
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Weir



Site



Spring

## 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  $\mu$ S/cm) / Drinking Water Test (1,875  $\mu$ S/cm)

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

### General Downgradient Distances

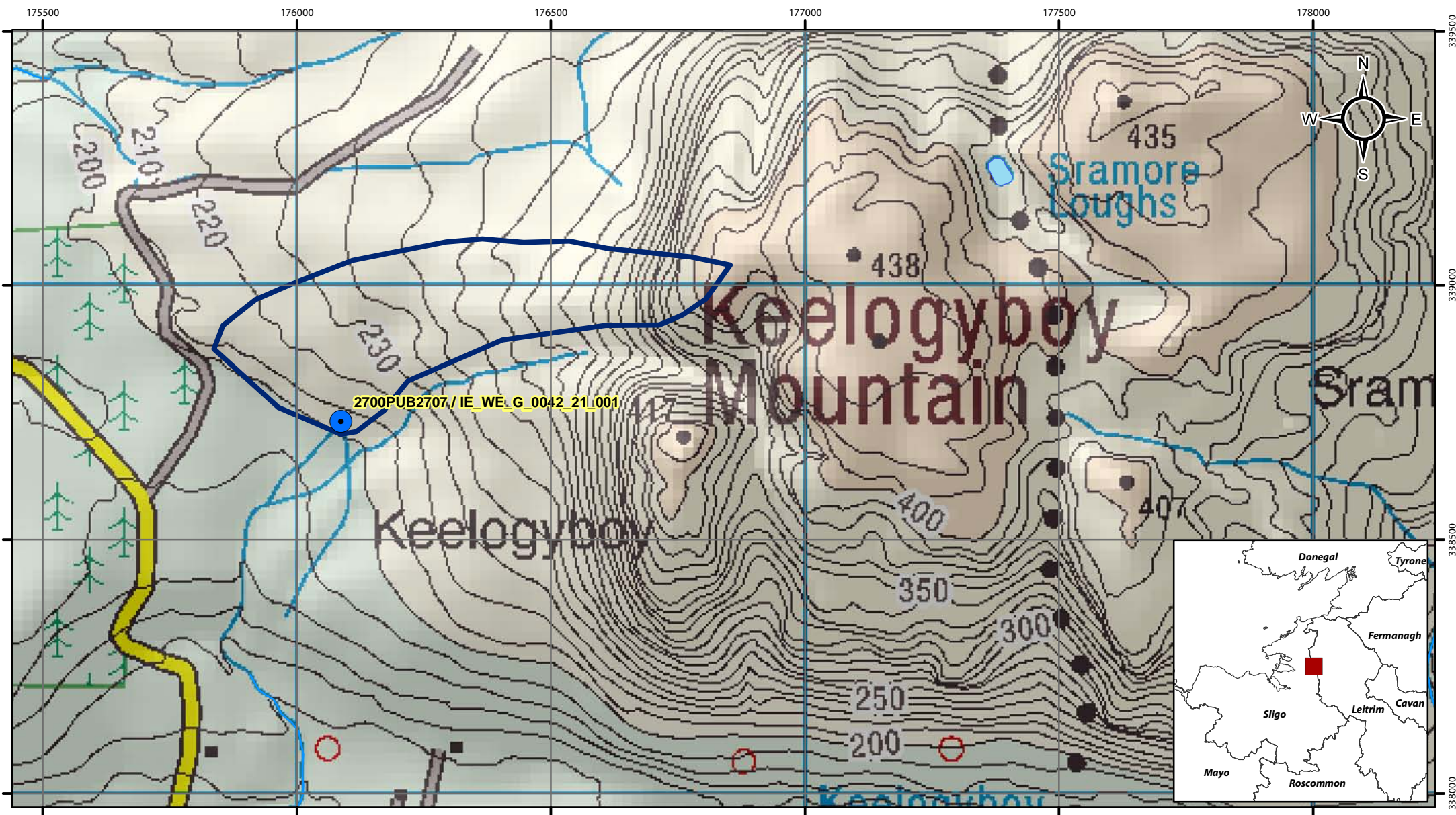
General Downgradient Distances (XL) applied to boreholes sourced in bedrock aquifers are constrained to estimate approximate limits based on data at the GSI. In some cases they may be higher or lower depending on local conditions.

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		Date:	
Version 1:	Prepared by	Tobin (CK)	Date:	Feb 2011
Version 2:	Prepared by		Date:	
Version 3:	Prepared by		Date:	
Version 4:	Prepared by		Date:	

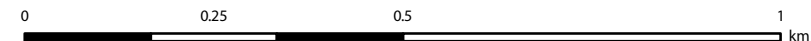




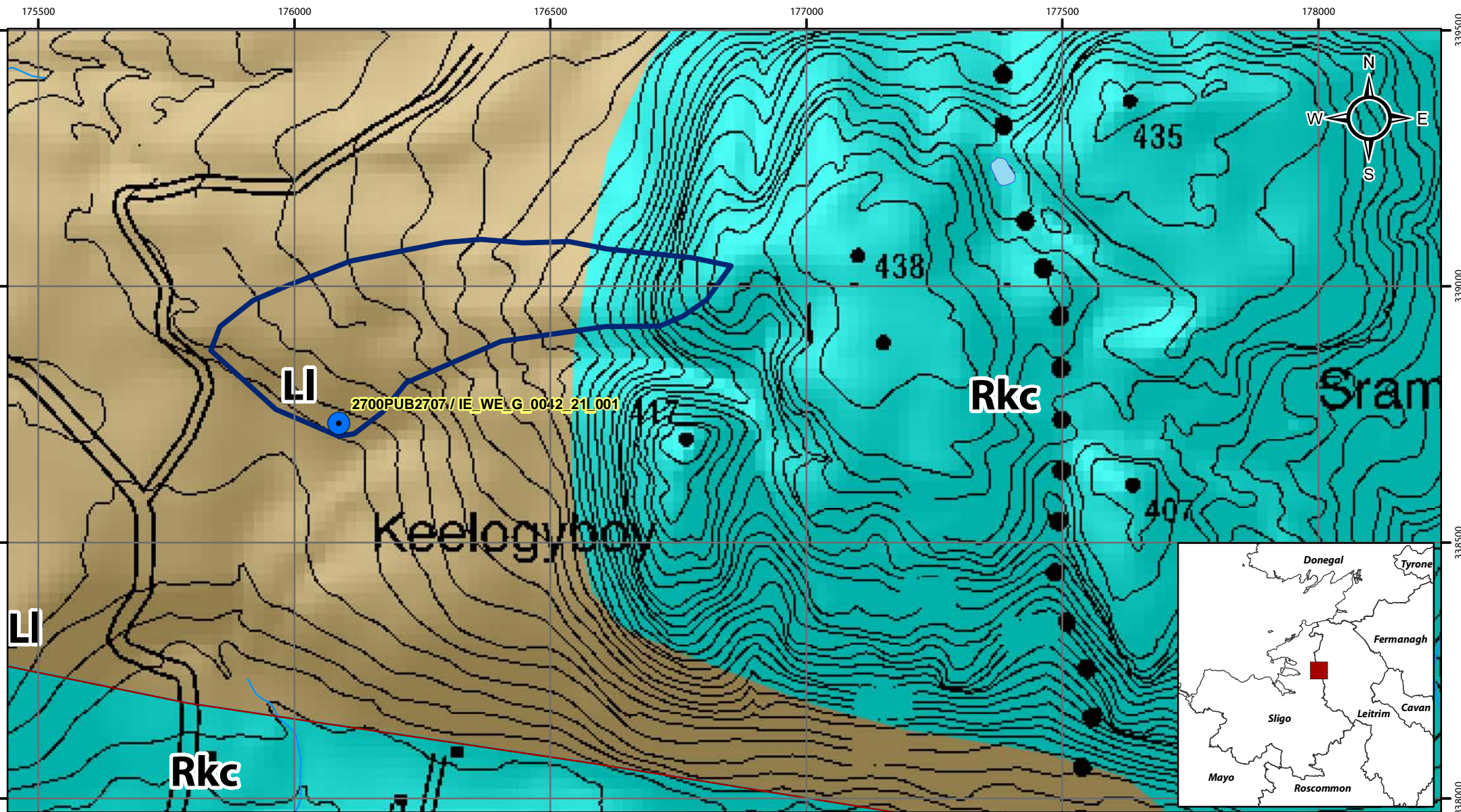
## Location Map for Calry

- Abstractions
- Lake
- River
- Zone of Contribution

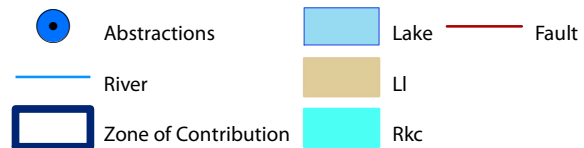
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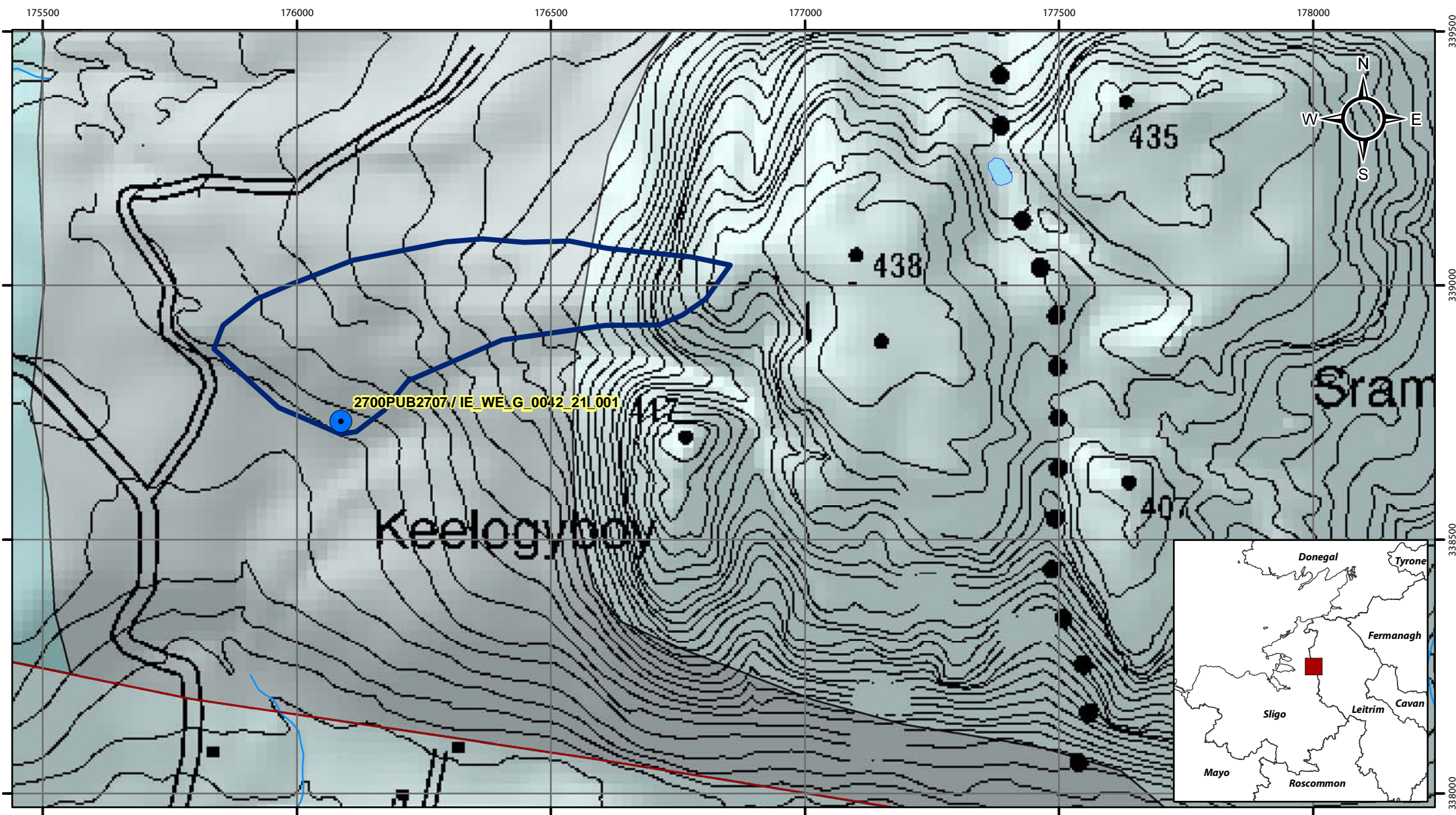




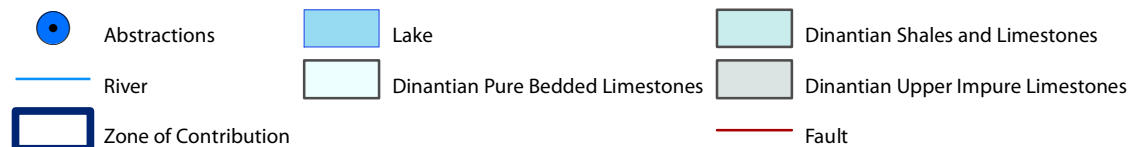
## Aquifer Category Map for Calry



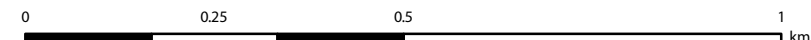




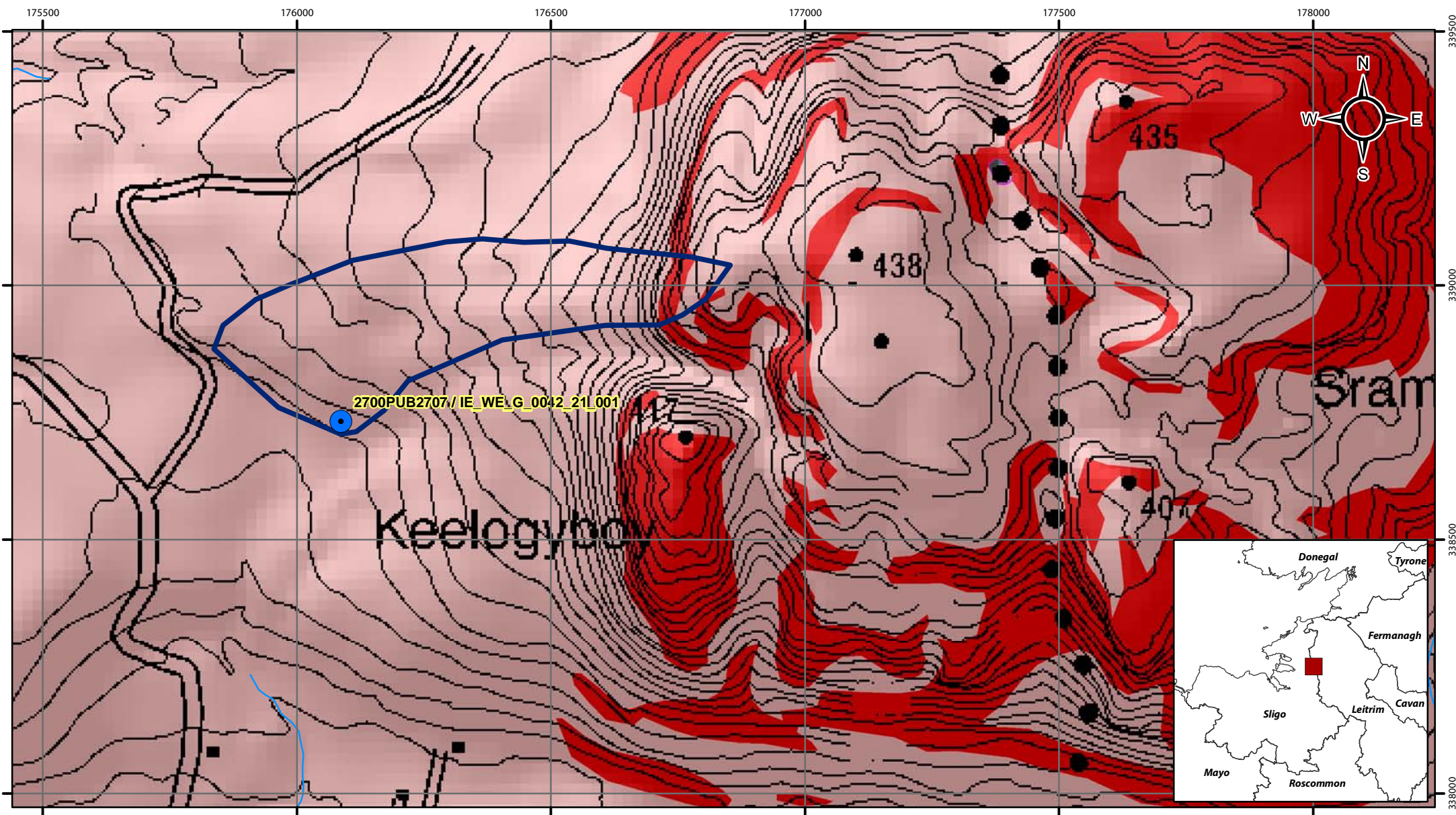
## Bedrock Category Map for Calry



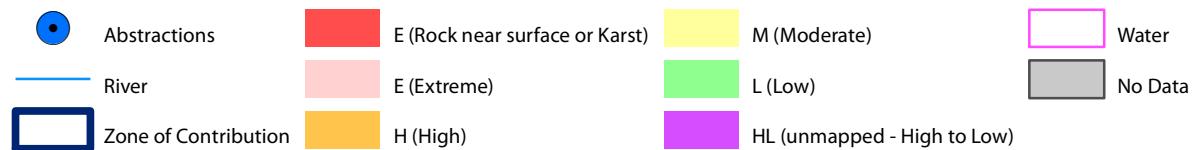
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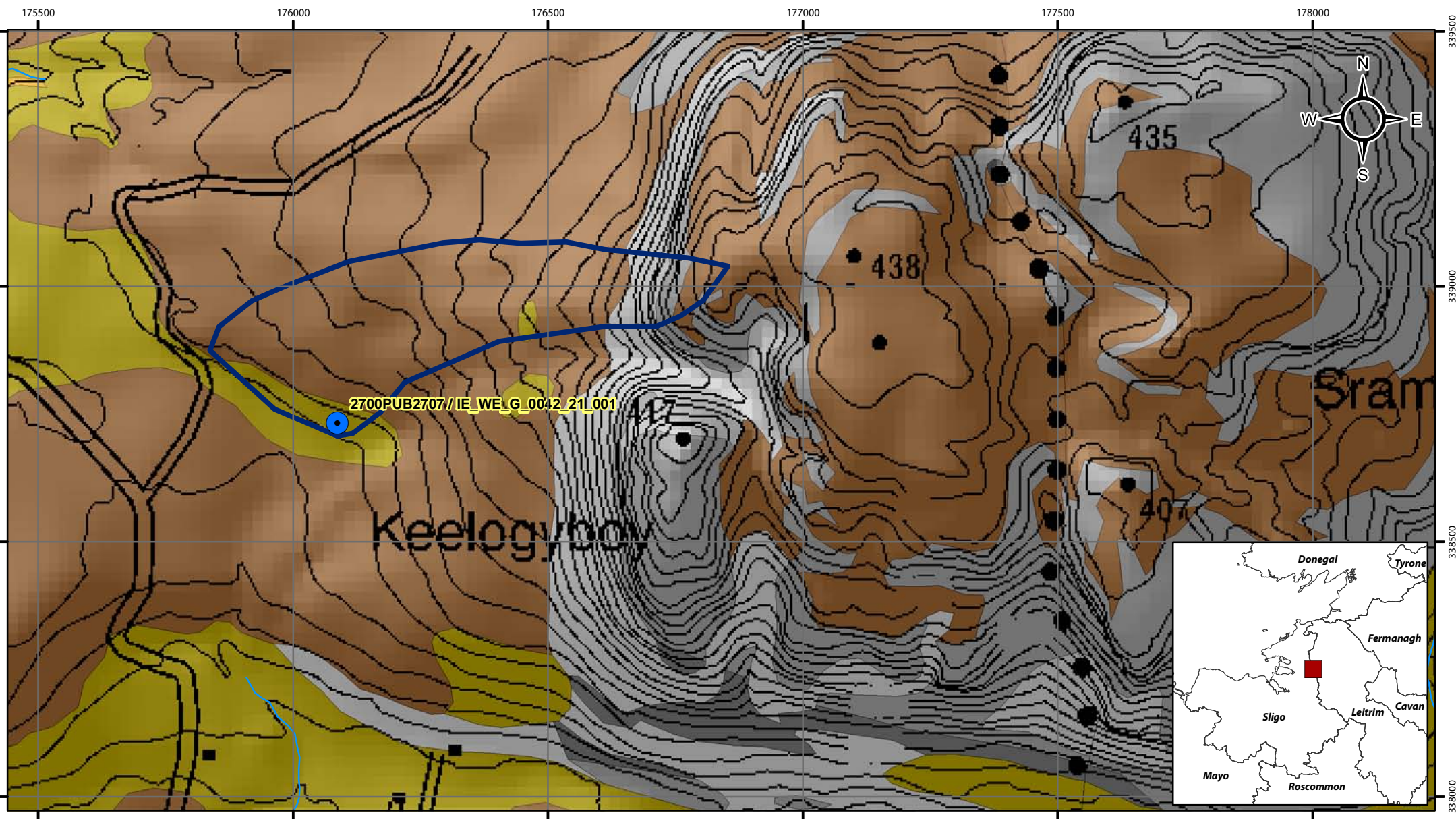




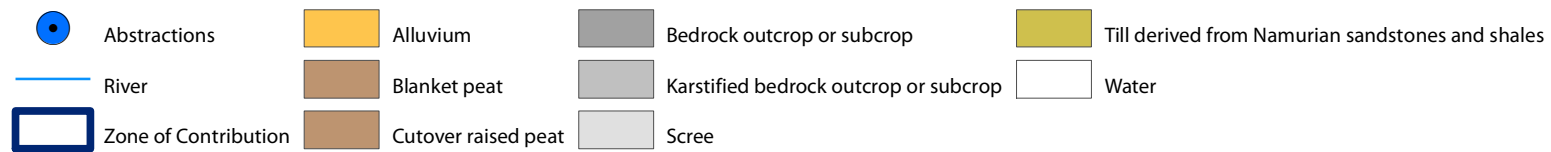
## Groundwater Vulnerability Map for Calry



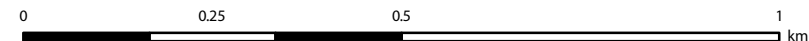




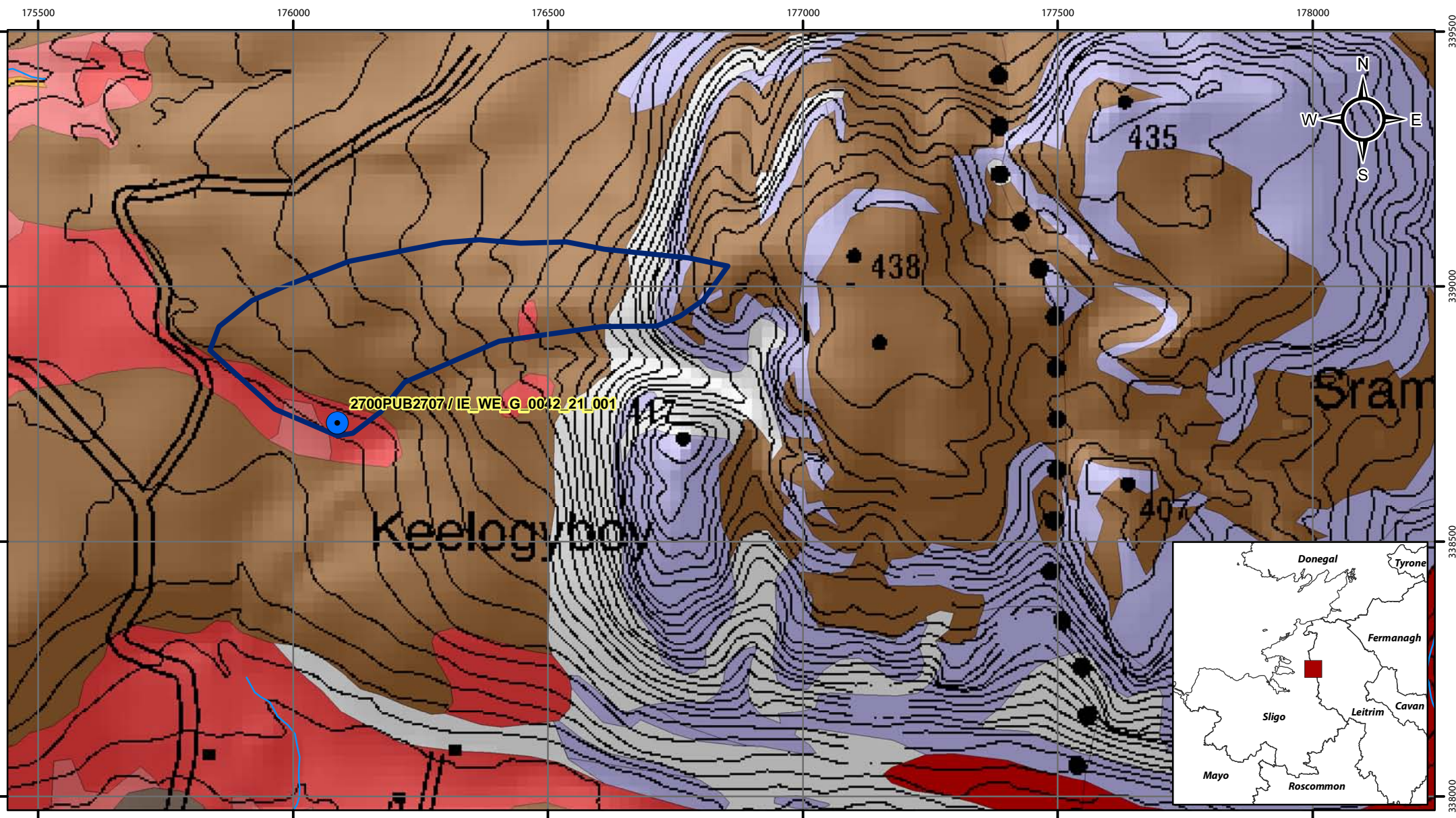
## Subsoils Map for Calry



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## Soils Map for Calry

