

Water Framework Directive Groundwater Monitoring Programme

Site Information **Clifden/Clara GWS**



Clifden/Clara GWS is a borehole with an average abstraction rate of 50m³/day. A source report was prepared for the source in 2010.



Kilkenny

August 2011

SITE INFORMATION					
Site Name:	Clifden/Clara GWS		County:	Kilkenny	
RBD:	SERBD		EU Reporting Code:	IE_SE_G_078_10_006	
Easting:	258221		GWB Name:	Kilkenny	
Northing:	155392		GWB Code:	IE_SE_G_078	
Site Use:	Drinking Water (GWS)		Drinking Water Code:	1500PRI3002	
Hydrometric Area:	15		Water Level Monitoring Network:	Level	Flow
Townland:	RATHGARVAN or CLIFDEN			N	N
Ownership:	Kilkenny Co. Co				
Water Quality Monitoring Network:	Surveillance		Operational (Point)		Operational (Diffuse)
	N		N		Y
Site Comments:	The borehole is securely located within a compound. A borehole pump brings the water to the pump house where the untreated water is chlorinated and passed through a UV system. Water is pumped directly into the distribution network from the chlorine contact tank.				
SITE DIRECTIONS					
Location and Access Information:	Located approximately 5 km to the east of Kilkenny City, adjacent to the N10 national road.				
Additional Comments:	---				
WELL INFORMATION					
Monitoring Point Type:	BH	Abstraction Rate (m³/d):	50	Ground Elevation (m OD):	76
Borehole Log Available:	---	Total Drilled Depth (m bgl):	38	Depth to Bedrock (m bgl):	12
Top of Casing (m agl):	ground level	Upper Casing Diameter (mm):	200	Lower Casing Diameter (mm):	---
Final Borehole Depth (m):	38	Upper Casing Bottom Depth (m bgl) :	14	Lower Casing Bottom Depth (m bgl):	---
Screen Interval (m bgl):	---	Screen Type (PVC,Steel,other):	steel	Screen Slot Size (mm):	---
Grout Type (cement,bentonite):	not grouted	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):	800	Comments on Monitoring Site:	The annulus around the borehole is not grouted. The borehole cover and surrounding area is securely covered and the site is fenced off		
Specific Capacity (m³/d/m):	331				
Static Water Level (m bgl):	4				
Scheme Name:	Clifden Clara GWS	Number of Abstraction Points in the Scheme:	1	Source Report Available	Y
Source Report Info:	TOBIN/CDM/OCM prepared a report Feb. 2010.				
Scheme Summary:	The Clifden Clara borehole is the main source for the Clifden Clara Group Water Scheme; operated by the EPS on behalf of Kilkenny County Council.				

HYDROGEOLOGY							
GEOLOGY	Soil:	Deep well drained mineral (AminDW)				Subsoil Permeability:	Low
	Subsoil:	Tills (diamictons) (TNSSs)					
	Bedrock:	Dinantian Pure Bedded Limestones					
HYDROGEOLOGY	Aquifer Category:	Rkd	Vulnerability at Monitoring site:	High	Flow Regime:	Karstified	
ZONE OF CONTRIBUTION	Estimated ZOC Size (km ²):	0.57	ZOC Delineated By:	OCM (DC)	Recharge Estimate (mm/yr):	272	
	ZOC Delineation Comments:	See report for full details. ZOC based mainly on topography.					
Groundwater Vulnerability within ZOC (% area):	Extreme (X)	Extreme (E)	High	Moderate	Low	High to Low	Unclassified
	18.39	31.45	50.15	0	0	0	0
HYDROCHEMISTRY							
Hydrochemical Signature:	Ca-HCO ₃		Additional Water Chemistry Information:	During the monitoring period: The average nitrate concentration was 28 mg/l NO ₃ and the maximum nitrate concentration was 39 mg/l NO ₃ . The average ammonium concentration was 0.07 mg/l N and the maximum ammonium concentration was 1.842 mg/l N. The average molybdate reductive phosphorus (MRP) concentration was 0.027 mg/l P and the maximum MRP concentration was 0.069 mg/l P. The average chloride concentration was 18.8 mg/l Cl and the maximum chloride concentration was 23 mg/l Cl.			
Alkalinity (mg/l HCO ₃):	Average:	Range:					
	312	283-350					
Hardness (mg/l CaCO ₃):	Average:	Range:					
	345	145-460					
Conductivity (uS/cm):	Average:	Range:					
	661	584-733					
Monitoring Record Period:	From:	To:					
	1993	2010					
RISK ASSESSMENT							
Pressure (e.g., Nitrates, Phosphates, Abstractions):	Diffuse		Typical Contaminants:	Nitrates & Phosphates			
Risk Category:	At risk, high confidence		GWB Status:	Good			
Impact Potential within ZOC (% area):	Extreme:	High:	Moderate:	Low:	Negligible:		
	0.00	61.74	38.26	0.00	0.00		
OTHER INFORMATION							



Pump House



Inside Pumphouse and Sampling Point

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).

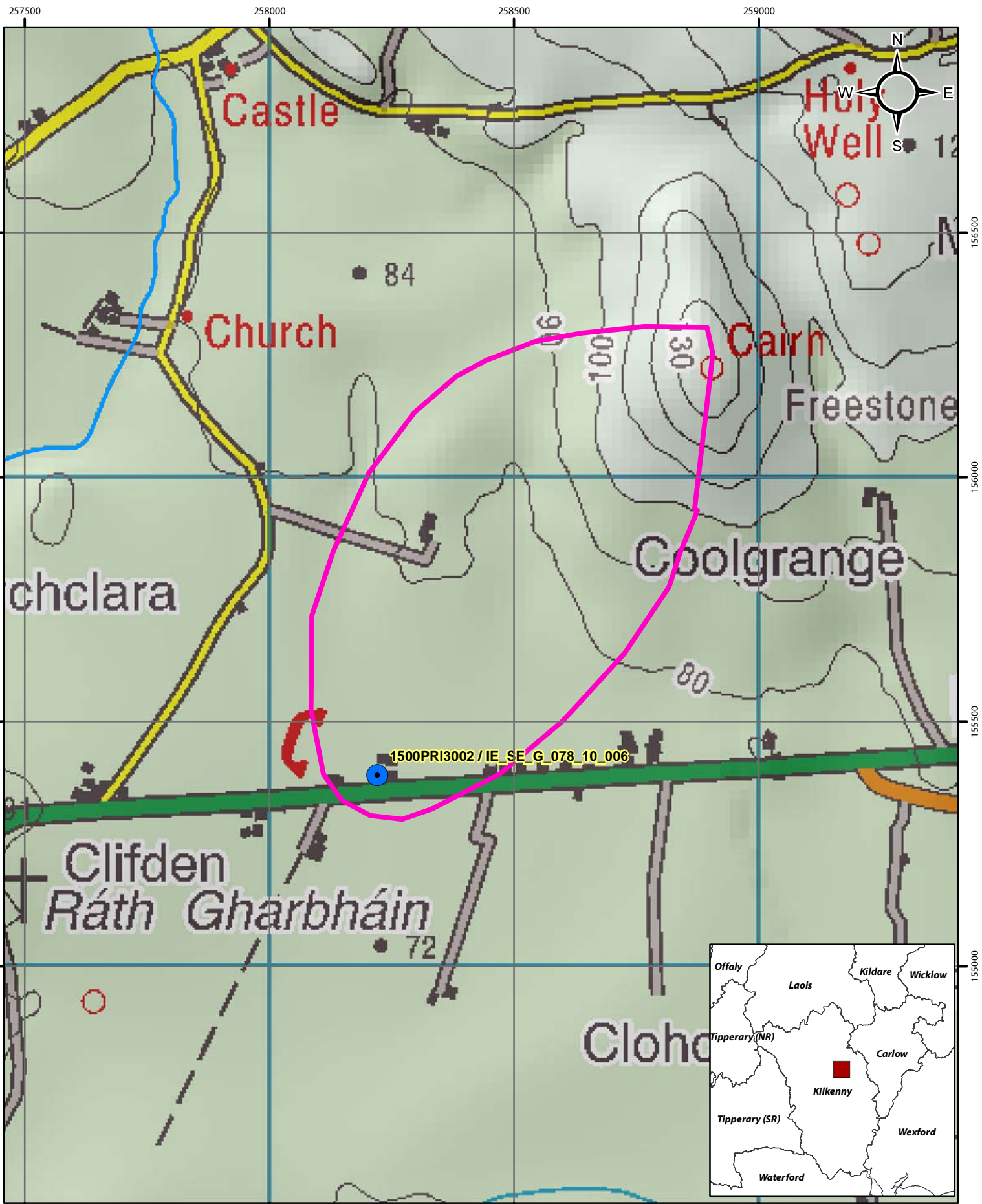
General Downgradient Distances

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		Date:	
Version 1:	Prepared by	OCM (DC)	Date:	Feb 2011
Version 2:	Prepared by		Date:	
Version 3:	Prepared by		Date:	
Version 4:	Prepared by		Date:	

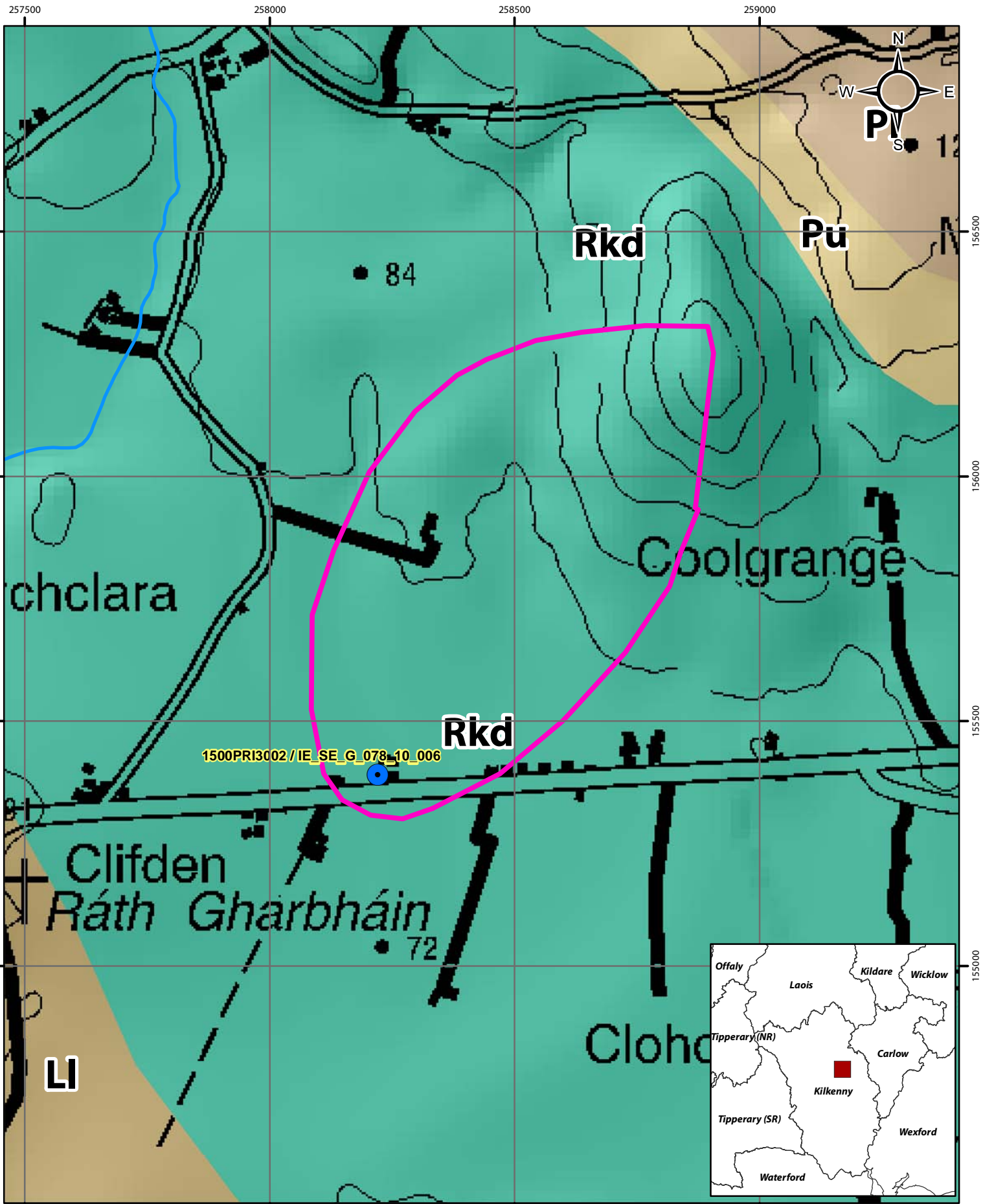


Location Map for Clifden/Clara GWS

- Abstractions
- River
- Zone of Contribution

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0 0.25 0.5 1 km

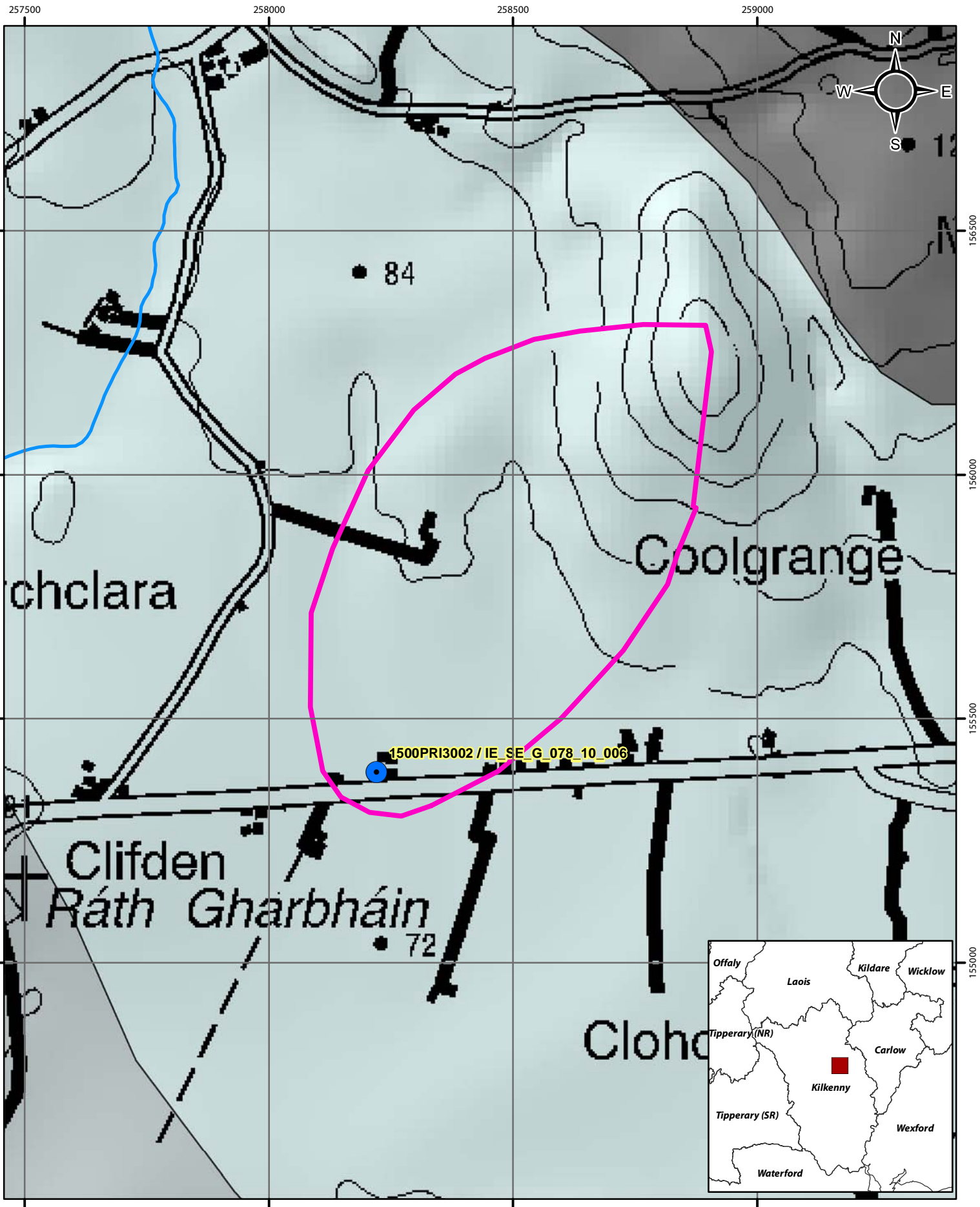


Aquifer Category Map for Clifden/Clara GWS

-  Abstractions
-  River
-  Zone of Contribution
-  LI
-  PI
-  Pu
-  Rkd
-  Fault

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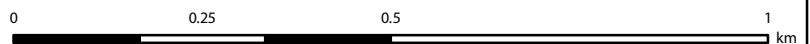
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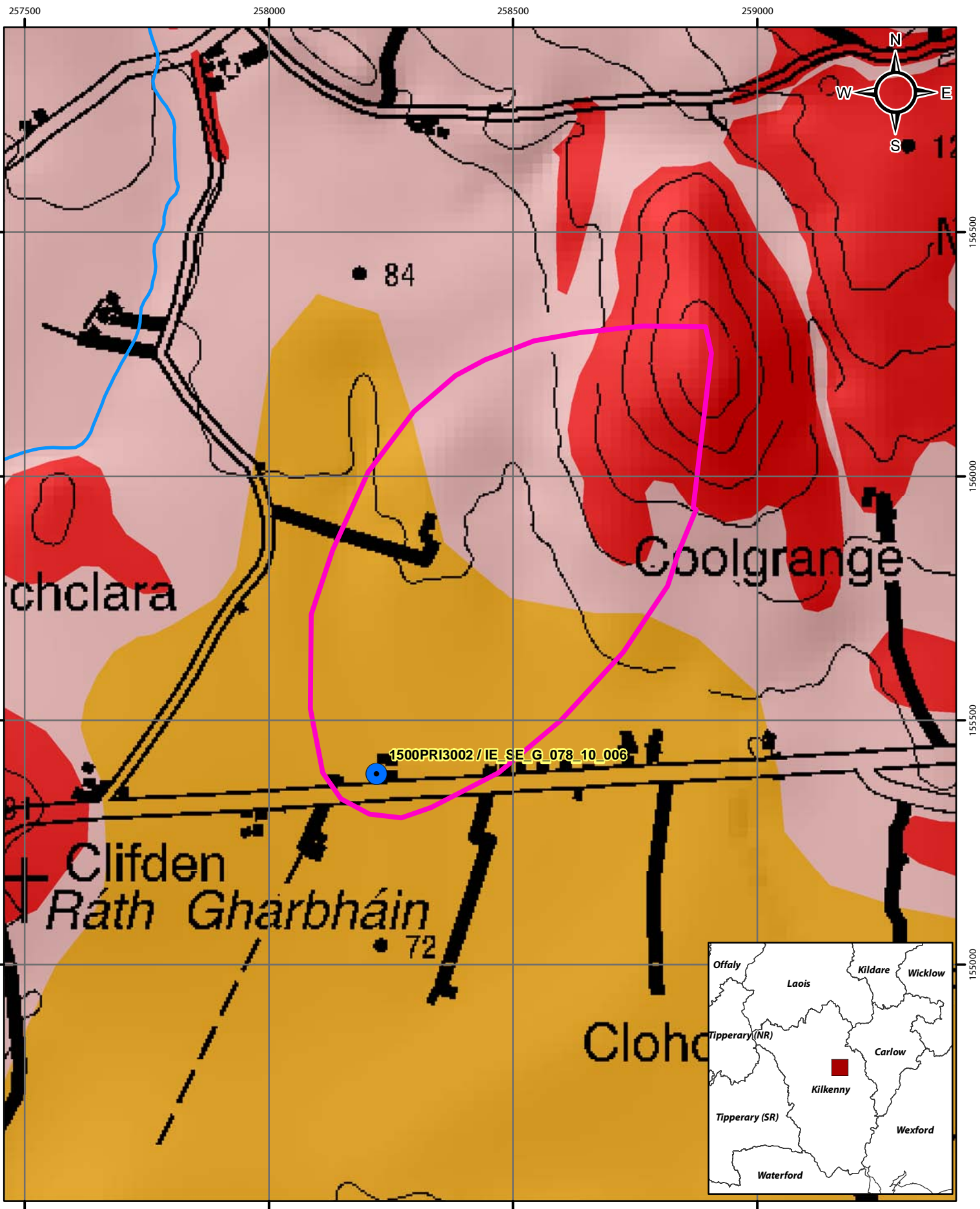


Bedrock Map for Clifden/Clara GWS

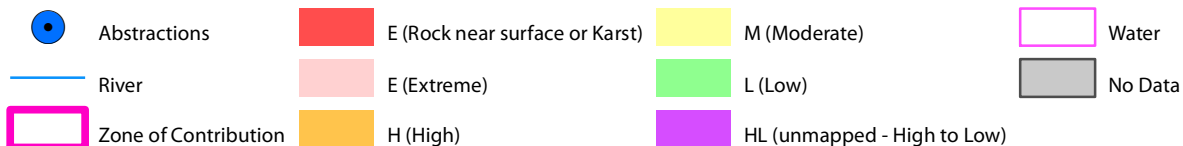


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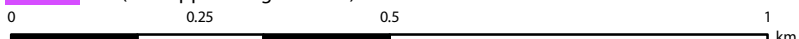


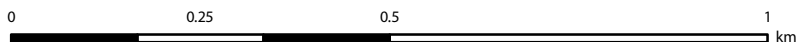
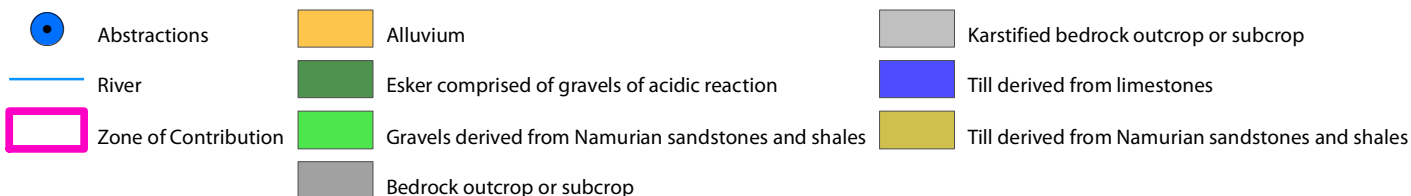
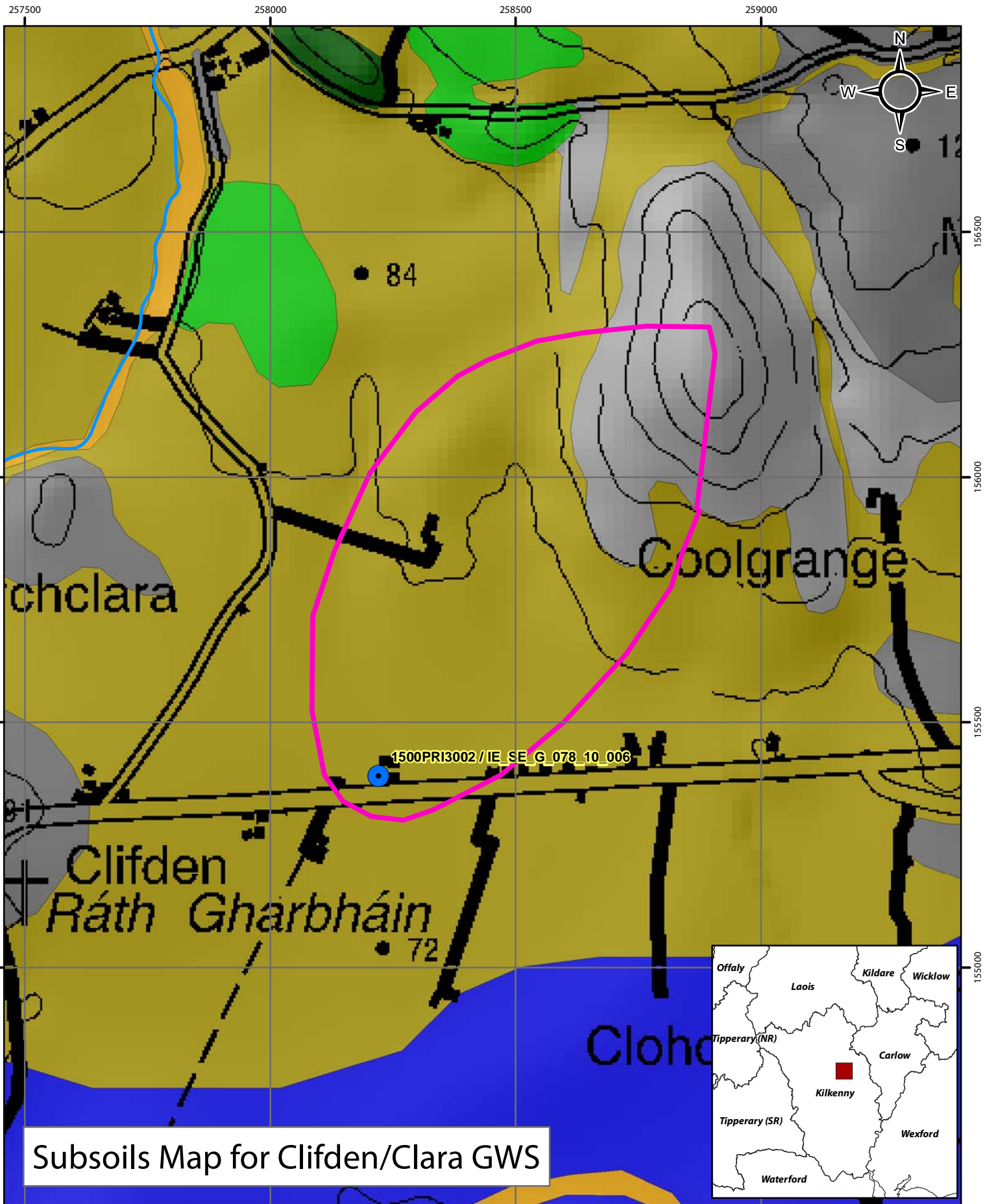


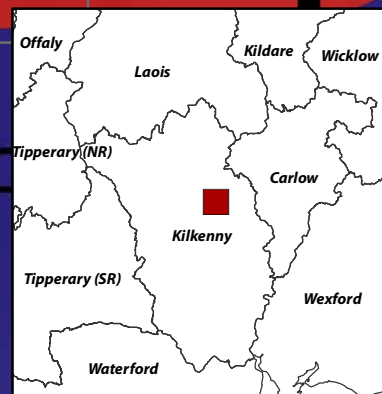
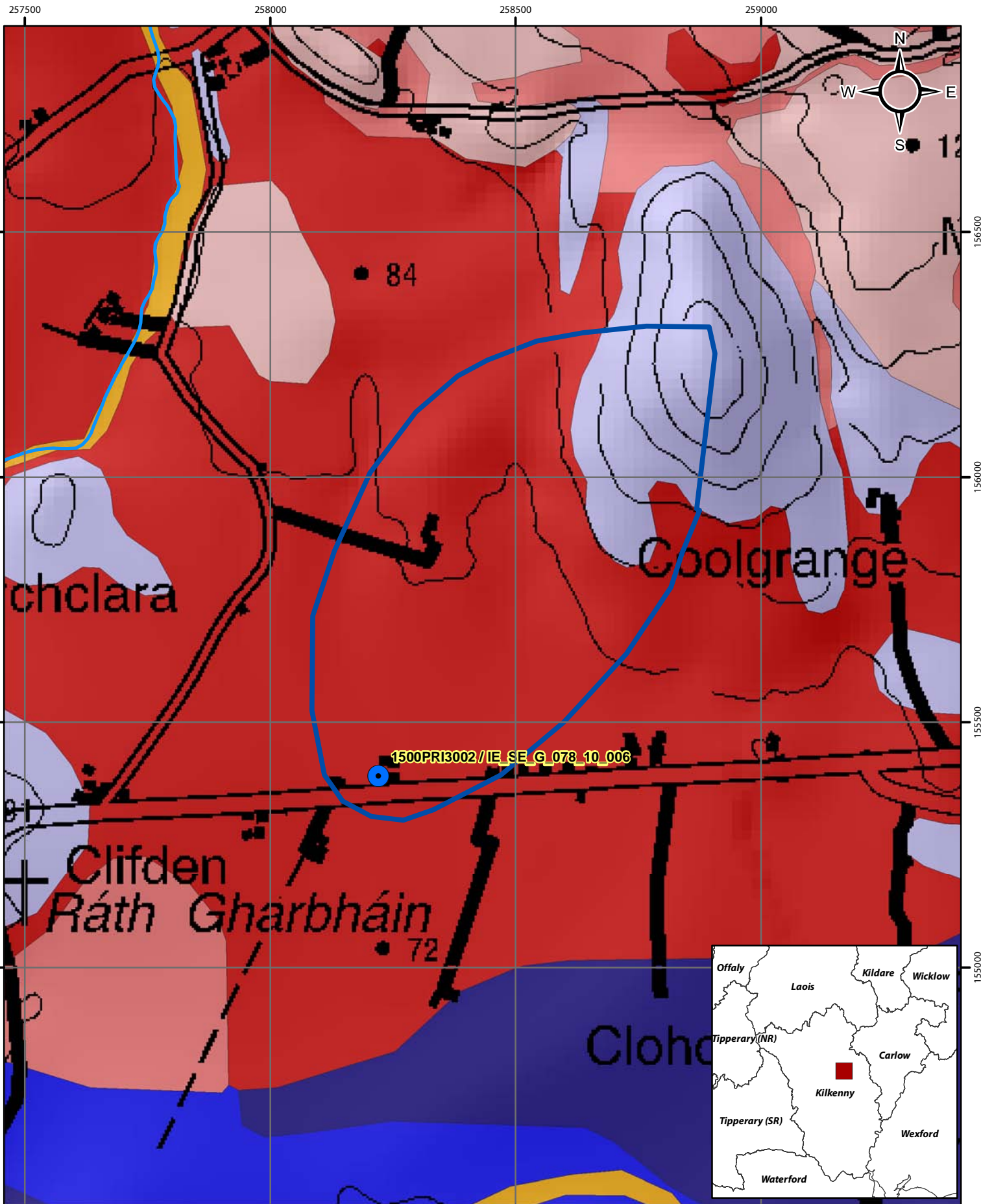
Groundwater Vulnerability Map for Clifden/Clara GWS



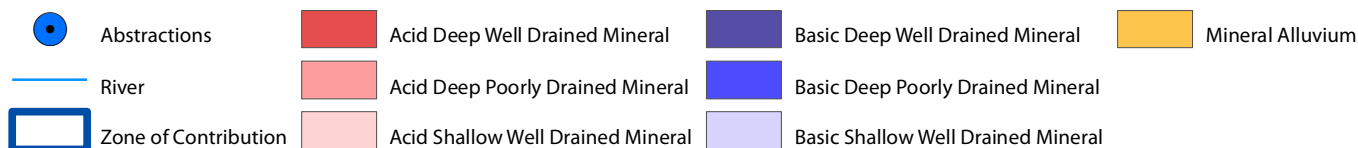
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Soils Map for Clifden/Clara GWS



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