

Water Framework Directive Groundwater Monitoring Programme

Site Information **Cregduff Spring**



Cregduff is a spring that is used for a group water supply. This site is located in a karstified aquifer. The spring is a large regional groundwater discharge point, extensively studied by Teagasc/GSI in 2010.



Mayo

August 2011

SITE INFORMATION					
Site Name:	Cregduff Spring		County:	Mayo	
RBD:	WRBD		EU Reporting Code:	IE_WE_G_0019_16_007	
Easting:	122340		GWB Name:	Cong-robe	
Northing:	263274		GWB Code:	IE_WE_G_0019	
Site Use:	Drinking Water (GWS)		Drinking Water Code:	---	
Hydrometric Area:	30		Water Level Monitoring Network:	Level	Flow
Townland:	CREGDUFF (ED Hollymount)			Y	Y
Ownership:	Cregduff Group Water Scheme				
Water Quality Monitoring Network:	Surveillance		Operational (Point)		Operational (Diffuse)
	Y		N		Y
Site Comments:	Situating at edge of forest and improved peat areas. Numerous drainage ditches.				

SITE DIRECTIONS	
Location and Access Information:	Located 3km ESE of Ballinrobe. Drive east from Ballinrobe direction Carrowmore. C, 2.7 kms from Ballinrobe centre, road takes a sharp left turn, then a sharp right run after another 250 m. after sharp right turn, take first road on right (opposite school). Follow road c. 800 (direction south). Take sharp left turn, then almost immediately take first dirt road on left. This leads to spring.
Additional Comments:	---

WELL INFORMATION					
Monitoring Point Type:	Spring	Abstraction Rate (m³/d):	0	Ground Elevation (m OD):	28
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:	---		
Specific Capacity (m³/d/m):	---				
Static Water Level (m bgl):	---				
Scheme Name:	---	Number of Abstraction Points in the Scheme:	---	Source Report Available	N
Source Report Info:	---				
Scheme Summary:	---				

HYDROGEOLOGY								
GEOLOGY	Soil:	Cutaway/cutover peat (Cut)					Subsoil Permeability:	n/a
	Subsoil:	Peat (Cut)						
	Bedrock:	Dinantian Pure Bedded Limestones						
HYDROGEOLOGY	Aquifer Category:	Rkc	Vulnerability at Monitoring site:	Extreme	Flow Regime:	Karstified		
ZONE OF CONTRIBUTION	Estimated ZOC Size (km ²):	15.95	ZOC Delineated By:	Tobin (CK)	Recharge Estimate (mm/yr):	491		
	ZOC Delineation Comments:	ZOC based on existing tracer results and catchment topography.						
Groundwater Vulnerability within ZOC (% area):	Extreme (X)	Extreme (E)	High	Moderate	Low	High to Low	Unclassified	
	3.83	10.6	0	0	0	85.12	0.45	
HYDROCHEMISTRY								
Hydrochemical Signature:	Ca-HCO ₃		Additional Water Chemistry Information:	During the monitoring period: The average nitrate concentration was 8 mg/l NO ₃ and the maximum nitrate concentration was 13 mg/l NO ₃ . The average ammonium concentration was 0.031 mg/l N and the maximum ammonium concentration was 0.132 mg/l N. The average molybdate reductive phosphorus (MRP) concentration was 0.015 mg/l P and the maximum MRP concentration was 0.032 mg/l P. The average chloride concentration was 16.9 mg/l Cl and the maximum chloride concentration was 20 mg/l Cl.				
Alkalinity (mg/l HCO ₃):	Average:	Range:						
	346	300-440						
Hardness (mg/l CaCO ₃):	Average:	Range:						
	358	316-407						
Conductivity (uS/cm):	Average:	Range:						
	673	468-929						
Monitoring Record Period:	From:	To:						
	2007	2010						
RISK ASSESSMENT								
Pressure (e.g., Nitrates, Phosphates, Abstractions):	Diffuse		Typical Contaminants:	Phosphate				
Risk Category:	At risk, high confidence		GWB Status:	Poor				
Impact Potential within ZOC (% area):	Extreme:	High:	Moderate:	Low:	Negligible:			
	0.00	13.06	76.67	8.30	1.97			
OTHER INFORMATION								
<p>Teagasc and GSI have conducted vulnerability mapping and karst features mapping in the Cregduff catchment in 2010 and 2011 (Robbie Meehan and Coran Kelly).</p>								



Spring



Site



Spring Intake

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).

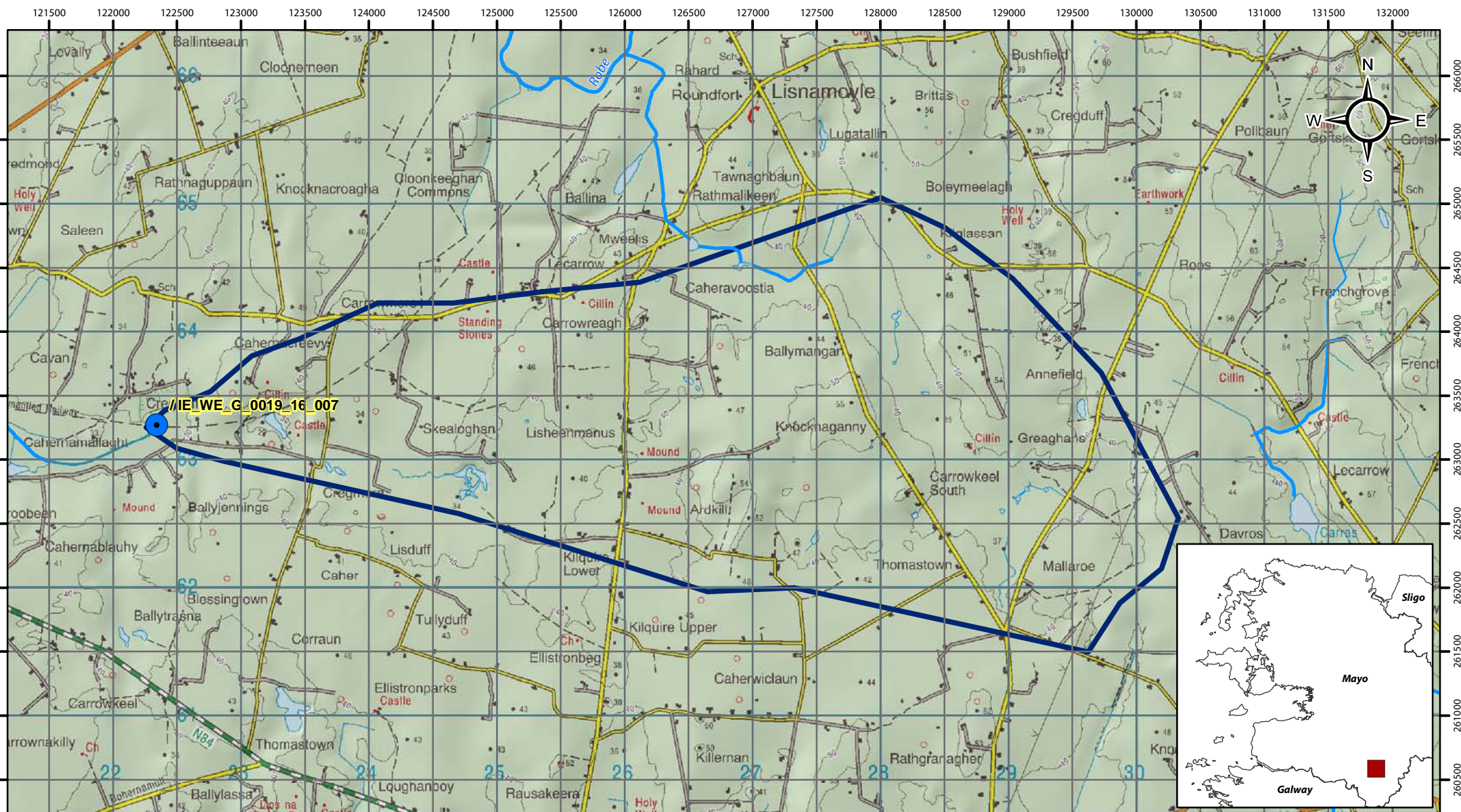
General Downgradient Distances

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	CDM (HM)	Date:	Feb 2011
Version 2:	Prepared by		Date:	
Version 3:	Prepared by		Date:	
Version 4:	Prepared by		Date:	

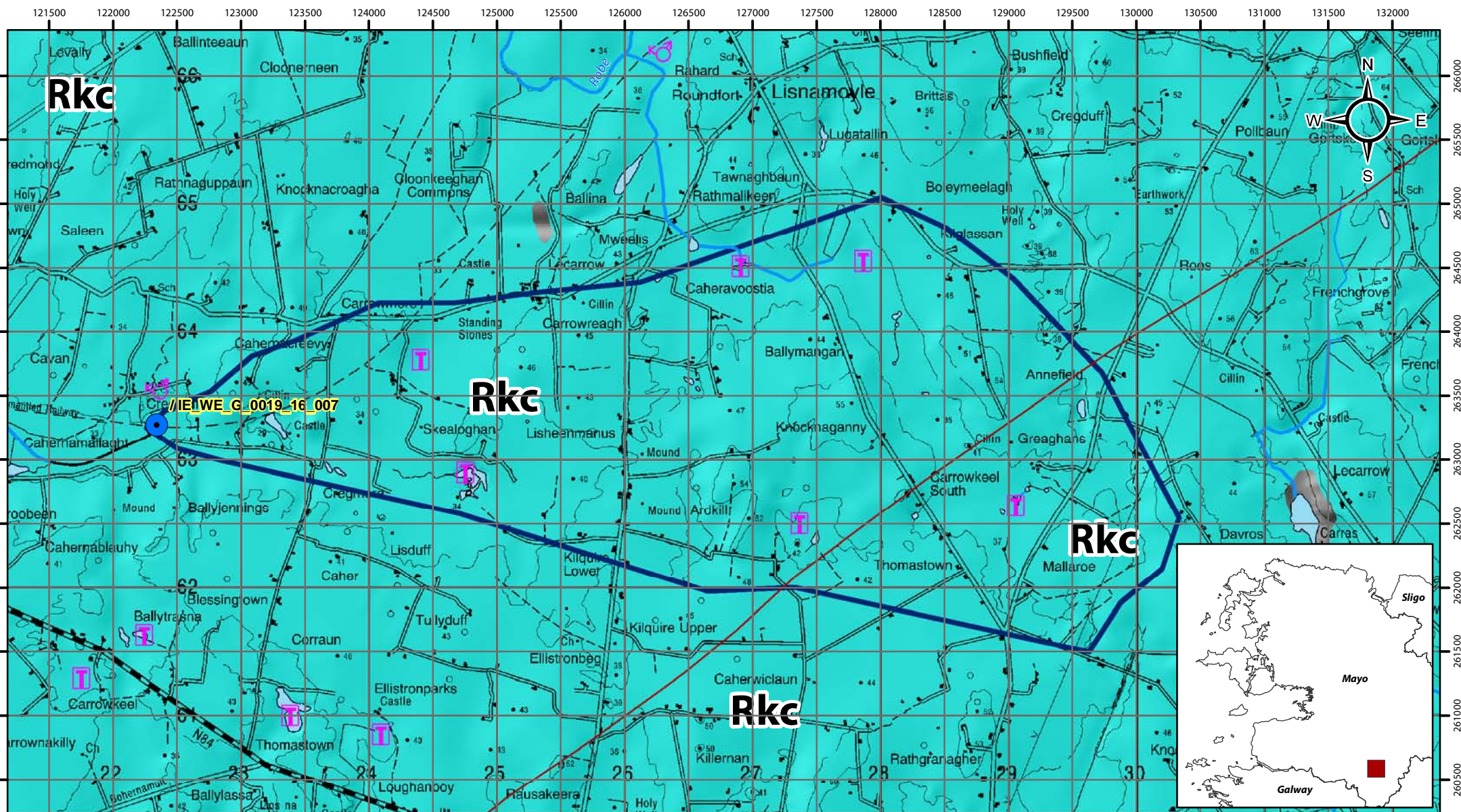


Location Map for Cregduff Spring

-  Abstractions
-  River
-  Zone of Contribution

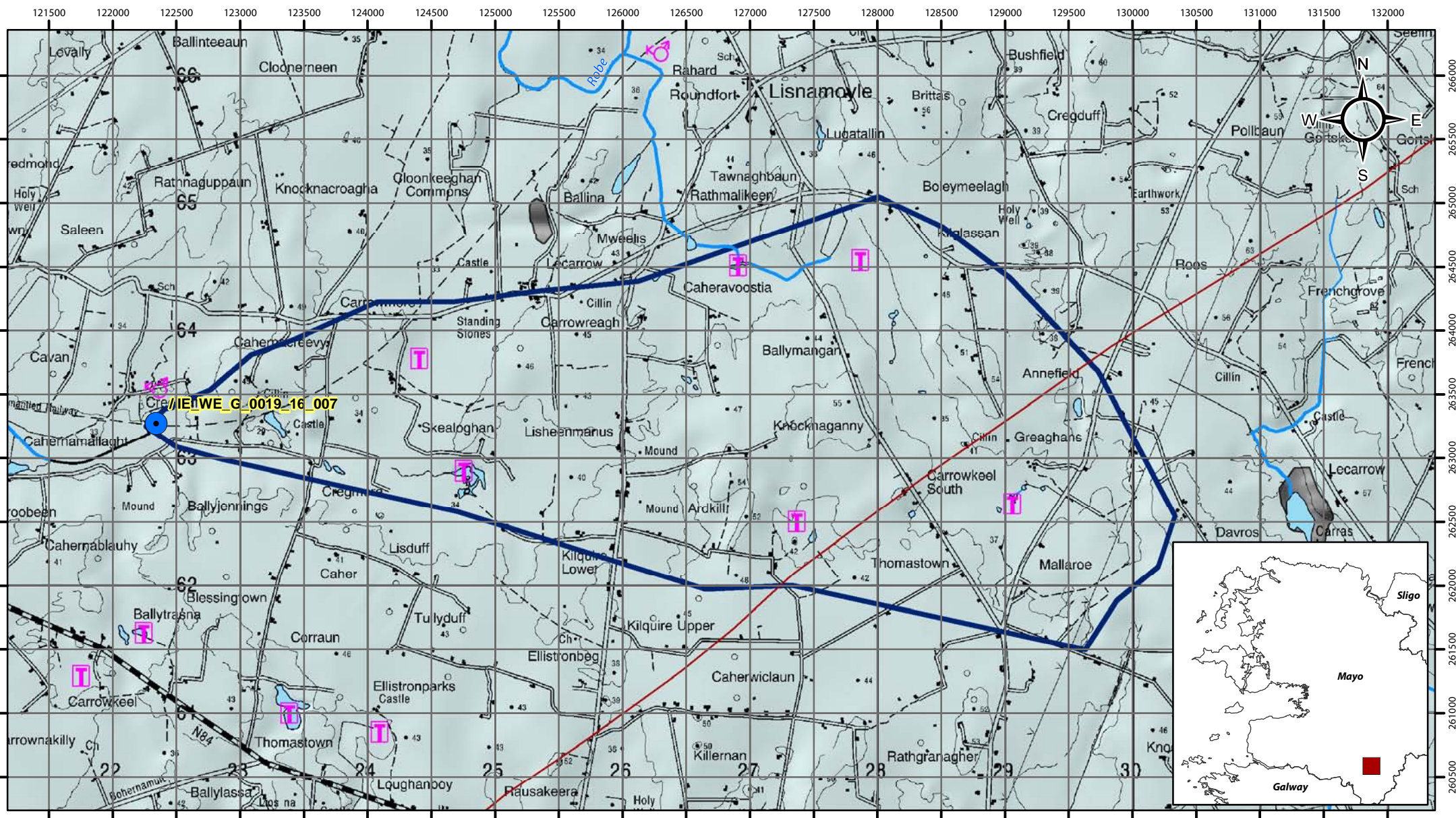
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0 0.25 0.5 1
km



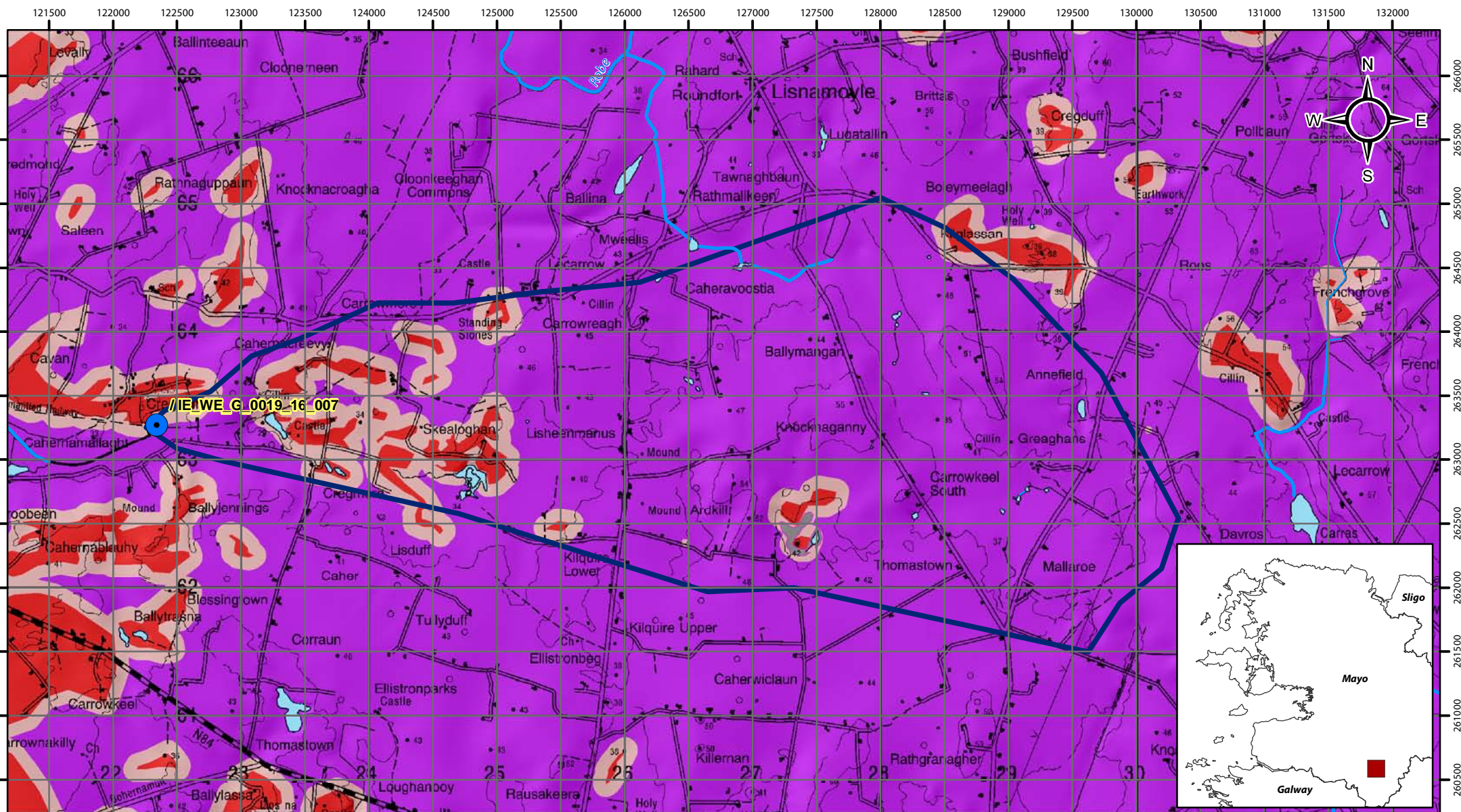
Aquifer Category Map for Cregduff Spring

- Abstractions
- Lake
- ♂ Spring
- River
- Rkc
- T Turf
- Zone of Contribution
- Fault

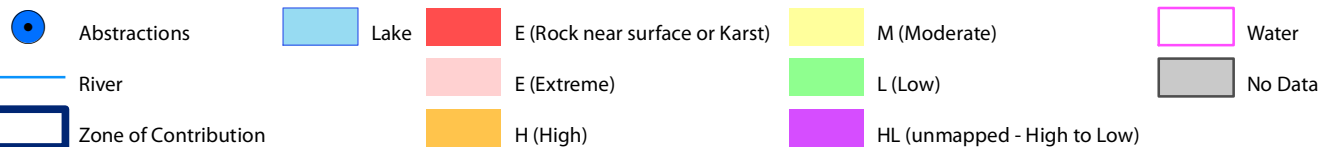


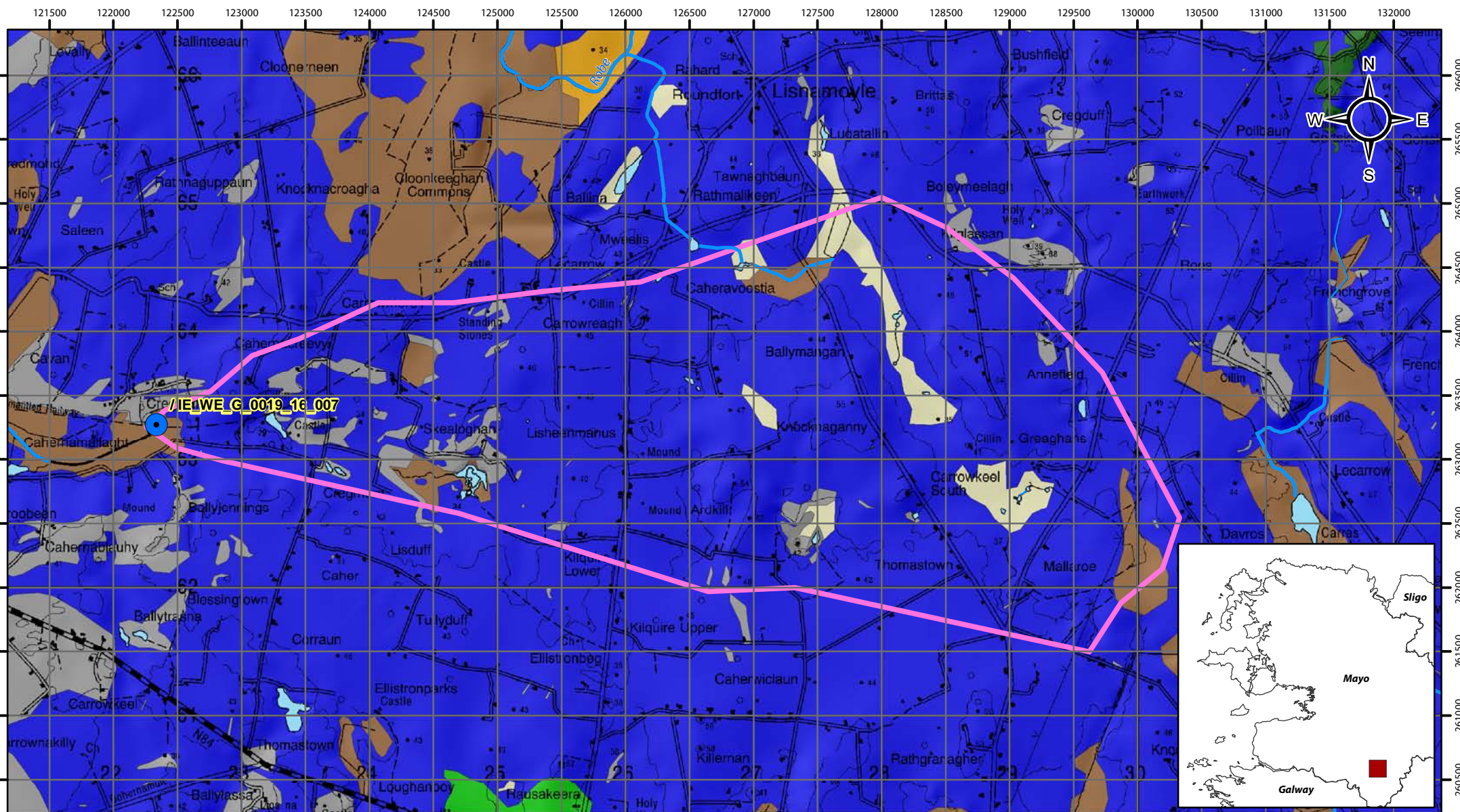
Bedrock Map for Cregduff Spring

- Abstractions
- Lake
- Spring
- River
- Dinantian Pure Bedded Limestones
- Turlough
- Zone of Contribution
- Fault



Groundwater Vulnerability Map for Cregduff Spring





Subsoils Map for Cregduff Spring

