

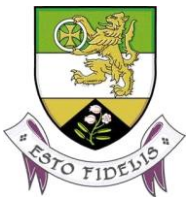
Water Framework Directive Groundwater Monitoring Programme

Site Information

Clonaslee Borehole - Forest



Clonaslee (Forest) borehole is one of two boreholes, the other being the Clonaslee (Plant) BH. The abstraction from Clonaslee Forest borehole is 200 m³/day, while the abstraction from Clonaslee Plant borehole is 130 m³/day; the ZOC has been delineated for the abstraction from the two boreholes. A source report has been completed by WYG.



Offaly

August 2011

SITE INFORMATION					
Site Name:	Clonaslee Borehole - Forest		County:	Offaly	
RBD:	Shannon IRBD		EU Reporting Code:	IE_SH_G_066_19_002	
Easting:	231725		GWB Name:	Clonaslee West	
Northing:	210704		GWB Code:	IE_SH_G_066	
Site Use:	Drinking Water (PWS)		Drinking Water Code:	2500PUB1020	
Hydrometric Area:	25		Water Level Monitoring Network:	Level	Flow
Townland:	BRITTAS			N	N
Ownership:	Offaly County Council				
Water Quality Monitoring Network:	Surveillance		Operational (Point)		Operational (Diffuse)
	Y		N		N
Site Comments:	Clonaslee (Forest) borehole is situated in a Regionally Important Fissured Aquifer (Rf) / Devonian Kiltorcan-type Sandstone. The Clonaslee Forest BH is included in the GW surveillance monitoring network.				
SITE DIRECTIONS					
Location and Access Information:	From Dublin, take M7 for Cork and turn off for Mountmellick just before Portlaoise. Drive through Mountmellick for Clonaslee village along the R422. Drive along the main street and take a left up a narrow road, next to a shop (Peavoy) and drive until arrive at Water Treatment Works.				
Additional Comments:	---				
WELL INFORMATION					
Monitoring Point Type:	BH	Abstraction Rate (m³/d):	200	Ground Elevation (m OD):	110
Borehole Log Available:	---	Total Drilled Depth (m bgl):	50	Depth to Bedrock (m bgl):	7
Top of Casing (m agl):	---	Upper Casing Diameter (mm):	150	Lower Casing Diameter (mm):	---
Final Borehole Depth (m):	---	Upper Casing Bottom Depth (m bgl) :	8	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):	600	Comments on Monitoring Site:	The sampling notes indicate the sample is taken from the borehole. The groundwater supplied from the Clonsalee boreholes is mixed with surface water prior to distribution. Water entries at 9, 30, 45, 51m - main inflow at 9m.		
Specific Capacity (m³/d/m):	23				
Static Water Level (m bgl):	artesian				
Scheme Name:	Clonaslee	Number of Abstraction Points in the Scheme:	2	Source Report Available	Y
Source Report Info:	Report completed by WYG				
Scheme Summary:	Clonaslee Borehole - Forest is part of a larger water supply , including Clonaslee Plant which also has a site folder.				

HYDROGEOLOGY								
GEOLOGY	Soil:	Alluviums (AlluvMIN)					Subsoil Permeability:	Moderate
	Subsoil:	Alluvium (A)						
	Bedrock:	Devonian Kiltorcan-type Sandstones						
HYDROGEOLOGY	Aquifer Category:	Rf	Vulnerability at Monitoring site:	Moderate	Flow Regime:	Productive fissured bedrock		
ZONE OF CONTRIBUTION	Estimated ZOC Size (km²):	6.7	ZOC Delineated By:	Tobin (CK)	Recharge Estimate (mm/yr):	344		
	ZOC Delineation Comments:	Original ZOC delineated for entire well field. The ZOC for Clonaslee (Forest and Plant) is based on the original WYG ZOC, though smaller based on lower abstraction rates and topography. The ZOC is larger than the cumulative abstraction of Forest and Plant (150%).						
Groundwater Vulnerability within ZOC (% area):	Extreme (X)	Extreme (E)	High	Moderate	Low	High to Low	Unclassified	
	17.19	21.55	38.14	23.12	0	0	0	
HYDROCHEMISTRY								
Hydrochemical Signature:	Ca-HCO3		Additional Water Chemistry Information:	During the monitoring period: The average nitrate concentration was 11 mg/l NO3 and the maximum nitrate concentration was 13 mg/l NO3. The average ammonium concentration was 0.028 mg/l N and the maximum ammonium concentration was 0.19 mg/l N. The average molybdate reductive phosphorus (MRP) concentration was 0.007 mg/l P and the maximum MRP concentration was 0.041 mg/l P. The average chloride concentration was 14.5 mg/l Cl and the maximum chloride concentration was 20.6 mg/l Cl.				
Alkalinity (mg/l HCO3):	Average:	Range:						
	278	183-546						
Hardness (mg/l CaCO3):	Average:	Range:						
	324	211-573						
Conductivity (uS/cm):	Average:	Range:						
	558	434-615						
Monitoring Record Period:	From:	To:						
	1995	2010						
RISK ASSESSMENT								
Pressure (e.g., Nitrates, Phosphates, Abstractions):	Diffuse		Typical Contaminants:	Nitrates				
Risk Category:	At risk, low confidence		GWB Status:	Good				
Impact Potential within ZOC (% area):	Extreme:	High:	Moderate:	Low:	Negligible:			
	0.00	10.54	26.51	16.42	46.53			
OTHER INFORMATION								



Pump House

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).

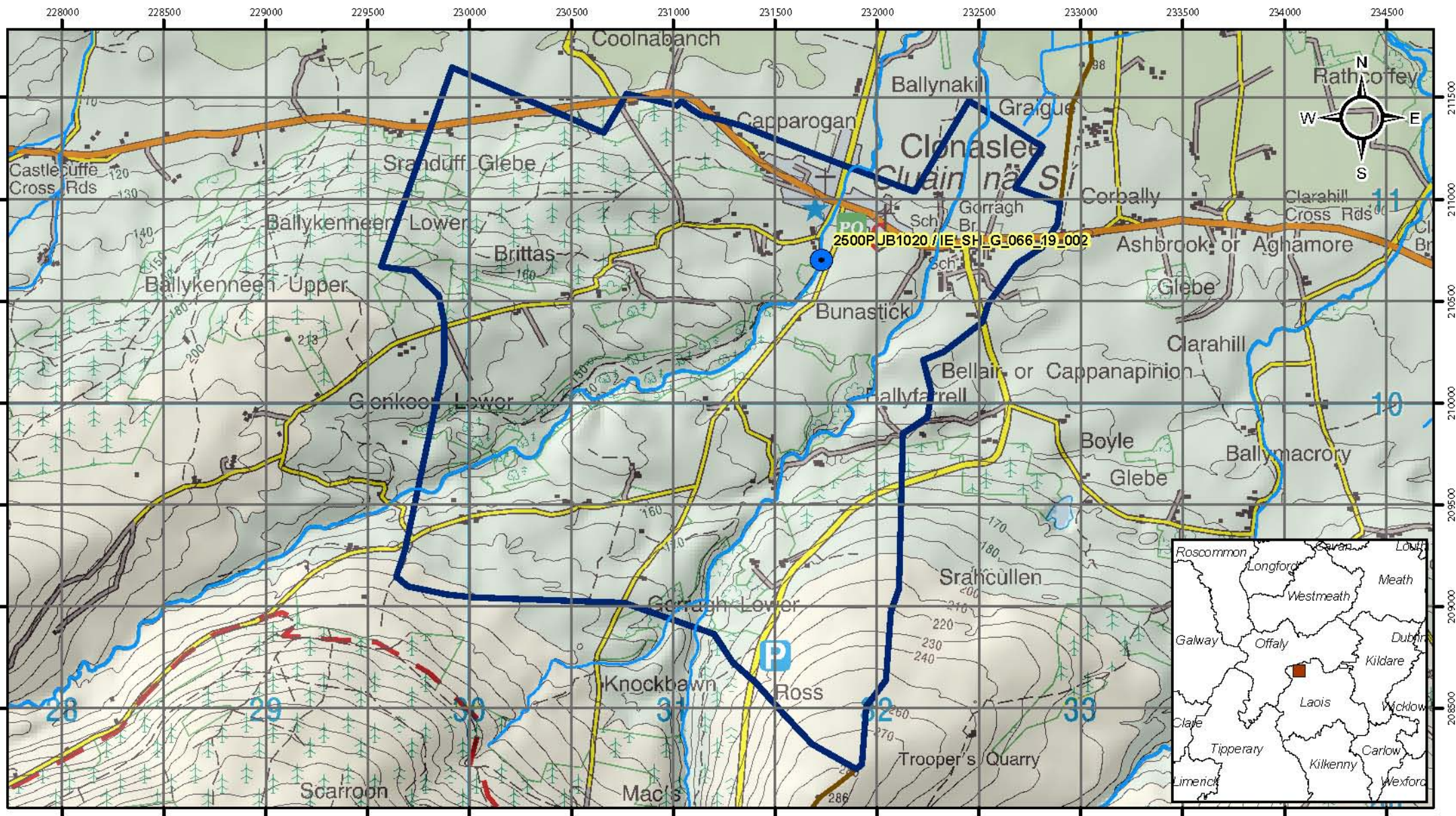
General Downgradient Distances

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

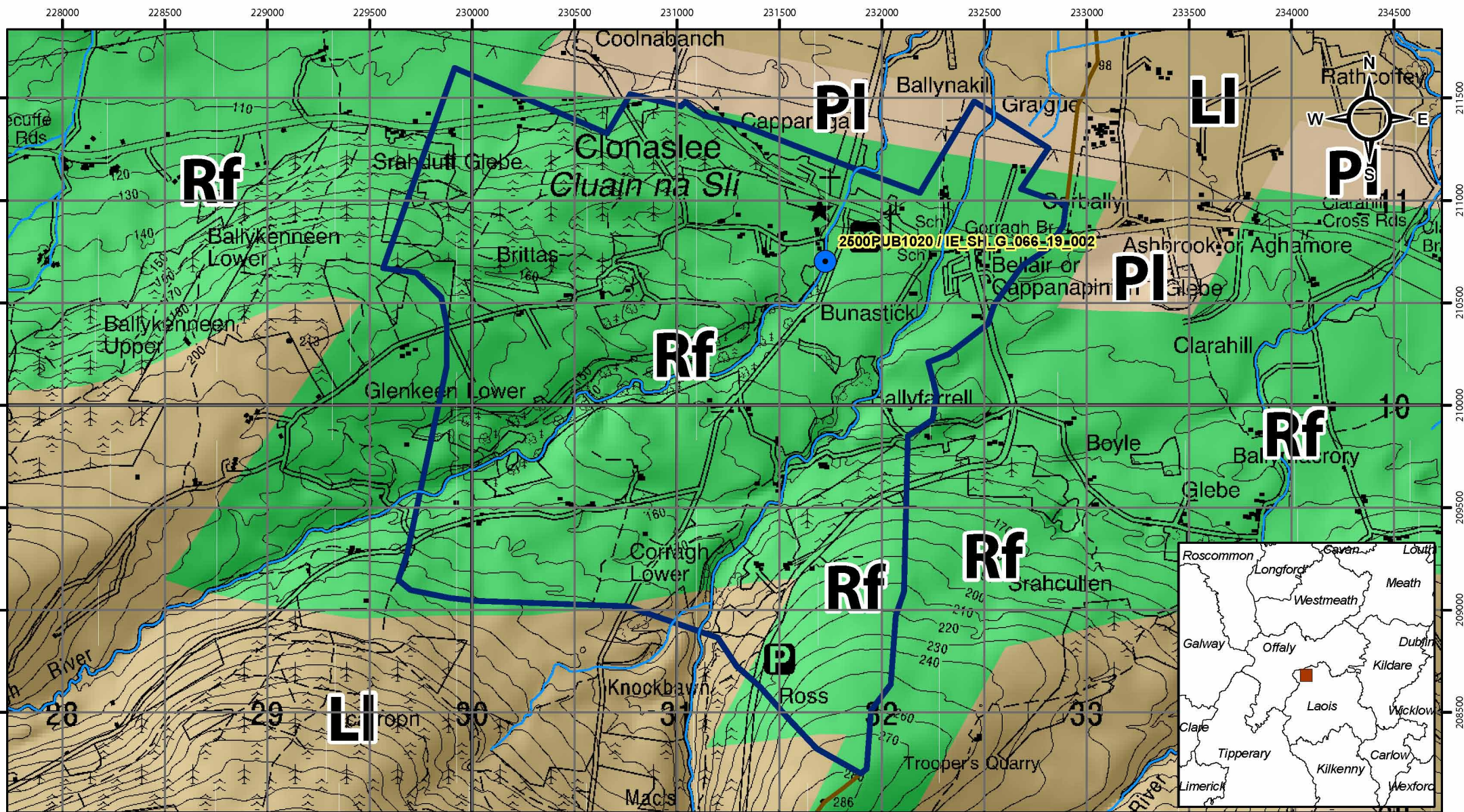


Location Map for Clonaslee Borehole - Forest

- Abstractions
- RiverBasinDistrict
- River
- Zone of Contribution

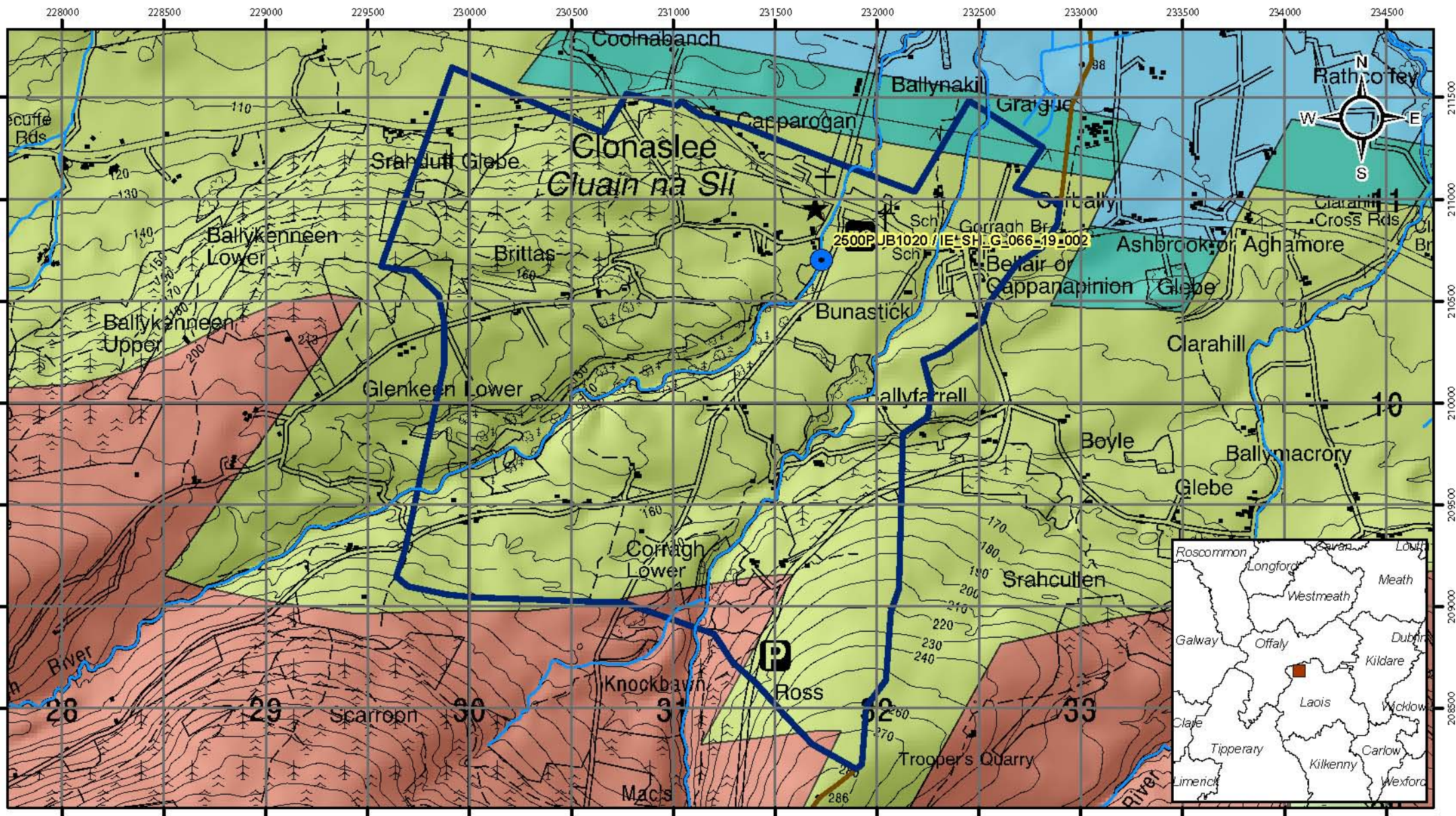
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0 0.25 0.5 1 km



Aquifer Category for Clonaslee Borehole - Forest

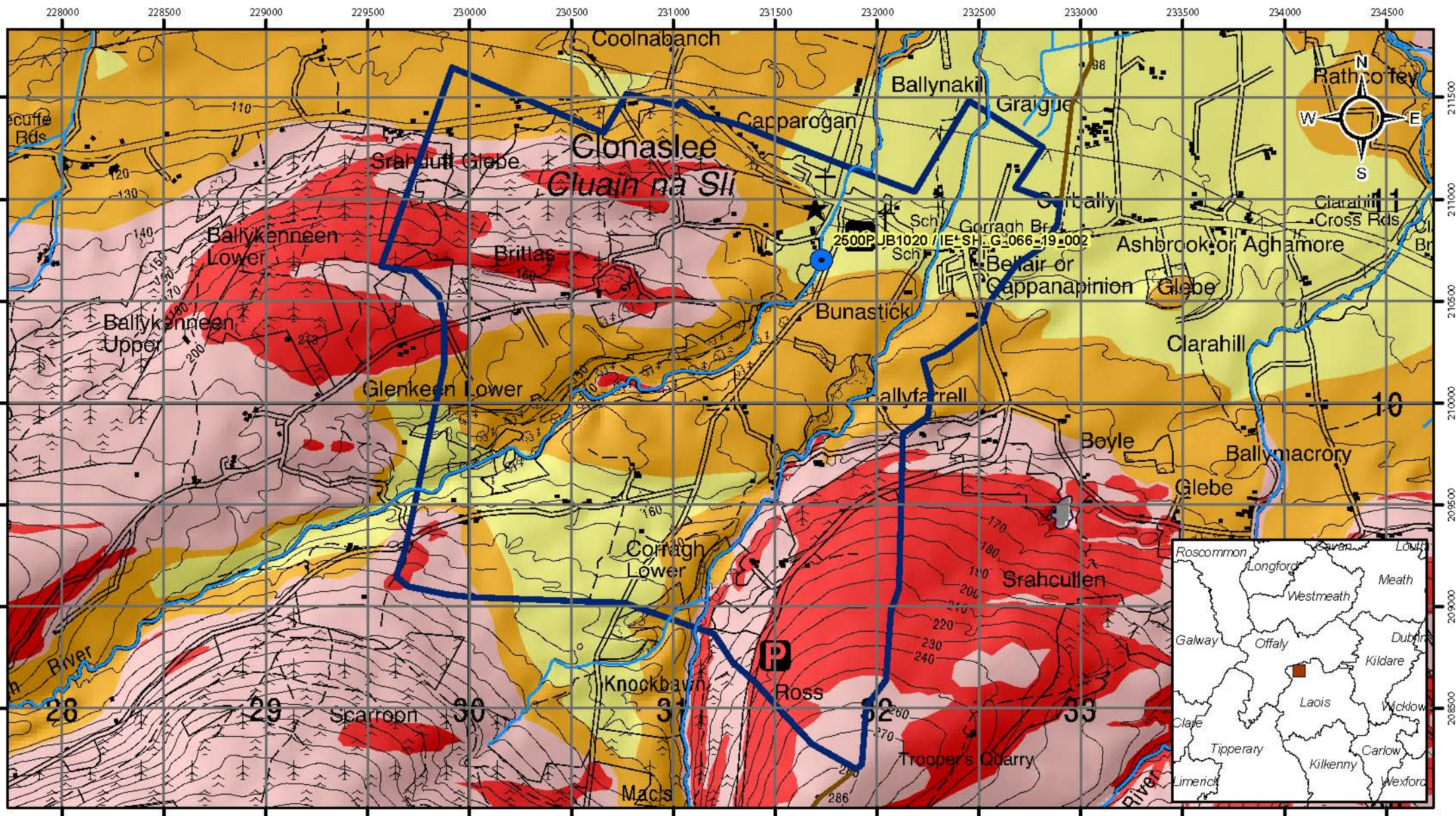
-  Abstractions
-  River
-  Zone of Contribution
-  RiverBasinDistrict
-  LI
-  PI
-  Rf



Bedrock Map for Clonaslee Borehole - Forest

- | | | |
|----------------------|------------------------------------|---|
| Abstractions | RiverBasinDistrict | Dinantian (early) Sandstones, Shales and Limestones |
| River | Devonian Kiltorcan-type Sandstones | Dinantian Lower Impure Limestones |
| Zone of Contribution | Devonian Old Red Sandstones | Silurian Metasediments and Volcanics |

0 0.25 0.5 1 km

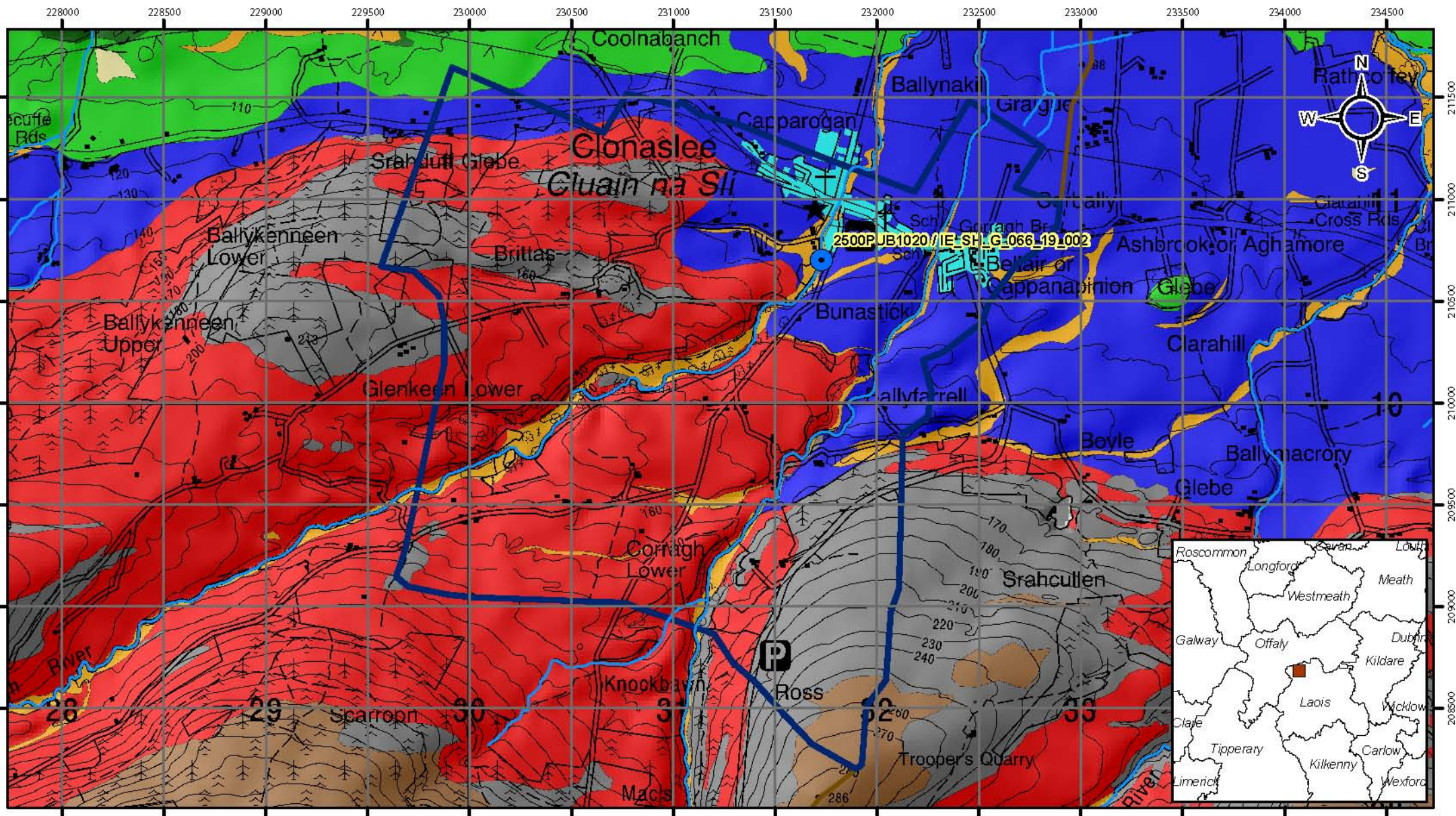


Groundwater Vulnerability for Clonaslee Borehole - Forest

- Abstractions
- River
- Zone of Contribution
- RiverBasinDistrict
- E (Extreme)
- H (High)
- M (Moderate)
- Water
- E (Rock near surface or Karst)

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0 0.25 0.5 1 km



Subsoils Map for Clonaslee Borehole - Forest



