

Water Framework Directive Groundwater Monitoring Programme

Site Information **Ballycastle PWS**



Ballycastle is a single spring that supplies the Ballycastle public water scheme. The average abstraction rate is 250 m³/d.



Mayo

August 2011

SITE INFORMATION					
Site Name:	Ballycastle PWS		County:	Mayo	
RBD:	WRBD		EU Reporting Code:	---	
Easting:	108384		GWB Name:	Belmullet	
Northing:	338373		GWB Code:	IE_WE_G_0057	
Site Use:	Drinking Water (PWS)		Drinking Water Code:	2200PUB1005	
Hydrometric Area:	33		Water Level Monitoring Network:	Level	Flow
Townland:	Ballyknock (ED Ballycastle)			N	N
Ownership:	Mayo County Council				
Water Quality Monitoring Network:	Surveillance		Operational (Point)		Operational (Diffuse)
	N		N		N
Site Comments:	Situated on an easterly exposed steep hill. Surrounded by steep cliffs and pasture.				

SITE DIRECTIONS	
Location and Access Information:	Drive west on the R134 from Ballycastle town. Take the first left outside of the town. Take a right at the next crossroads. The next junction is a fork (Y) in the road, keep left. Drive along this road for about 1.3km and take the next left turn. Follow the road around to the spring location which is visible by the road.
Additional Comments:	---

WELL INFORMATION					
Monitoring Point Type:	Spring	Abstraction Rate (m³/d):	250	Ground Elevation (m OD):	85
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:	The spring is one of many which appear along the base of an east-west exposed cliff-face, over a distance of 3-4 kms. This apparent spring horizon occurs at a break in topographic slope at an elevation of c. 90 mOD. It is likely stratigraphically controlled.		
Specific Capacity (m³/d/m):	---				
Static Water Level (m bgl):	---				
Scheme Name:	Ballycastle PWS	Number of Abstraction Points in the Scheme:	1	Source Report Available	N
Source Report Info:	---				
Scheme Summary:	Single spring feeding the Ballycastle PWS. The supply is gravity fed to a reservoir serving about 4,000 people.				

HYDROGEOLOGY								
GEOLOGY	Soil:	Deep poorly drained mineral (AminPD)					Subsoil Permeability:	Low
	Subsoil:	Tills (diamictons) (TDCSs)						
	Bedrock:	Dinantian (early) Sandstones, Shales and Limestones						
HYDROGEOLOGY	Aquifer Category:	PI	Vulnerability at Monitoring site:	High to Low		Flow Regime:	Poorly productive	
ZONE OF CONTRIBUTION	Estimated ZOC Size (km ²):	0.80	ZOC Delineated By:	CDM (HM)		Recharge Estimate (mm/yr):	100	
	ZOC Delineation Comments:	ZOC is delineated on the basis of a recharge estimate, topography and the abstraction rate. The spring has some overflow which is not quantified, but which on the day of the site visit amounted to approximately 2 l/s. For purposes of ZOC delineation, the abstraction rate was increased by 25% to account for some overflow. A 50% increase cannot be supported on account of the PI aquifer designation. As well, other springs along a spring horizon require area for their respective ZOCs. The ZOC drawn for the Ballycastle spring is therefore a judged ZOC with the above factors taken into account.						
Groundwater Vulnerability within ZOC (% area):	Extreme (X)	Extreme (E)	High	Moderate	Low	High to Low	Unclassified	
	13.87	22.28	0	0	0	63.85	0	
HYDROCHEMISTRY								
Hydrochemical Signature:	---		Additional Water Chemistry Information:	Few data available				
Alkalinity (mg/l HCO ₃):	Average:	Range:						
	---	---						
Hardness (mg/l CaCO ₃):	Average:	Range:						
	---	---						
Conductivity (uS/cm):	Average:	Range:						
	412	395-421						
Monitoring Record Period:	From:	To:						
	2006	2007						
RISK ASSESSMENT								
Pressure (e.g., Nitrates, Phosphates, Abstractions):	---		Typical Contaminants:	---				
Risk Category:	Not at risk, low confidence		GWB Status:	Good				
Impact Potential within ZOC (% area):	Extreme:	High:	Moderate:	Low:	Negligible:			
	0.00	0.00	7.35	0.04	92.62			
OTHER INFORMATION								
The raw water is chlorinated using liquid chlorine.								



Site Location



Pump House



Spring Overflow

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 NO₃)

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 µS/cm) / Drinking Water Test (1,875 µS/cm)

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

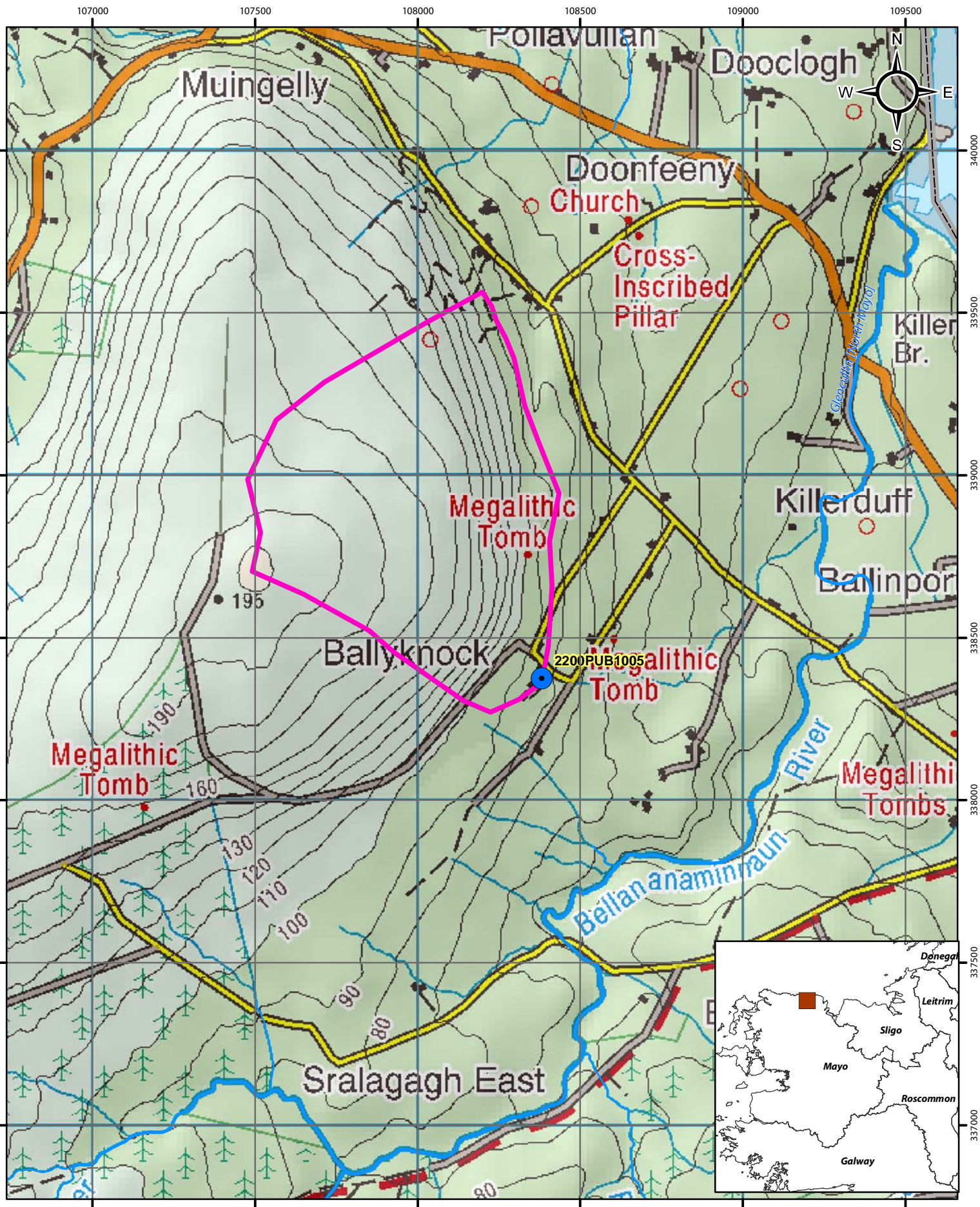
General Downgradient Distances

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
Ll, Pl	60 m

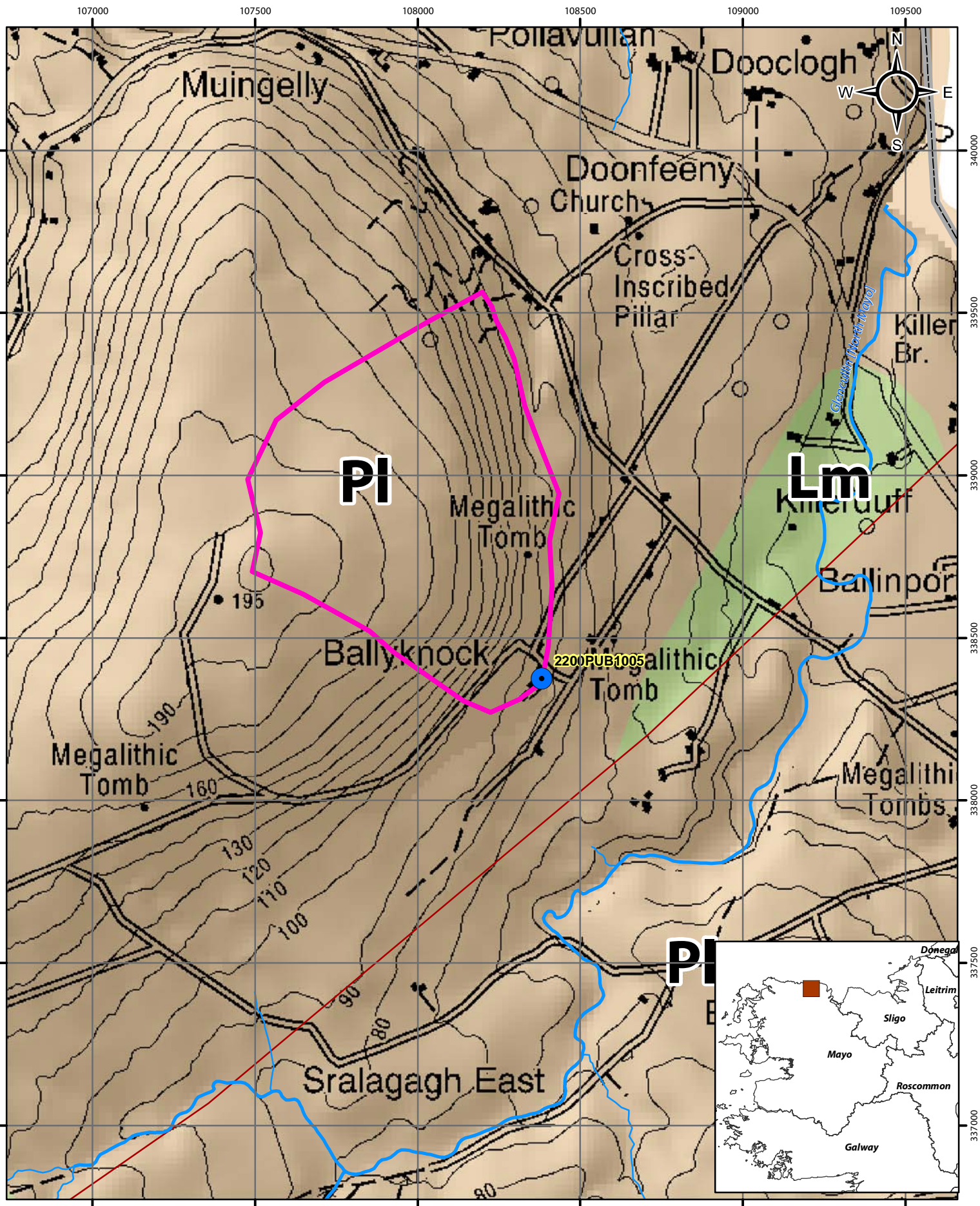
It is assumed that groundwater downgradient of a spring cannot flow back up to the spring, however a precautionary 30m buffer is generally applied which allows for instances where pumping under dry weather periods may induce a drawdown or where the ground may be sloping toward the spring from the downgradient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



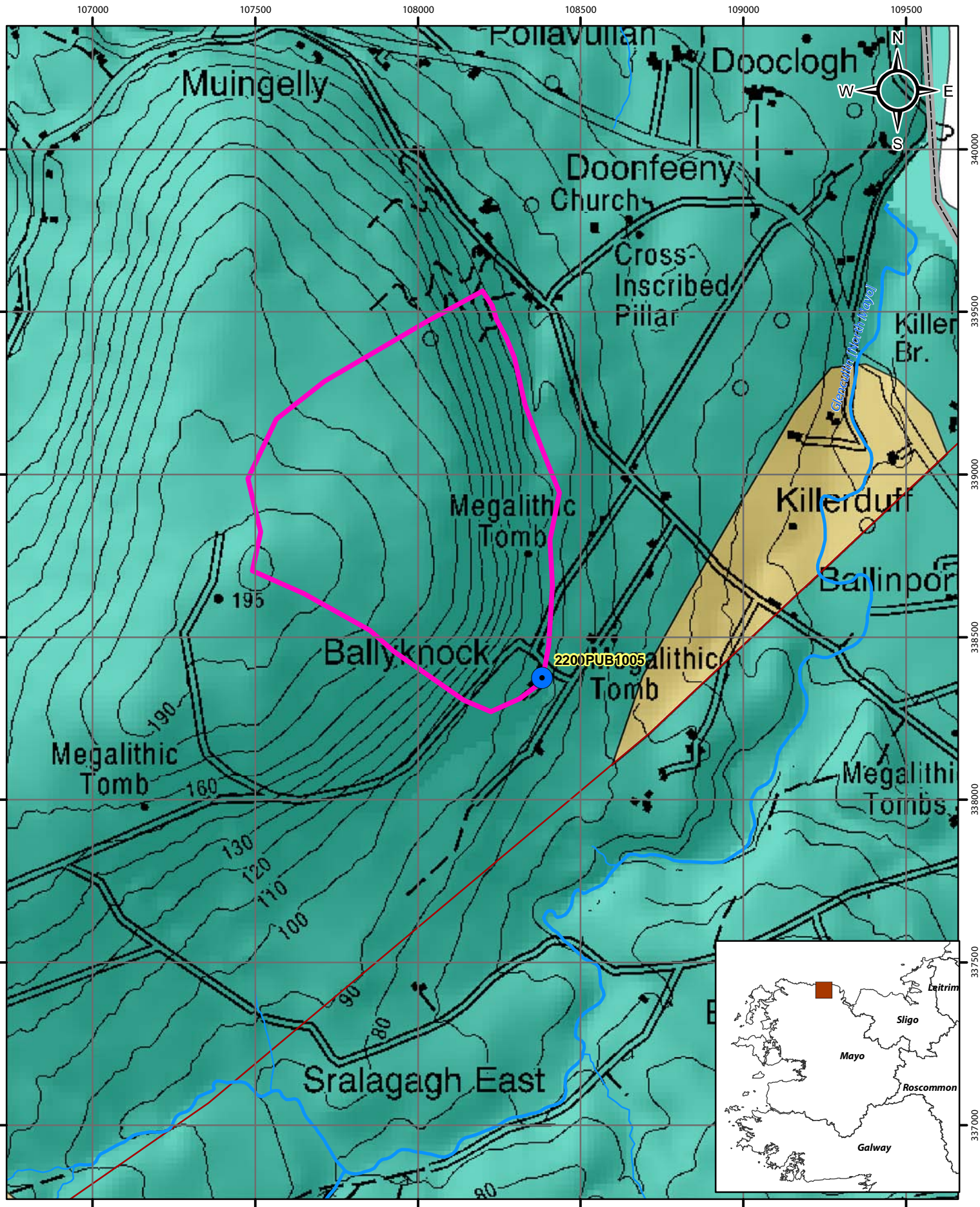
Location Map for BALLYCASTLE WSS

- Abstractions
- Zone of Contribution
- River



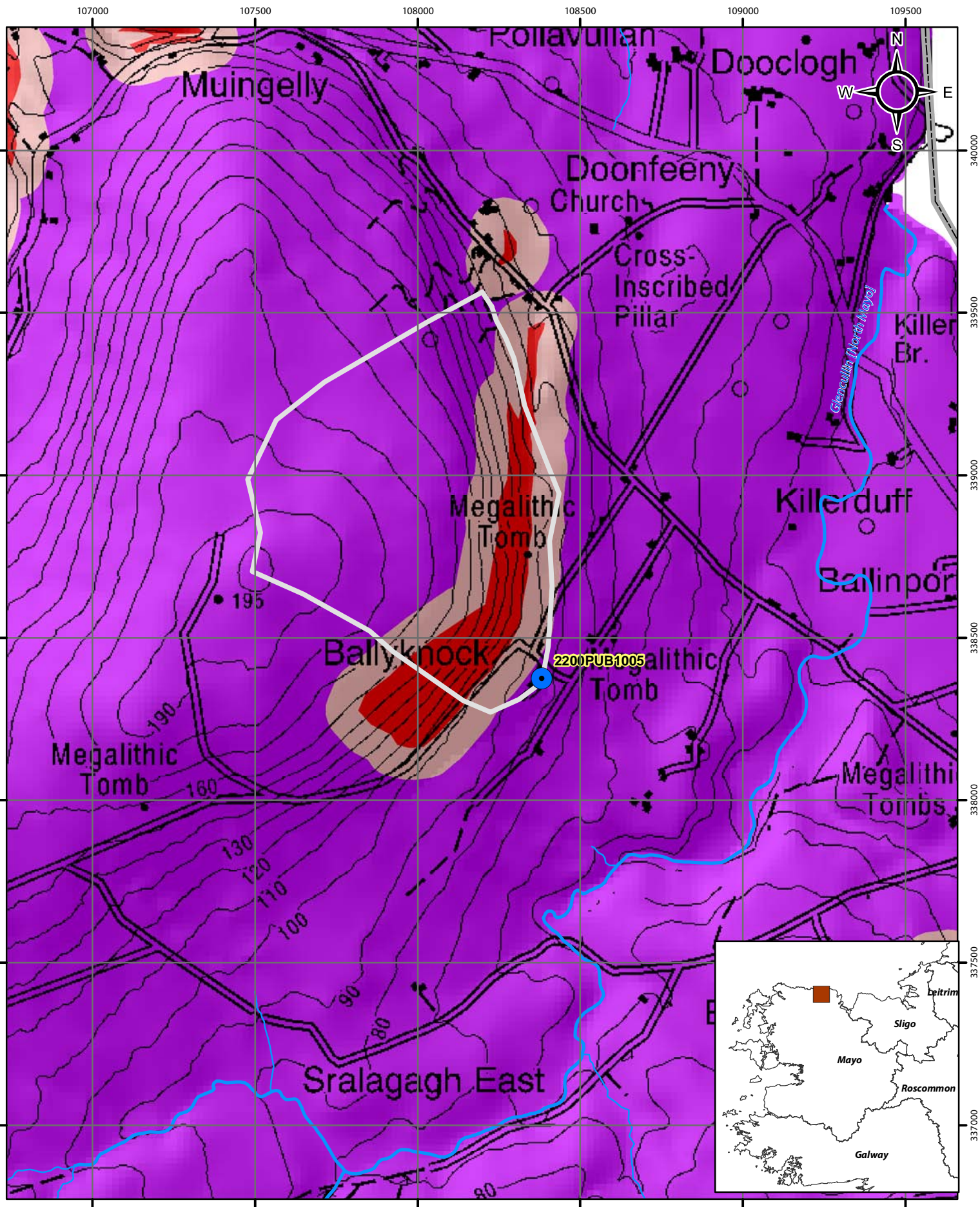
Aquifer Category Map for BALLYCASTLE WSS

- Abstractions
- Lm
- Fault
- Zone of Contribution
- PI
- River

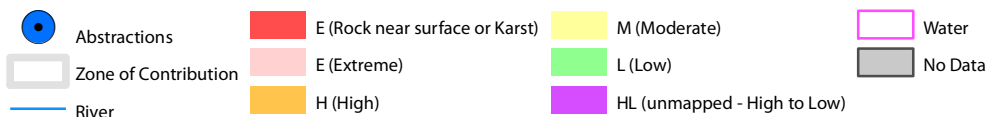


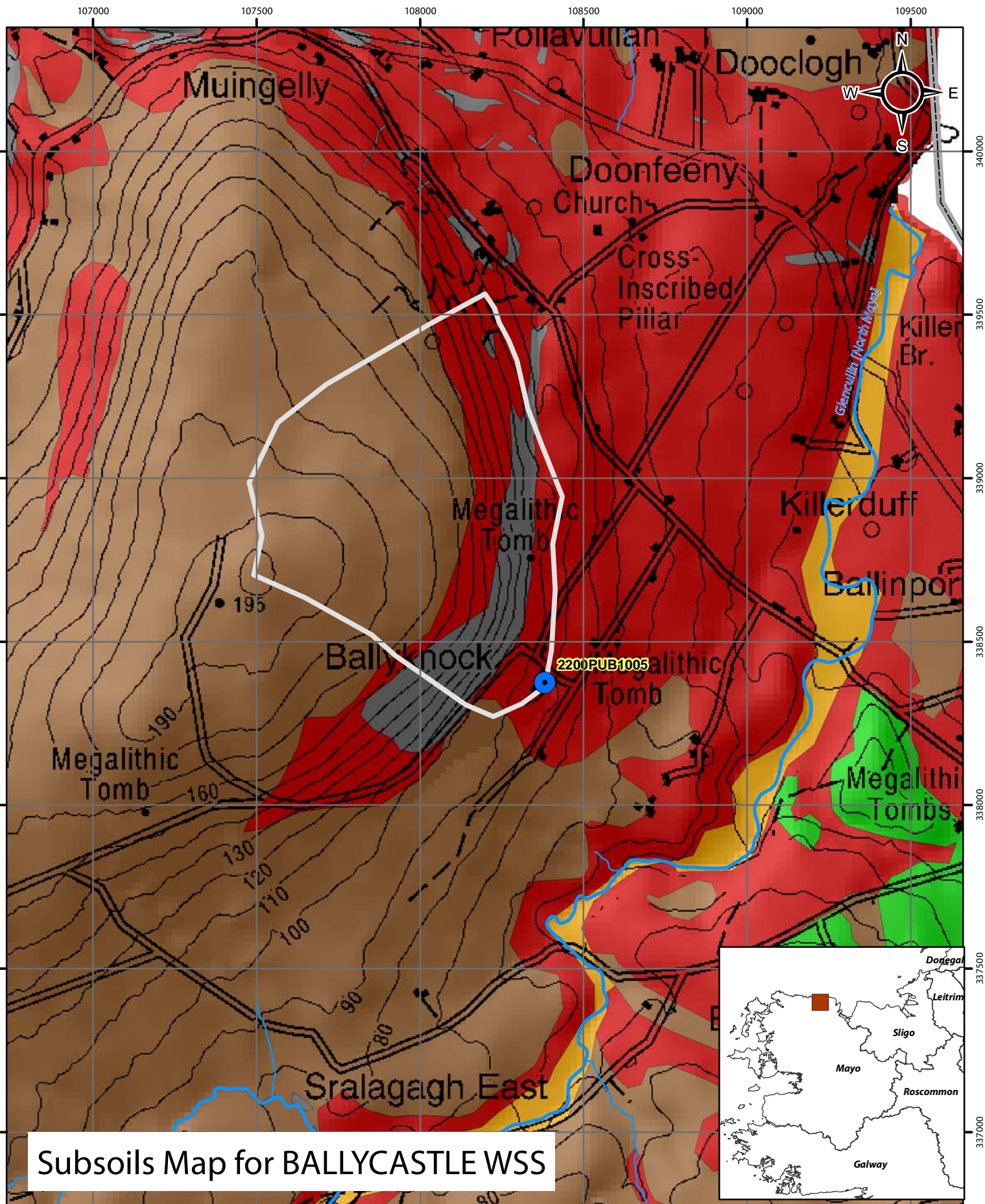
Bedrock Map for BALLYCASTLE WSS

- Abstractions
- ▭ Zone of Contribution
- River
- ▭ Dinantian (early) Sandstones, Shales and Limestones
- ▭ Dinantian Pure Bedded Limestones
- ▭ Dinantian Sandstones
- Fault



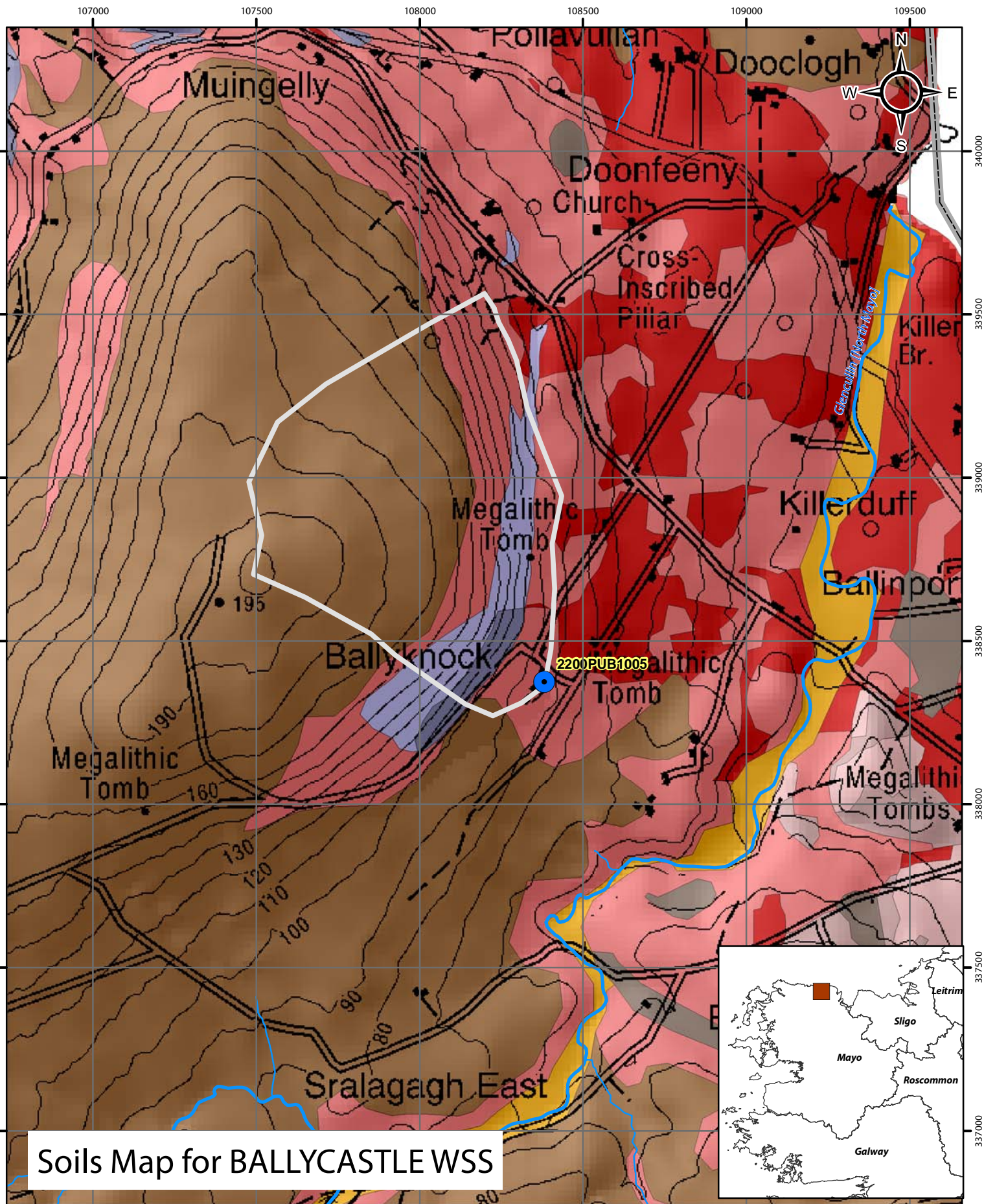
Groundwater Vulnerability Map for BALLYCASTLE WSS





Subsoils Map for BALLYCASTLE WSS

- | | | |
|----------------------|---|---|
| Abstractions | Alluvium | Bedrock outcrop or subcrop |
| Zone of Contribution | Blanket peat | Till derived from Devonian and Carboniferous sandstones |
| River | Cutover raised peat | Water |
| | Gravels derived from Lower Palaeozoic and Devonian sandstones | |



Soils Map for BALLYCASTLE WSS

