

Water Framework Directive Groundwater Monitoring Programme

Site Information **Carraignabhfear PWS**



Carraignabhfear PWS consists of two boreholes used as a public water supply. The abstraction rate is 280m³/day. A source report was completed in 2009.



Cork

August 2011

SITE INFORMATION					
Site Name:	Carraignabhfeair PWS		County:	Cork	
RBD:	SWRBD		EU Reporting Code:	IE_SW_G_004_04_005	
Easting:	167290		GWB Name:	Ballinhassig_1	
Northing:	82106		GWB Code:	IE_SW_G_004	
Site Use:	Drinking Water (PWS)		Drinking Water Code:	0500PUB3301	
Hydrometric Area:	19		Water Level Monitoring Network:	Level	Flow
Townland:	CARRIGNAVAR			N	N
Ownership:	Cork County Council				
Water Quality Monitoring Network:	Surveillance		Operational (Point)		Operational (Diffuse)
	N		N		Y
Site Comments:	Carrignabhfeair PWS is a 75m deep borehole situated in Devonian Old Red Sandstones and is used as a public water supply. The borehole is included in the operational chemical network.				
SITE DIRECTIONS					
Location and Access Information:	located approximately 200 m north of Carraig na bhFear village. The wells are located in a green area which can be access via a lane leading off to the northeast from the third class road which runs through the centre of the village. There is a school located 100 m to the south of BH1, a GAA pitch 50 m to the east of BH2				
Additional Comments:	---				
WELL INFORMATION					
Monitoring Point Type:	BH	Abstraction Rate (m³/d):	280	Ground Elevation (m OD):	120
Borehole Log Available:	---	Total Drilled Depth (m bgl):	75	Depth to Bedrock (m bgl):	---
Top of Casing (m agl):	---	Upper Casing Diameter (mm):	150	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):	2.3 (Artesian in winter)				
Scheme Name:	Carraig Na bhFear PWS	Number of Abstraction Points in the Scheme:	2	Source Report Available	Y
Source Report Info:	Report prepared by OCM/TOBIN/CDM 2010				
Scheme Summary:	Carraig na bhFear consists of two boreholes pumping together. BH-1 was drilled in 1994. BH-2 was commissioned in 2004 to augment the supply. The water sample is a mixture of both boreholes				

HYDROGEOLOGY								
GEOLOGY	Soil:	Deep well drained mineral (AminDW)					Subsoil Permeability:	Moderate
	Subsoil:	Tills (diamictos) (TDSs)						
	Bedrock:	Devonian Old Red Sandstones						
HYDROGEOLOGY	Aquifer Category:	LI	Vulnerability at Monitoring site:	High	Flow Regime:	Poorly productive		
ZONE OF CONTRIBUTION	Estimated ZOC Size (km ²):	0.83	ZOC Delineated By:	OCM	Recharge Estimate (mm/yr):	199		
	ZOC Delineation Comments:	O'Callaghan Moran and Associates (OCM) delineated a ZOC as based on topography, recharge and abstraction rate as part of the 2009 Source Protection Report. See the source report for details.						
Groundwater Vulnerability within ZOC (% area):	Extreme (X)	Extreme (E)	High	Moderate	Low	High to Low	Unclassified	
	0	0	100	0	0	0	0	
HYDROCHEMISTRY								
Hydrochemical Signature:	Mg-HCO ₃		Additional Water Chemistry Information:	During the monitoring period: The average nitrate concentration was 32 mg/l NO ₃ and the maximum nitrate concentration was 38 mg/l NO ₃ . The average ammonium concentration was 0.023 mg/l N and the maximum ammonium concentration was 0.16 mg/l N. The average molybdate reductive phosphorus (MRP) concentration was 0.028 mg/l P and the maximum MRP concentration was 0.069 mg/l P. The average chloride concentration was 16 mg/l Cl and the maximum chloride concentration was 19 mg/l Cl.				
Alkalinity (mg/l HCO ₃):	Average:	Range:						
	77	55-100						
Hardness (mg/l CaCO ₃):	Average:	Range:						
	109	90-128						
Conductivity (uS/cm):	Average:	Range:						
	257	164-311						
Monitoring Record Period:	From:	To:						
	2007	2010						
RISK ASSESSMENT								
Pressure (e.g., Nitrates, Phosphates, Abstractions):	Diffuse		Typical Contaminants:	Nitrate				
Risk Category:	At risk, high confidence		GWB Status:	Good				
Impact Potential within ZOC (% area):	Extreme:	High:	Moderate:	Low:	Negligible:			
	0.00	100.00	0.00	0.00	0.00			
OTHER INFORMATION								



Pumphouse and Borehole Housing



Borehole



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).

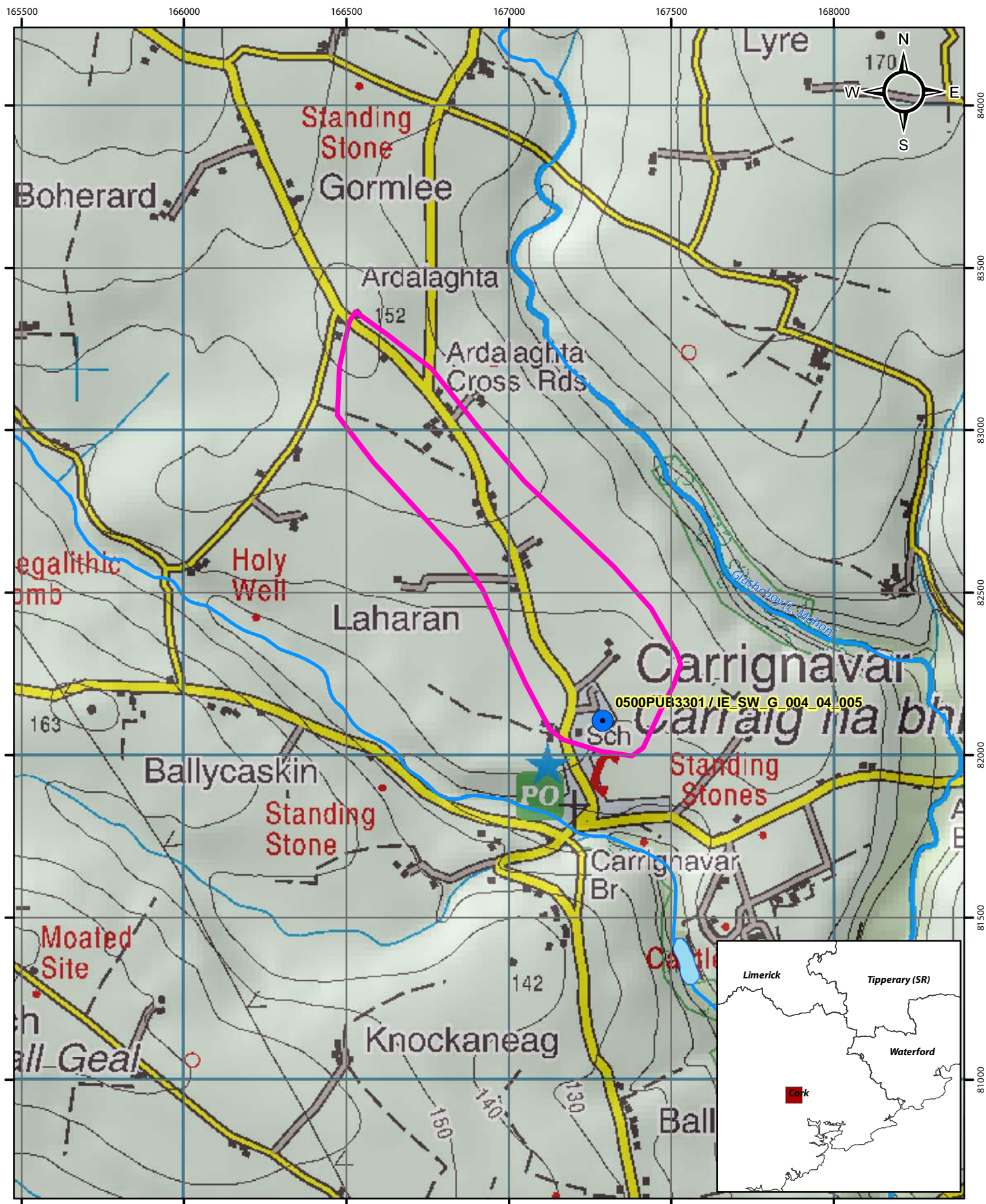
General Downgradient Distances

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

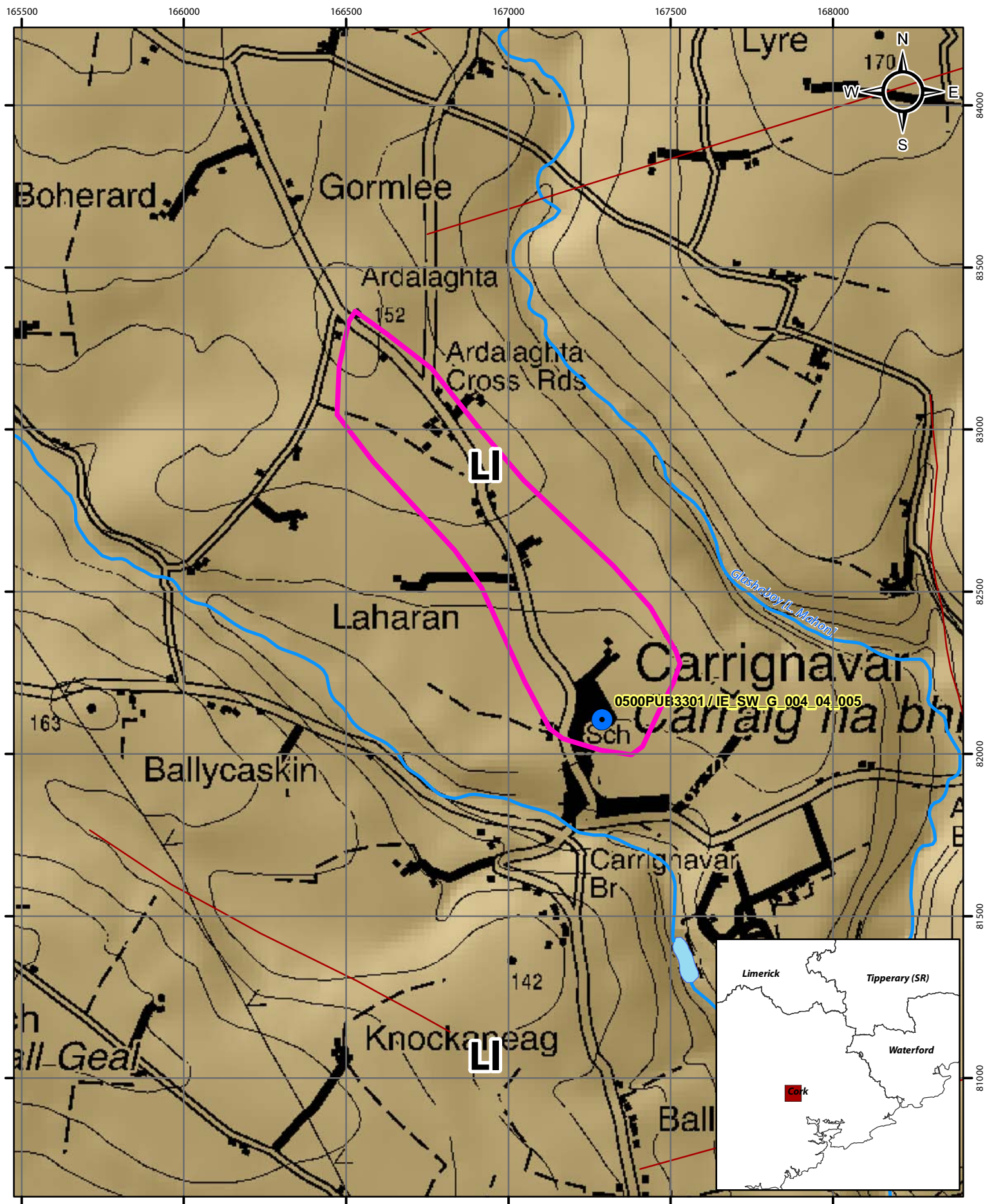


Location Map for Carraignabh fear PWS






-  Abstractions
-  River
-  Zone of Contribution

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0 0.25 0.5 1 km

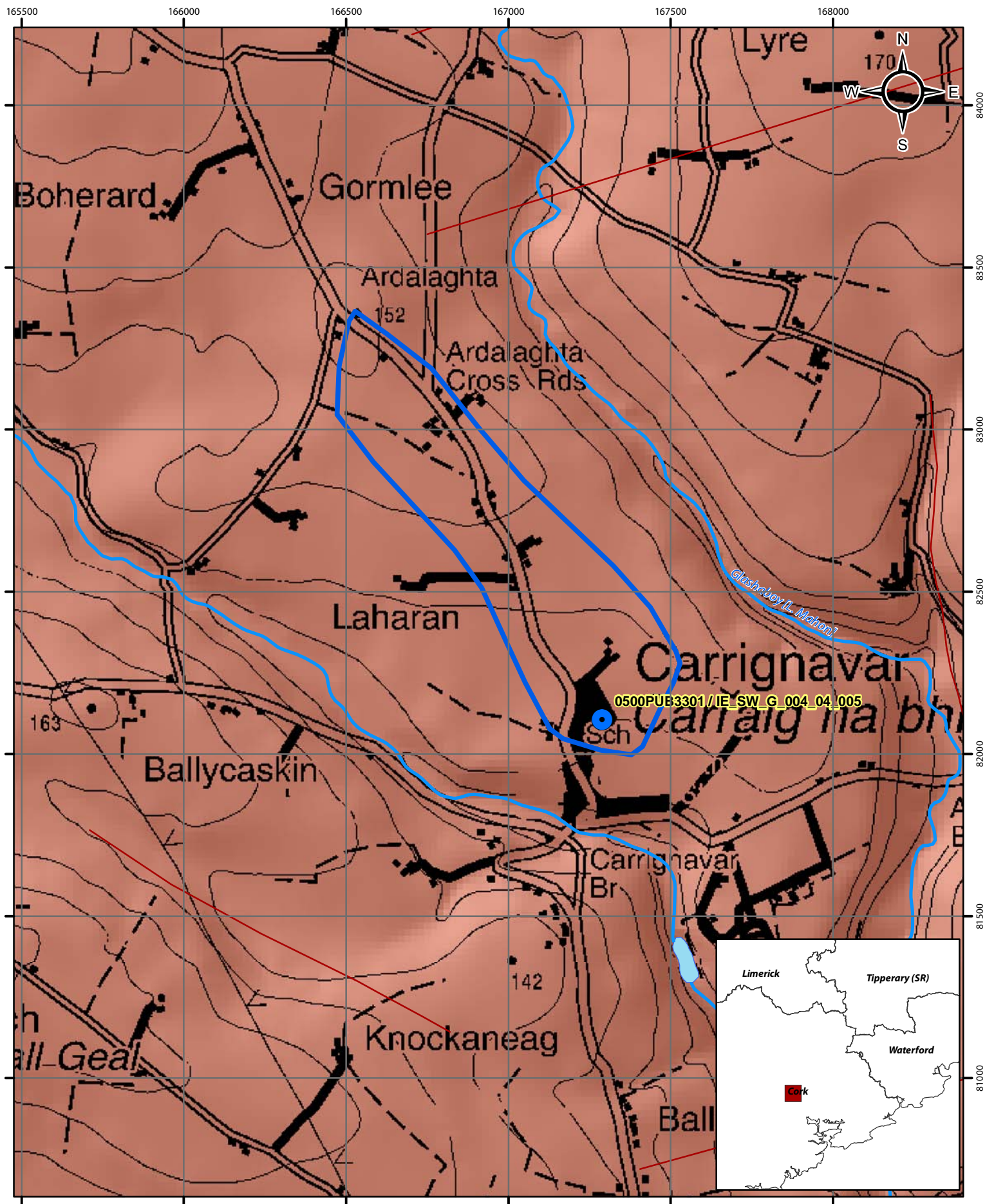


Aquifer Category Map for Carraignabh fear PWS






-  Abstractions
-  River
-  Zone of Contribution
-  LI
-  Fault

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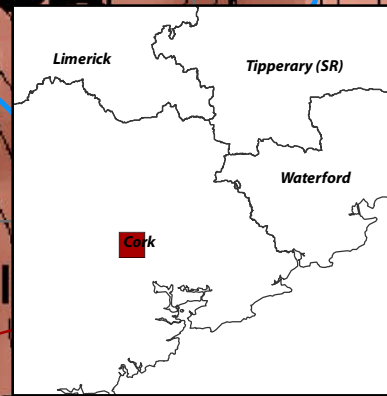


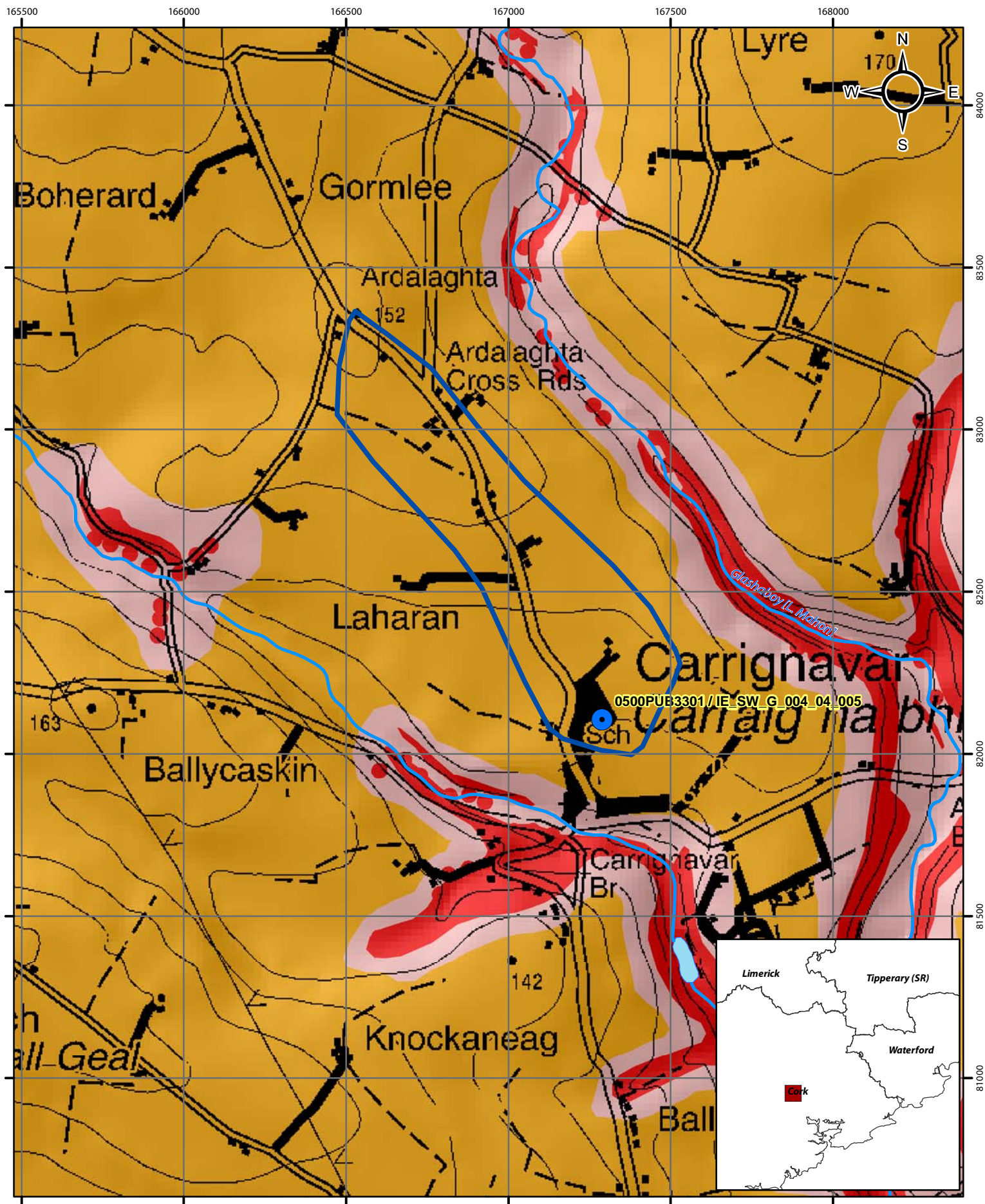
Bedrock Map for Carrignabh fear PWS

-  Abstractions
-  River
-  Zone of Contribution
-  Devonian Old Red Sandstones
-  Fault

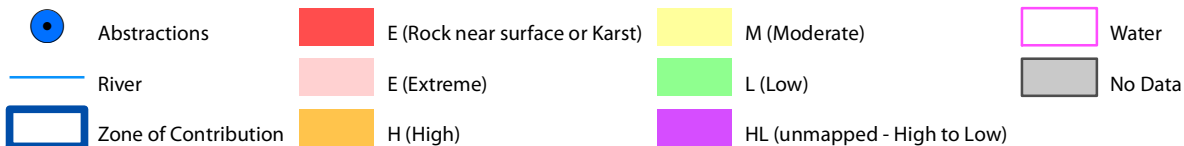
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0 0.25 0.5 1 km

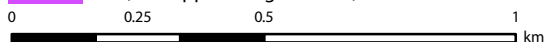


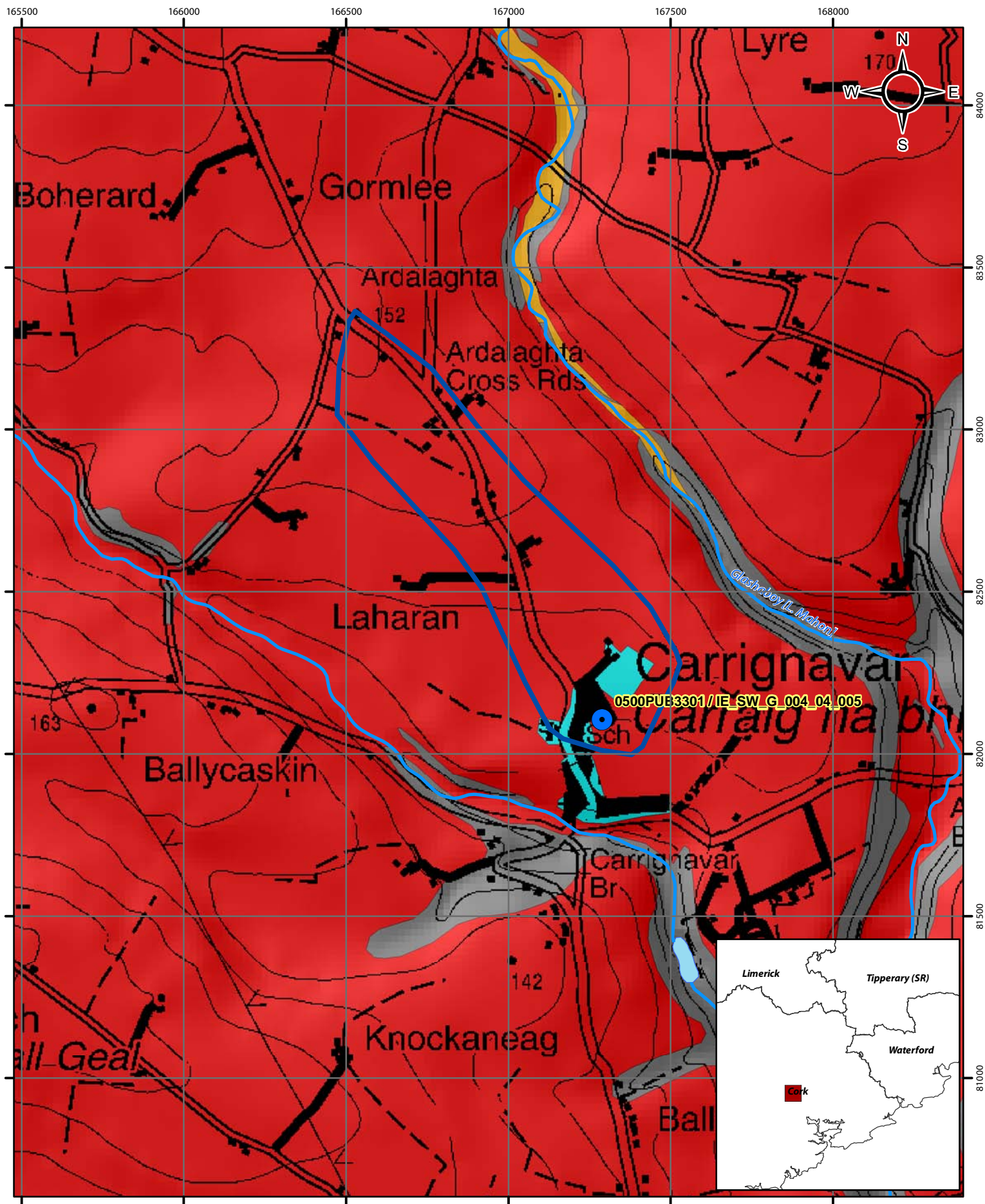


Groundwater Vulnerability Map for Carrignabhfeair PWS

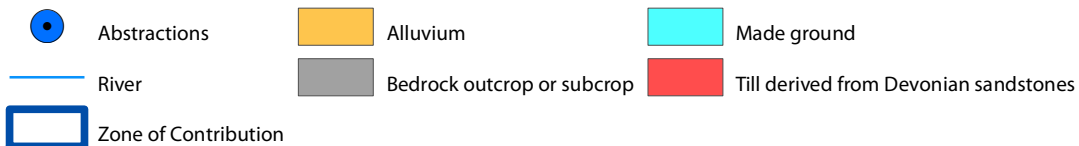


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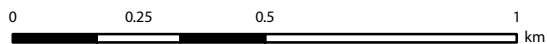


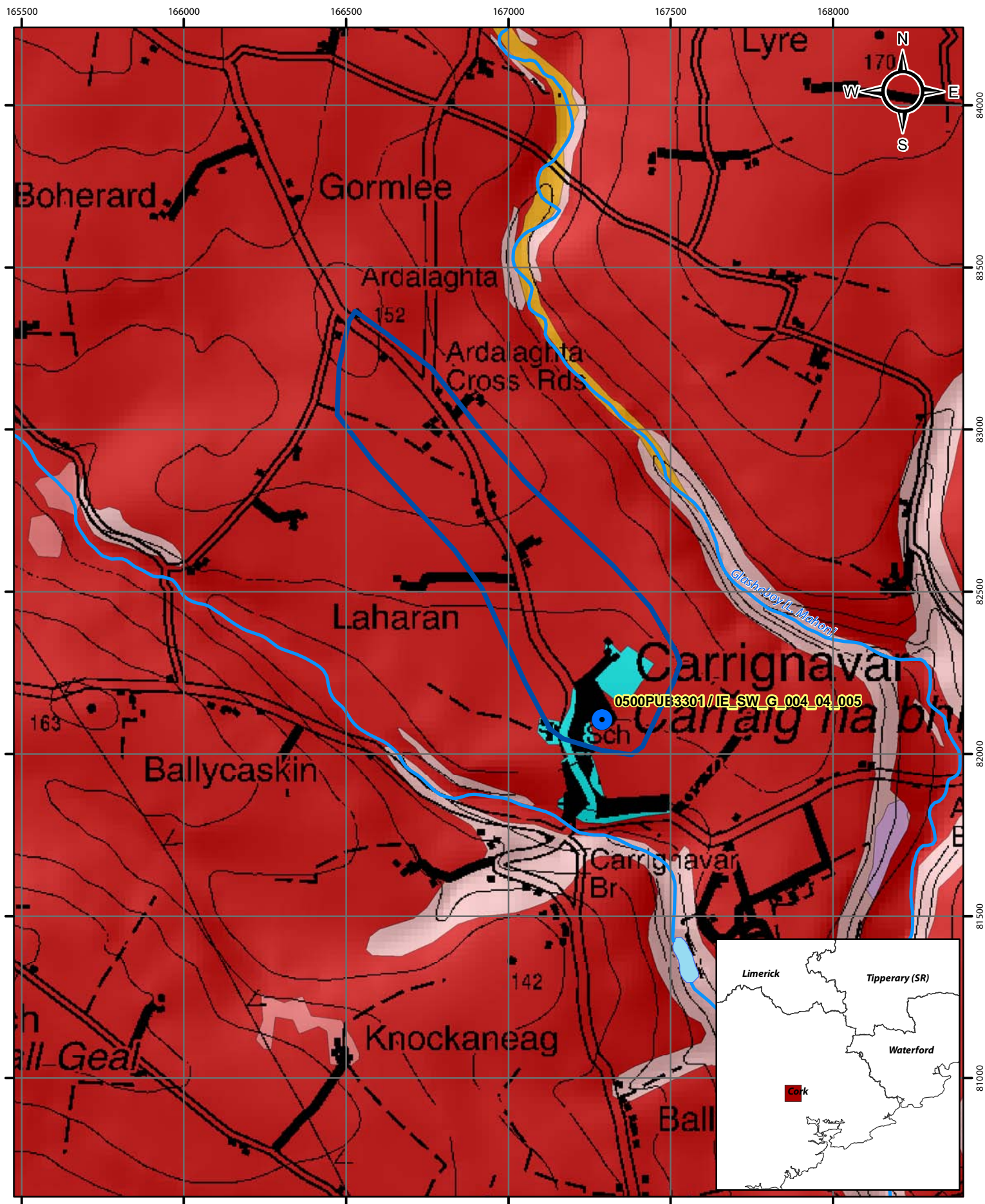


Subsoils Map for Carrignabh fear PWS

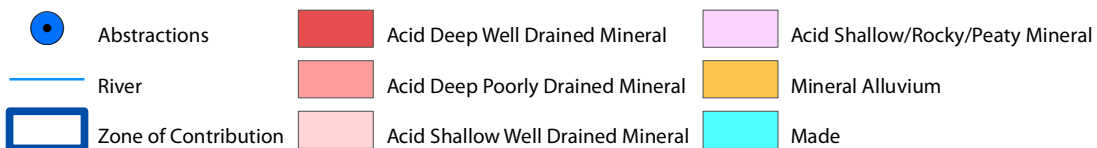


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Soils Map for Carraignabh fear PWS



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