

Water Framework Directive Groundwater Monitoring Programme

Site Information **Charleville WS (BH 3)**



Charleville WS (BH-3) is a borehole used as a public water supply. It is one of three boreholes pumping. The total abstraction rate is 4290m³/day.



Cork

August 2011

SITE INFORMATION					
Site Name:	Charleville WS (BH 3)		County:	Cork	
RBD:	SWRBD		EU Reporting Code:	IE_SW_G_082_04_008	
Easting:	153061		GWB Name:	Mitchelstown 1	
Northing:	114603		GWB Code:	IE_SW_G_082	
Site Use:	Drinking Water (PWS)		Drinking Water Code:	0500PUB1103	
Hydrometric Area:	18		Water Level Monitoring Network:	Level	Flow
Townland:	BALLYNAGERAGH			N	N
Ownership:	Cork County Council				
Water Quality Monitoring Network:	Surveillance		Operational (Point)		Operational (Diffuse)
	N		N		Y
Site Comments:	---				
SITE DIRECTIONS					
Location and Access Information:	Take N20 south out of Charleville. After the road crosses the railway take second right down the Ballyhoura Way for Churchtown. Drive along road until arrive at a Red and Yellow Council building.				
Additional Comments:	---				
WELL INFORMATION					
Monitoring Point Type:	BH	Abstraction Rate (m³/d):	1666	Ground Elevation (m OD):	46
Borehole Log Available:	---	Total Drilled Depth (m bgl):	73	Depth to Bedrock (m bgl):	11
Top of Casing (m agl):	---	Upper Casing Diameter (mm):	150	Lower Casing Diameter (mm):	---
Final Borehole Depth (m):	Screened to Bedrock - 11m	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):	1800	Comments on Monitoring Site:	MCOS did original work on the well field. Description of subsoils - overburden.		
Specific Capacity (m³/d/m):	62				
Static Water Level (m bgl):	artesian				
Scheme Name:	Charleville	Number of Abstraction Points in the Scheme:	3	Source Report Available	N
Source Report Info:	---				
Scheme Summary:	The scheme comprises three borehole pumping at the same time. The boreholes pump 195 m³/hour for 20-22 hours per day. Borehole BH3 pumps approximately 1,666m³/day				

HYDROGEOLOGY							
GEOLOGY	Soil:	Alluviums (AlluvMIN)				Subsoil Permeability:	Moderate
	Subsoil:	Alluvium (A)					
	Bedrock:	Dinantian Lower Impure Limestones					
HYDROGEOLOGY	Aquifer Category:	Rf (LI at surface)	Vulnerability at Monitoring site:	High to Low		Flow Regime:	Productive fissured bedrock
ZONE OF CONTRIBUTION	Estimated ZOC Size (km ²):	1.18	ZOC Delineated By:	TOBIN (CK)		Recharge Estimate (mm/yr):	450
	ZOC Delineation Comments:	The ZOC was delineated for BH3, and is based on topography, defining the likely shallow groundwater flow component / surface catchment to the borehole. There is insufficient area to account for the abstraction rate of 1666m3/d. It is likely to be a combination of the fault and possibly gravels underlying the alluvium that feed the groundwater. The indications are that the borehole is into sandstone overlain by 11m of 'overburden'. There may be a significant contribution from the subsoils and possibly the river.					
Groundwater Vulnerability within ZOC (% area):	Extreme (X)	Extreme (E)	High	Moderate	Low	High to Low	Unclassified
	6.3	16.86	0	0	0	76.85	0
HYDROCHEMISTRY							
Hydrochemical Signature:	Ca-HCO3		Additional Water Chemistry Information:	During the monitoring period: The average nitrate concentration was 14 mg/l NO3 and the maximum nitrate concentration was 22 mg/l NO3. The average ammonium concentration was 0.014 mg/l N and the maximum ammonium concentration was 0.1 mg/l N. The average molybdate reductive phosphorus (MRP) concentration was 0.037 mg/l P and the maximum MRP concentration was 0.061 mg/l P. The average chloride concentration was 20 mg/l Cl and the maximum chloride concentration was 24.9 mg/l Cl.			
Alkalinity (mg/l HCO3):	Average:	Range:					
	200	169-280					
Hardness (mg/l CaCO3):	Average:	Range:					
	211	165-262					
Conductivity (uS/cm):	Average:	Range:					
	431	329-548					
Monitoring Record Period:	From:	To:					
	1995	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	98.28	0.00	0.00	1.72		
OTHER INFORMATION							



Borehole Housing



Sampling Point



Access

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).

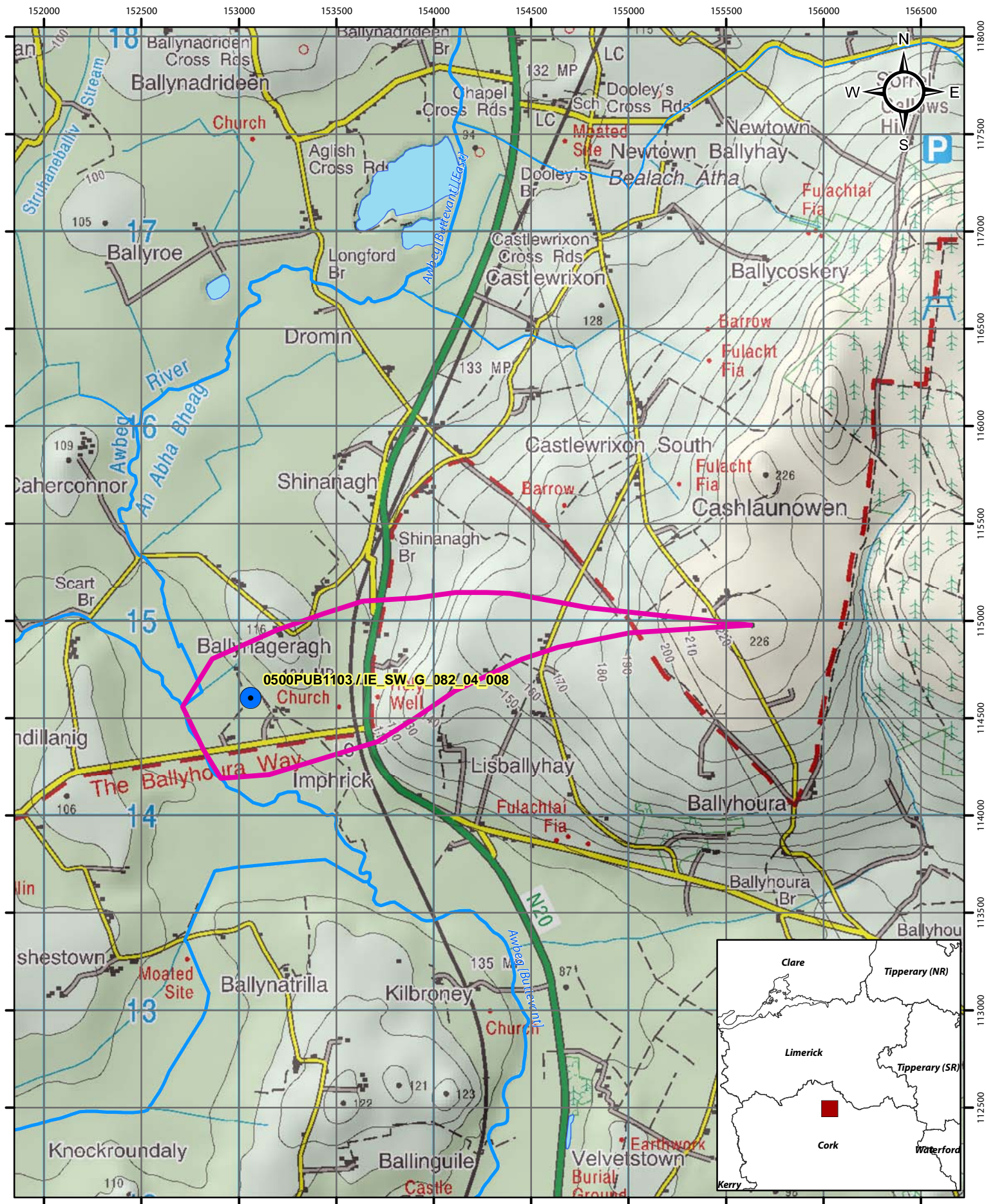
General Downgradient Distances

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:	28/02/2011
Version 1:	Prepared by	TOBIN (CK)	Date:	Feb 2011
Version 2:	Prepared by		Date:	
Version 3:	Prepared by		Date:	
Version 4:	Prepared by		Date:	



Location Map for Charleville WS

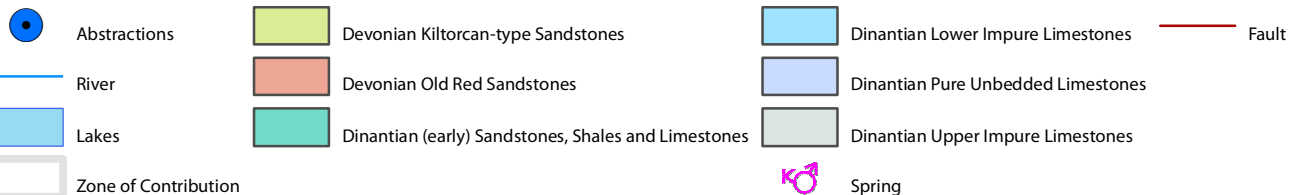
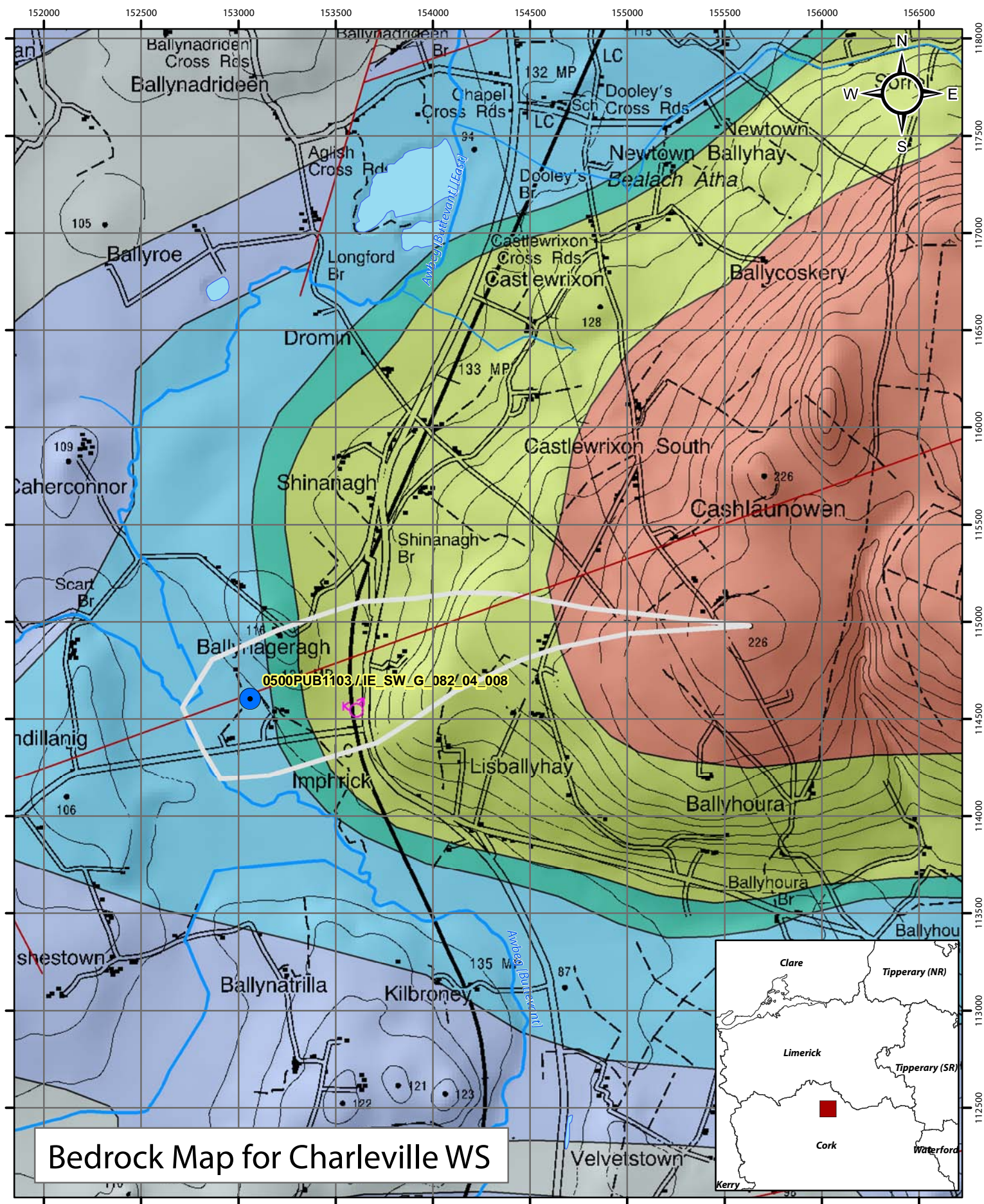
 Abstractions
  Zone of Contribution

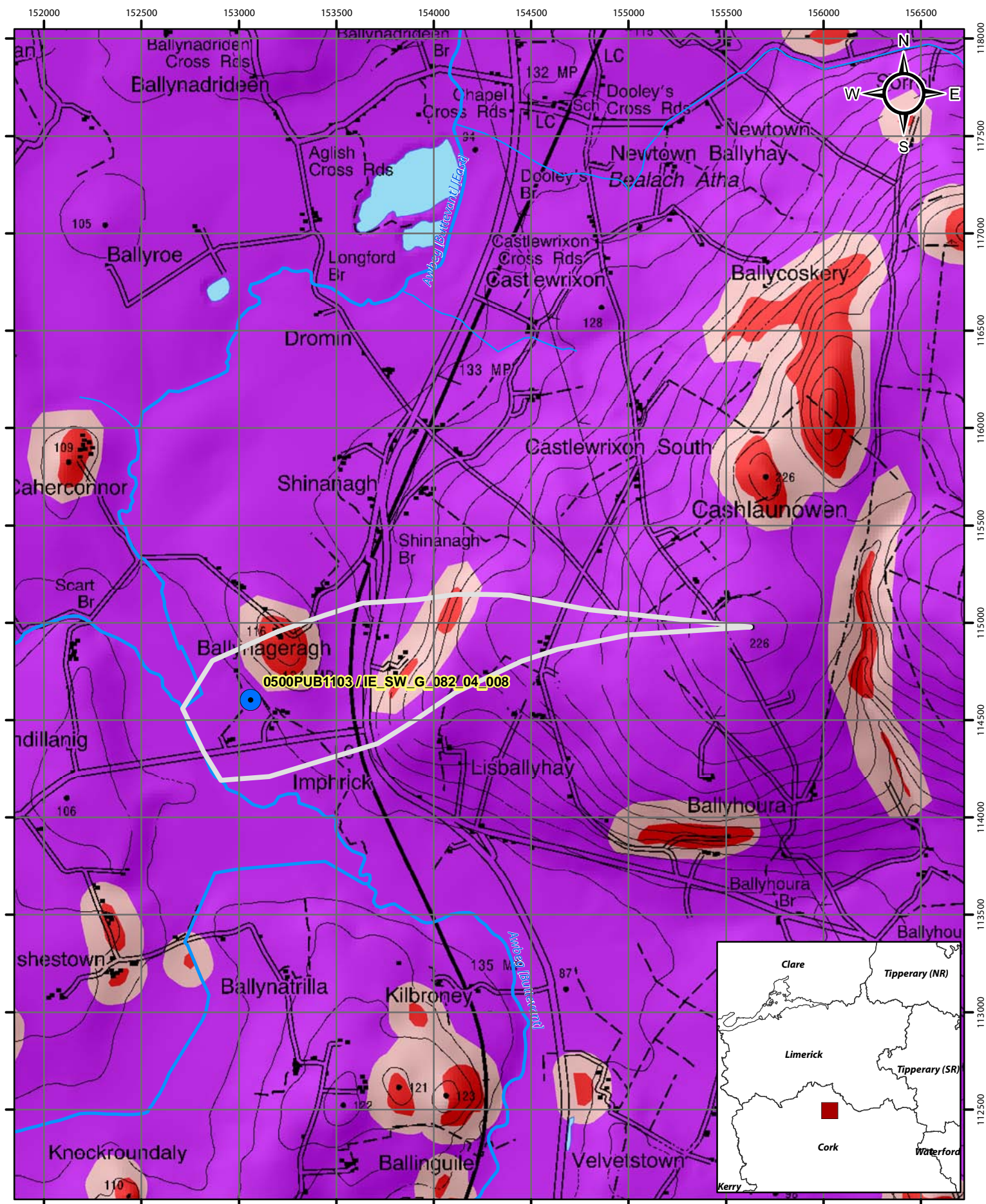
 River

 Lakes

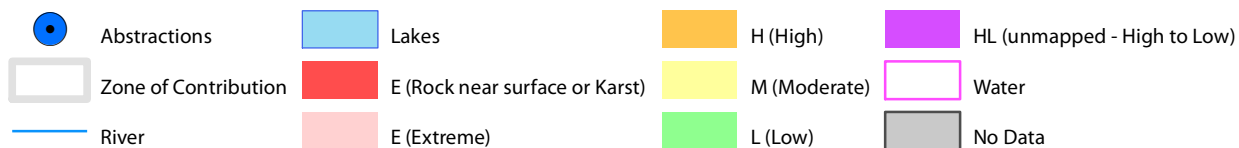
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0 0.25 0.5 1 km



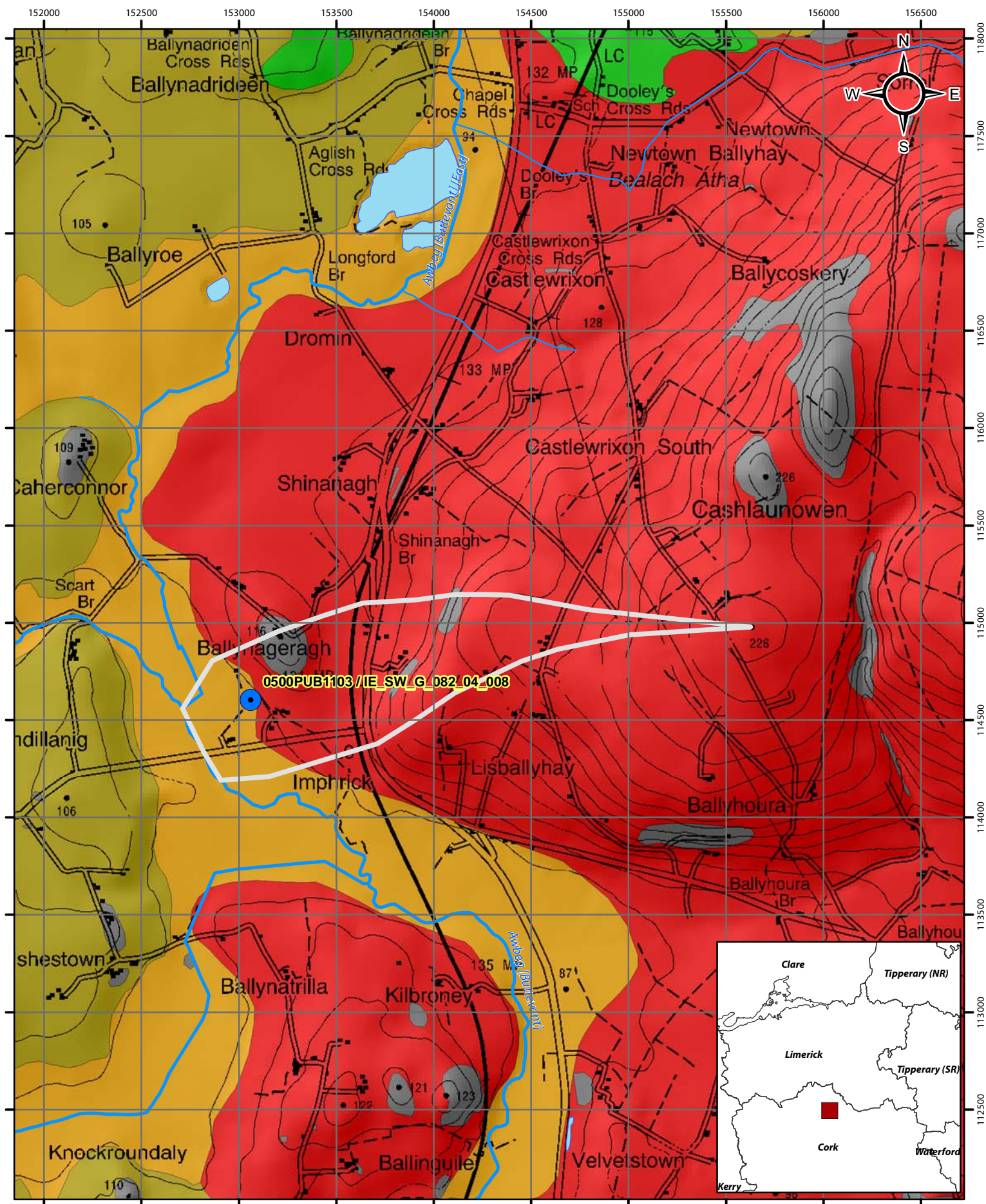


Groundwater Vulnerability Map for Charleville WS

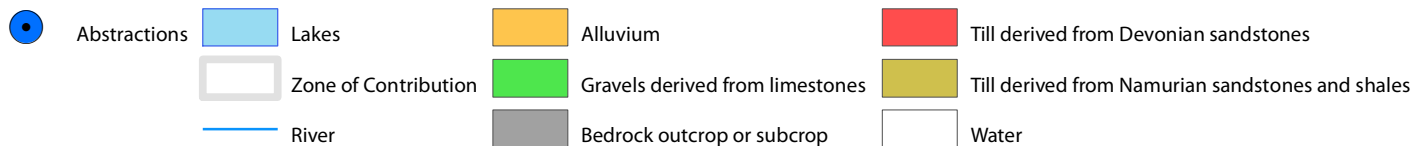


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0 0.25 0.5 1 km



Subsoils Map for Charleville WS



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0 0.25 0.5 1 km

