

Water Framework Directive Groundwater Monitoring Programme

Site Information

Box Cross



Box Cross is a borehole situated used as a public supply. The abstraction rate is 160 m³/d.



Cork

August 2011

SITE INFORMATION					
Site Name:	Box Cross		County:	Cork	
RBD:	SWRBD		EU Reporting Code:	---	
Easting:	158510		GWB Name:	Mitchelstown 1	
Northing:	107510		GWB Code:	IE_SW_G_082	
Site Use:	Drinking Water (PWS)		Drinking Water Code:	0500PUB1320	
Hydrometric Area:	18		Water Level Monitoring Network:	Level	Flow
Townland:	ROSSAGH WEST			N	N
Ownership:	Cork County Council				
Water Quality Monitoring Network:	Surveillance		Operational (Point)		Operational (Diffuse)
	N		N		N
Site Comments:	---				
SITE DIRECTIONS					
Location and Access Information:	Located 1.5 km west of Doneraile. The borehole is south of the main road just west of Box Cross Roads.				
Additional Comments:	---				
WELL INFORMATION					
Monitoring Point Type:	BH	Abstraction Rate (m³/d):	160	Ground Elevation (m OD):	70
Borehole Log Available:	---	Total Drilled Depth (m bgl):	---	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:	Box Cross	Number of Abstraction Points in the Scheme:	3	Source Report Available	N
Source Report Info:	---				
Scheme Summary:	Box Cross consists of 3 boreholes. Only one is pumping with the remaining two boreholes scheduled to augment the supply in 2011. When the other two boreholes are incorporated into the supply it will increase from 160 m³/d to between 2000-3000 m³/d. The water is chlorinated before being pumped to the reservoir.				

HYDROGEOLOGY								
GEOLOGY	Soil:	Deep well drained mineral (AminDW)					Subsoil Permeability:	Low
	Subsoil:	Tills (diamictos) (TDSs)						
	Bedrock:	Dinantian Pure Unbedded Limestones						
HYDROGEOLOGY	Aquifer Category:	Rkd	Vulnerability at Monitoring site:	High to Low		Flow Regime:	Karstified	
ZONE OF CONTRIBUTION	Estimated ZOC Size (km ²):	0.71	ZOC Delineated By:	OCM (DC)		Recharge Estimate (mm/yr):	124	
	ZOC Delineation Comments:	The ZOC was delineated based on the abstraction rate, topography and recharge. It is based on 150% of the abstraction rate to account for increases in demand and uncertainties in the delineation process. The boundaries are uncertain because it is not certain what rock unit the borehole is receiving water from.						
Groundwater Vulnerability within ZOC (% area):	Extreme (X)	Extreme (E)	High	Moderate	Low	High to Low	Unclassified	
	0	0	0	0	0	100	0	
HYDROCHEMISTRY								
Hydrochemical Signature:	Ca-HCO ₃		Additional Water Chemistry Information:	Little data is available				
Alkalinity (mg/l HCO ₃):	Average:	Range:						
	---	---						
Hardness (mg/l CaCO ₃):	Average:	Range:						
	---	---						
Conductivity (uS/cm):	Average:	Range:						
	544.5	543-546						
Monitoring Record Period:	From:	To:						
	2004	2006						
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	35.88	64.12		0.00	0.00		
OTHER INFORMATION								



Well Head



Well Head



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 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).

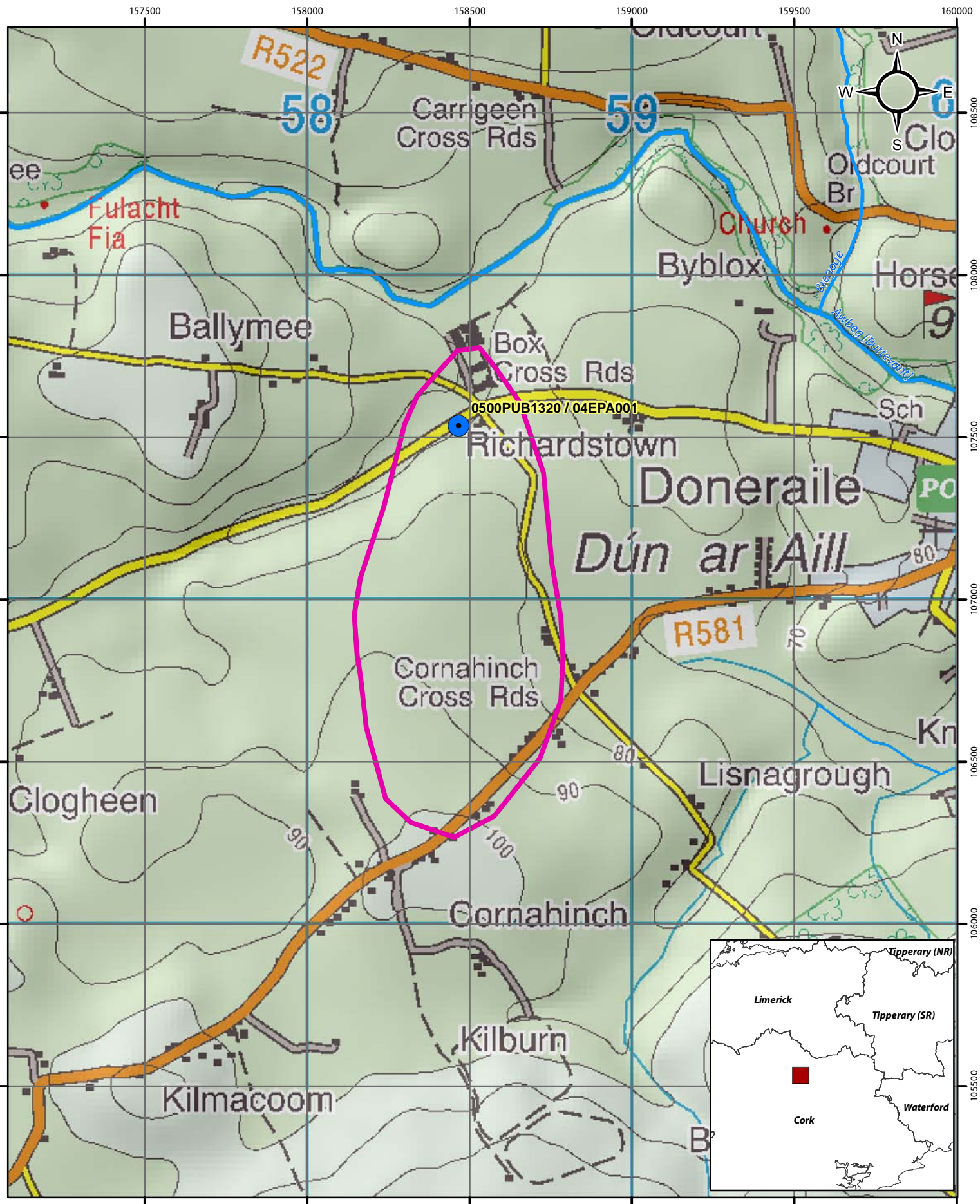
General Downgradient Distances

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

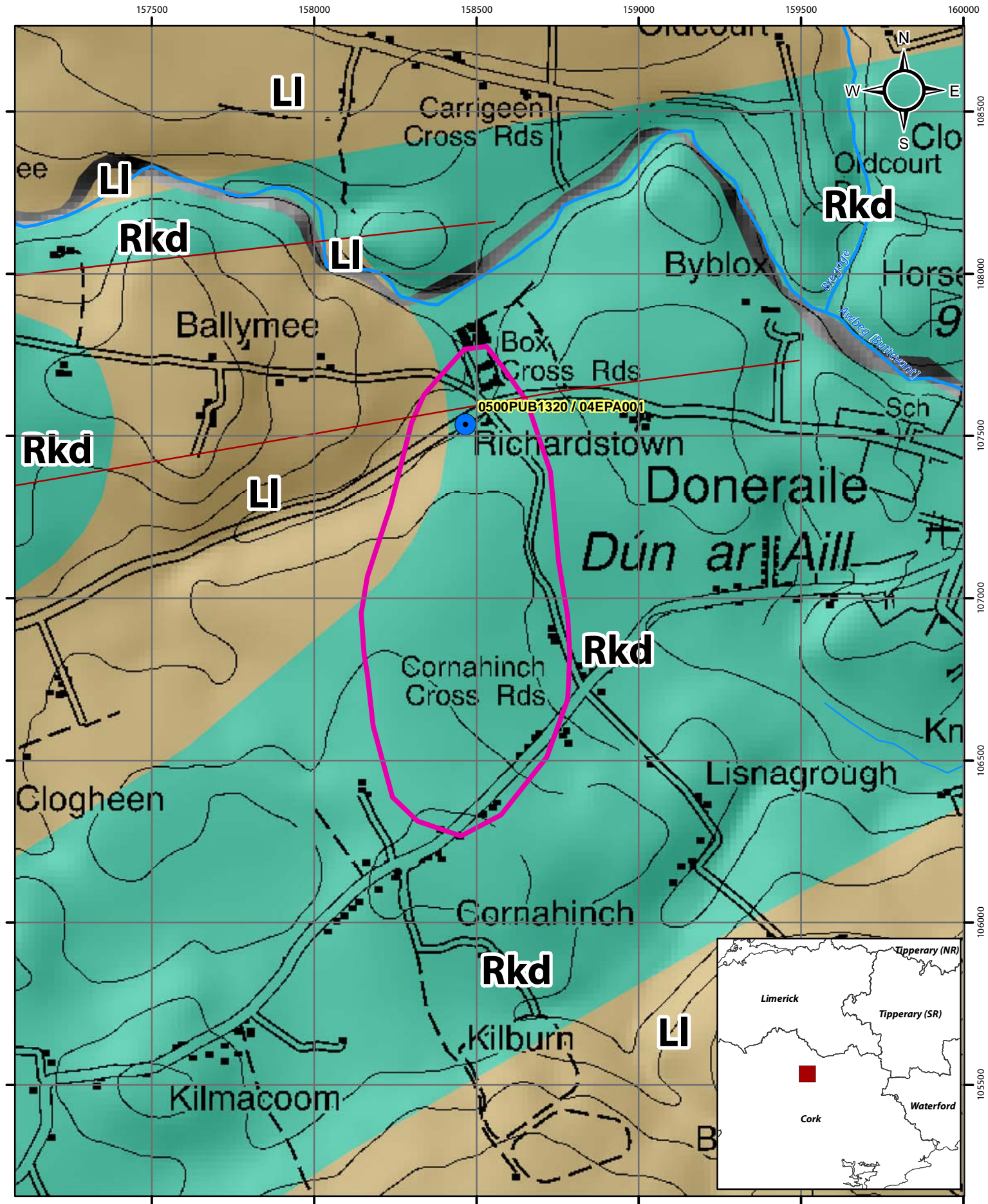


Location Map for Box Cross

-  Abstractions
-  River
-  Zone of Contribution

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0 0.25 0.5 1 km



Aquifer Category Map for Box Cross

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

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0 0.25 0.5 1 km

157500

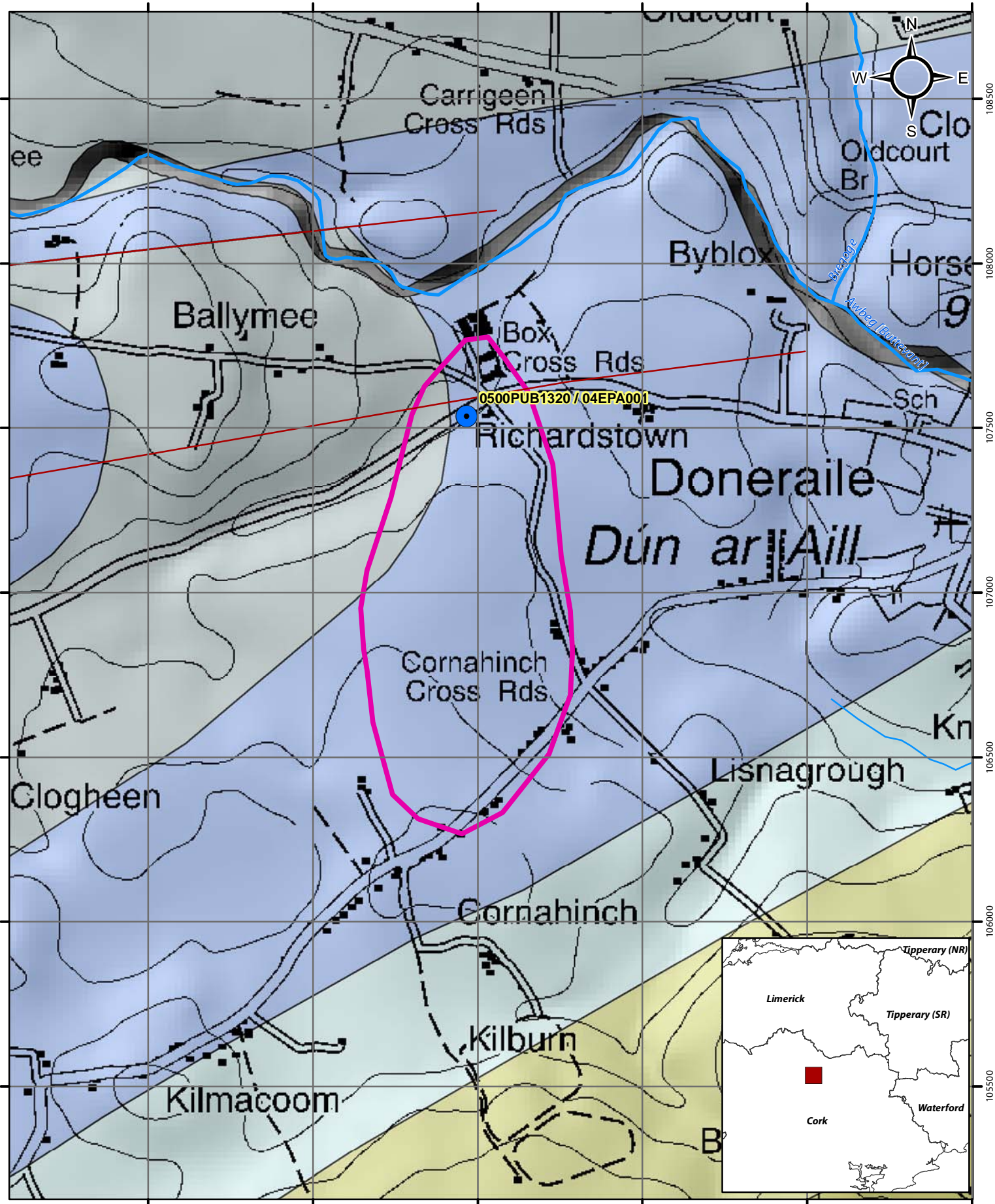
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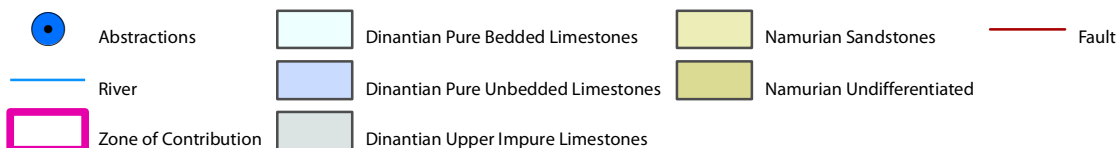
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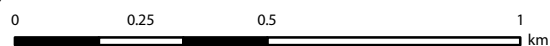
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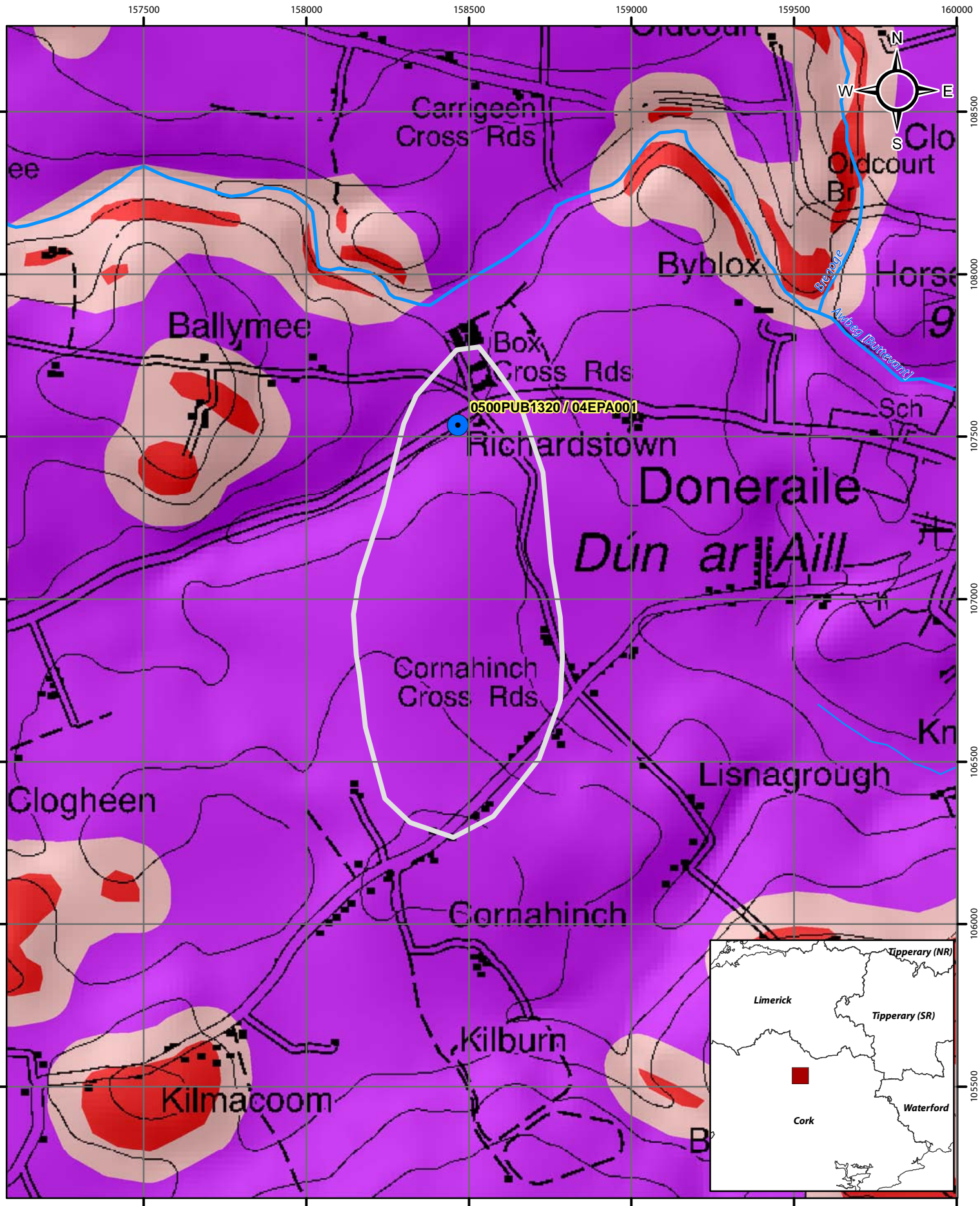


Bedrock Map for Box Cross

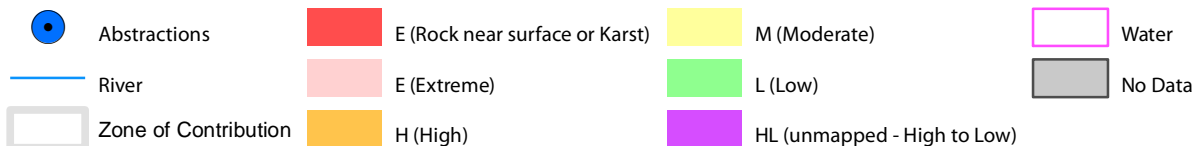


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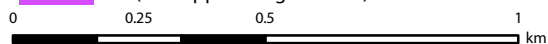


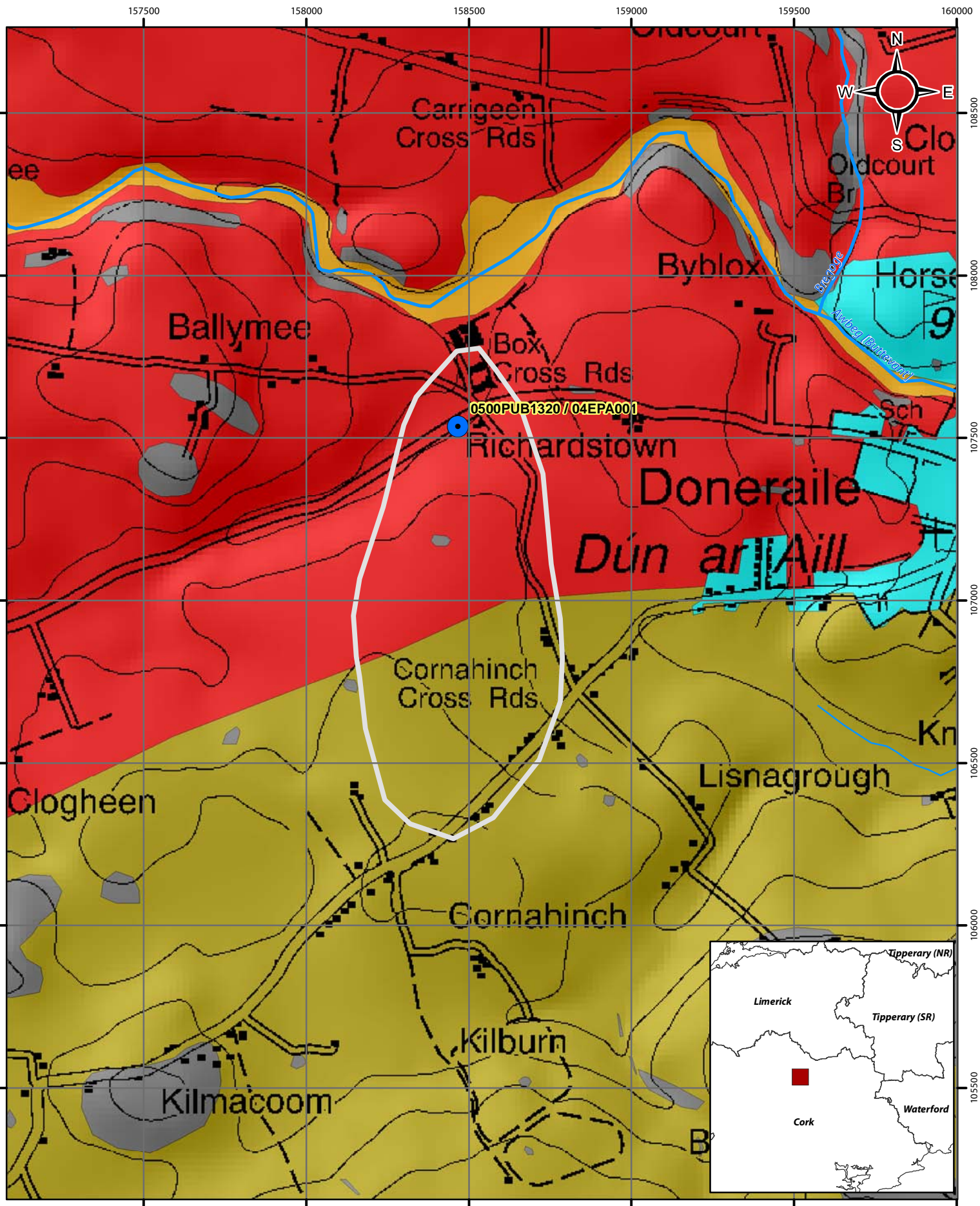


Groundwater Vulnerability Map for Box Cross



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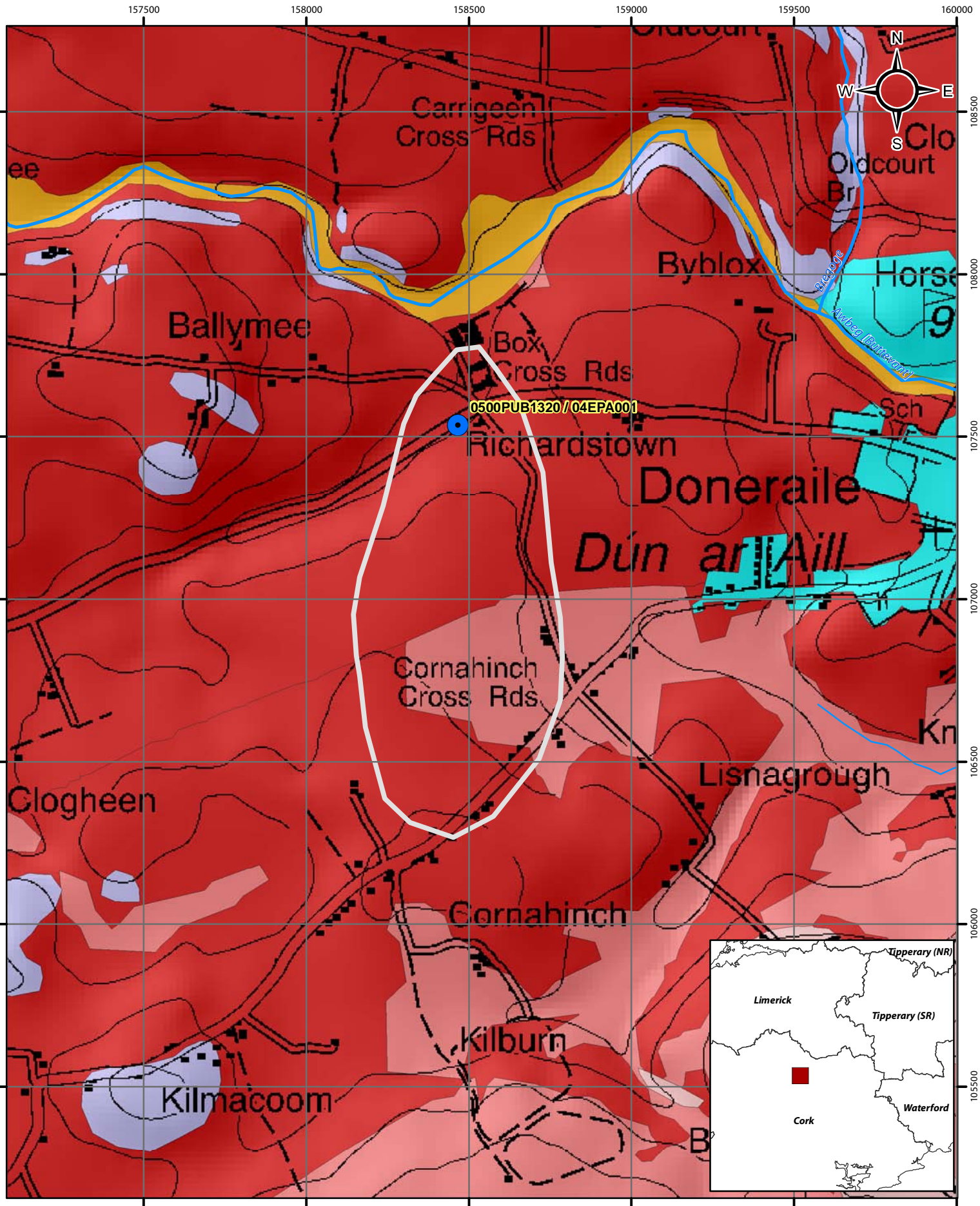


Subsoils Map for Box Cross

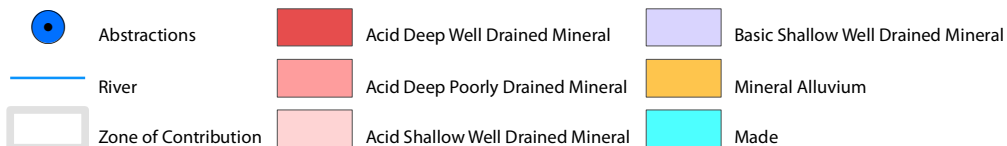
- Abstractions
- River
- Zone of Contribution
- Alluvium
- Bedrock outcrop or subcrop
- Made ground
- Till derived from Devonian sandstones
- Till derived from Namurian sandstones and shales

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0 0.25 0.5 1 km



Soils Map for Box Cross



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