

Water Framework Directive Groundwater Monitoring Programme

Site Information **Cappoquin WS**



Cappoquin WS is a borehole used as a public water supply. The abstraction rate is 409m³/d on average. A GSI source report has been completed for this site.

SITE INFORMATION					
Site Name:	Cappoquin WS		County:	Waterford	
RBD:	SWRBD		EU Reporting Code:	IE_SW_G_025_24_006	
Easting:	211498		GWB Name:	Cappoquin Kiltorcan	
Northing:	99326		GWB Code:	IE_SW_G_025	
Site Use:	Drinking Water (PWS)		Drinking Water Code:	3100PUB1074	
Hydrometric Area:	18		Water Level Monitoring Network:	Level	Flow
Townland:	SHANBALLY			N	N
Ownership:	Waterford County Council				
Water Quality Monitoring Network:	Surveillance		Operational (Point)		Operational (Diffuse)
	N		N		Y
Site Comments:	The site is fenced off and the borehole is located in front of the small pumphouse.				
SITE DIRECTIONS					
Location and Access Information:	Follow road R669 east out of the Cappoquin village. The site is located c. 1 km east of the fire station in Cappoquin, neat the Cappoquin Monument, and immediately prior to a Y-junction in the road. The site is on the right (south) side of the R669.				
Additional Comments:	---				
WELL INFORMATION					
Monitoring Point Type:	Borehole	Abstraction Rate (m³/d):	409	Ground Elevation (m OD):	38
Borehole Log Available:	---	Total Drilled Depth (m bgl):	62	Depth to Bedrock (m bgl):	---
Top of Casing (m agl):	---	Upper Casing Diameter (mm):	200	Lower Casing Diameter (mm):	---
Final Borehole Depth (m):	30.5	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):	710	Comments on Monitoring Site:	---		
Specific Capacity (m³/d/m):	160				
Static Water Level (m bgl):	7.5				
Scheme Name:	Cappoquin (Monument)	Number of Abstraction Points in the Scheme:	1	Source Report Available	Y
Source Report Info:	The GSI prepared a source report in 1996				
Scheme Summary:	Single borehole serving the public supply for the Cappoquin area.				

HYDROGEOLOGY								
GEOLOGY	Soil:	Deep well drained mineral (AminDW)					Subsoil Permeability:	n/a
	Subsoil:	Tills (diamictos) (TDSs)						
	Bedrock:	Dinantian (early) Sandstones, Shales and Limestones						
HYDROGEOLOGY	Aquifer Category:	PI	Vulnerability at Monitoring site:	Extreme			Flow Regime:	Poorly productive
ZONE OF CONTRIBUTION	Estimated ZOC Size (km²):	0.7	ZOC Delineated By:	GSI			Recharge Estimate (mm/yr):	341
	ZOC Delineation Comments:	The GSI delineated a source area based on numerical modelling of the groundwater system together with hydrogeological mapping techniques.						
Groundwater Vulnerability within ZOC (% area):	Extreme (X)	Extreme (E)	High	Moderate	Low	High to Low	Unclassified	
	5.1	13.74	0	0	0	81.16	0	
HYDROCHEMISTRY								
Hydrochemical Signature:	Ca-HCO3		Additional Water Chemistry Information:	During the monitoring period: The average nitrate concentration was 41 mg/l NO3 and the maximum nitrate concentration was 57 mg/l NO3. The average ammonium concentration was 0.02 mg/l N and the maximum ammonium concentration was 0.048 mg/l N. The average molybdate reductive phosphorus (MRP) concentration was 0.007 mg/l P and the maximum MRP concentration was 0.039 mg/l P. The average chloride concentration was 21.9 mg/l Cl and the maximum chloride concentration was 27 mg/l Cl.				
Alkalinity (mg/l HCO3):	Average:	Range:						
	43	29-80						
Hardness (mg/l CaCO3):	Average:	Range:						
	77	51-99						
Conductivity (uS/cm):	Average:	Range:						
	234	93-312						
Monitoring Record Period:	From:	To:						
	1993	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	19.46	80.00		0.00	0.54		
OTHER INFORMATION								



Pump House



Borehole



Sampling Point

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).

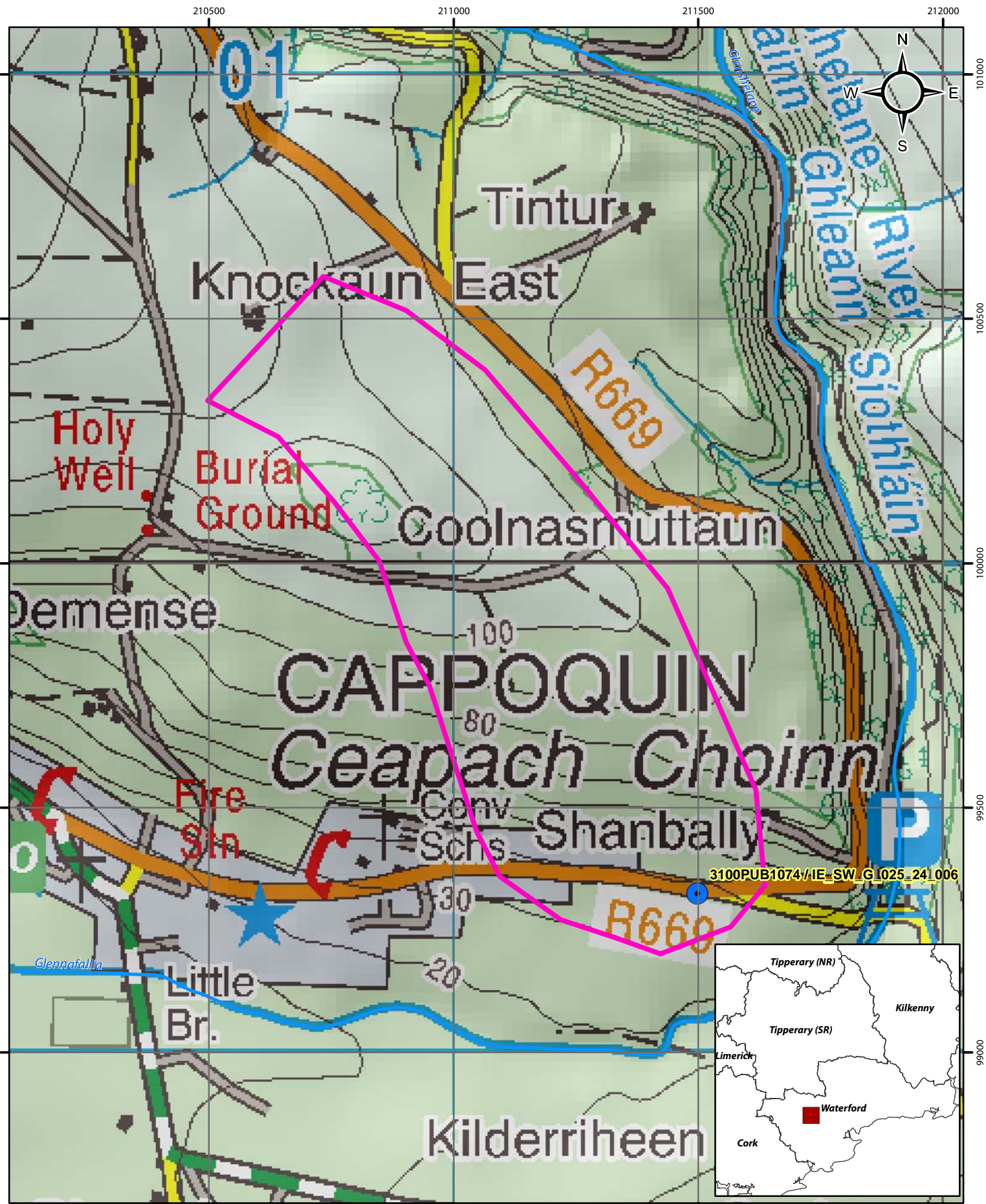
General Downgradient Distances

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	GSI	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:	

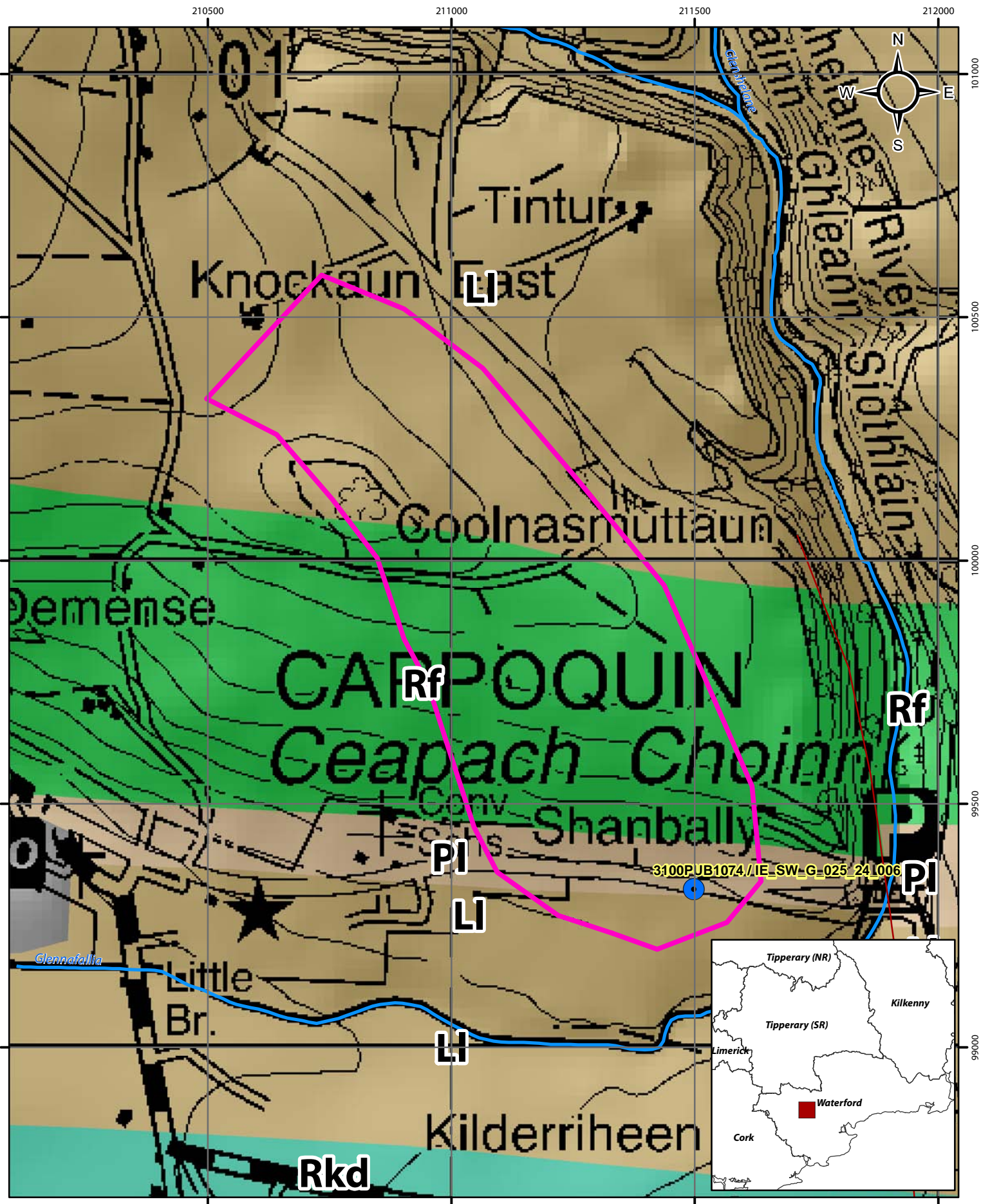


Location Map for Cappoquin WS

- Abstractions
- River
- Zone of Contribution

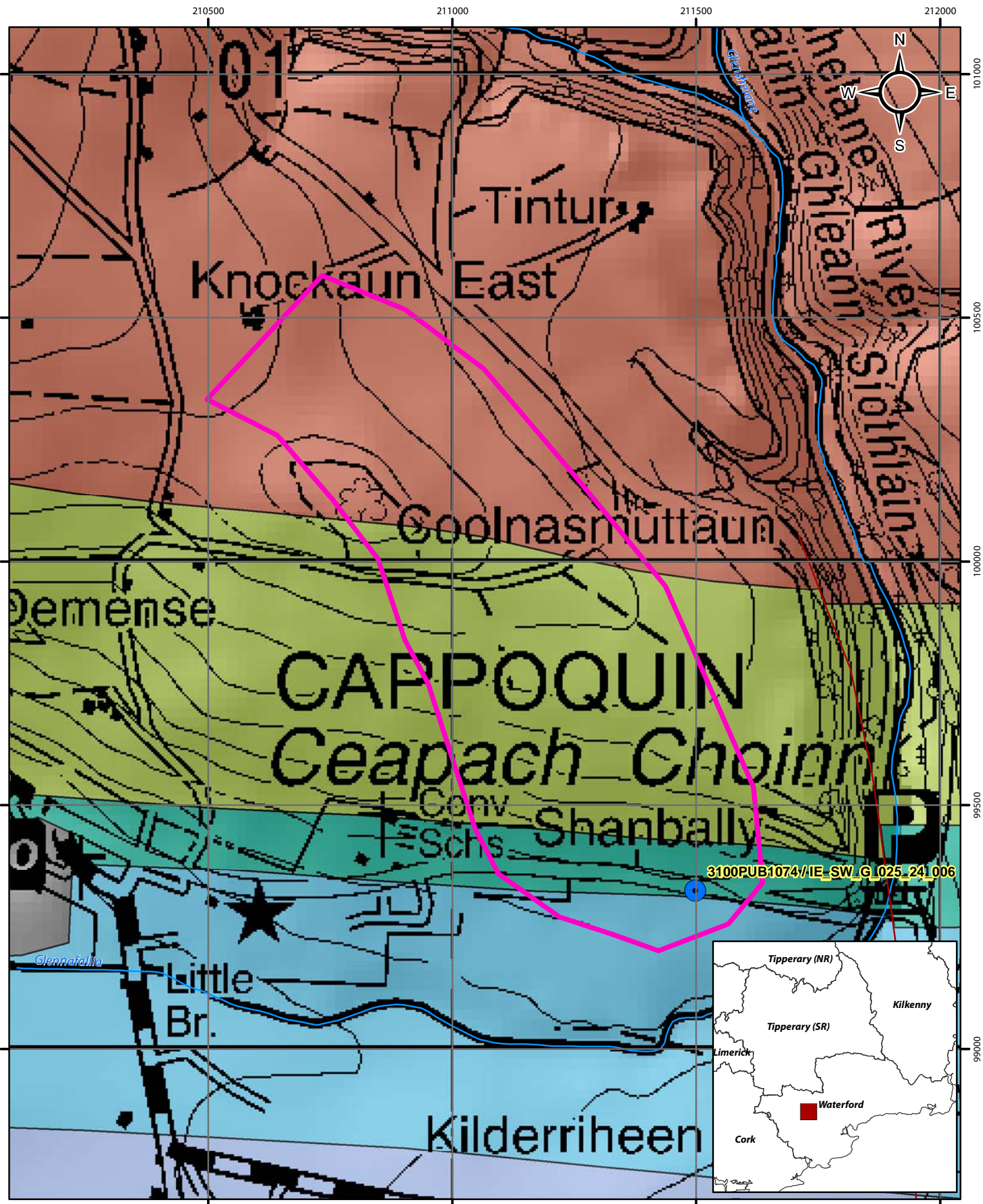
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0 0.25 0.5 1 km












Aquifer Category Map for Cappoquin WS

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

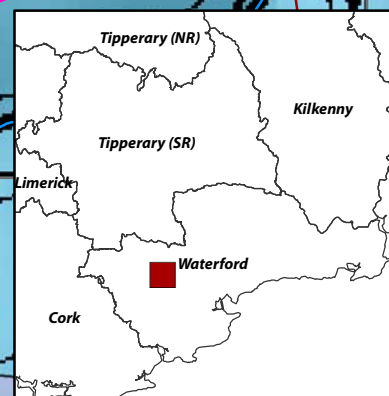


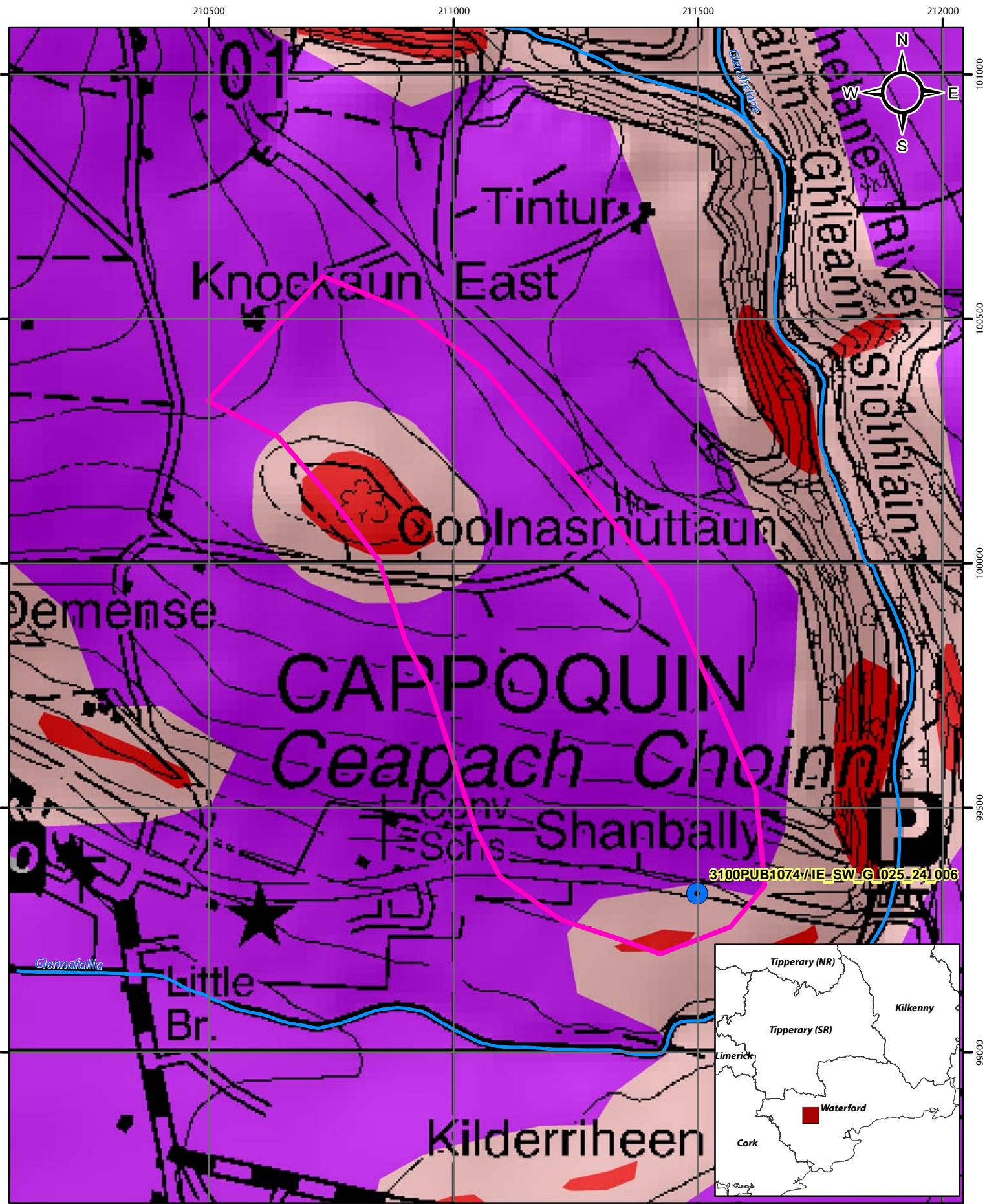
Bedrock Map for Cappoquin WS

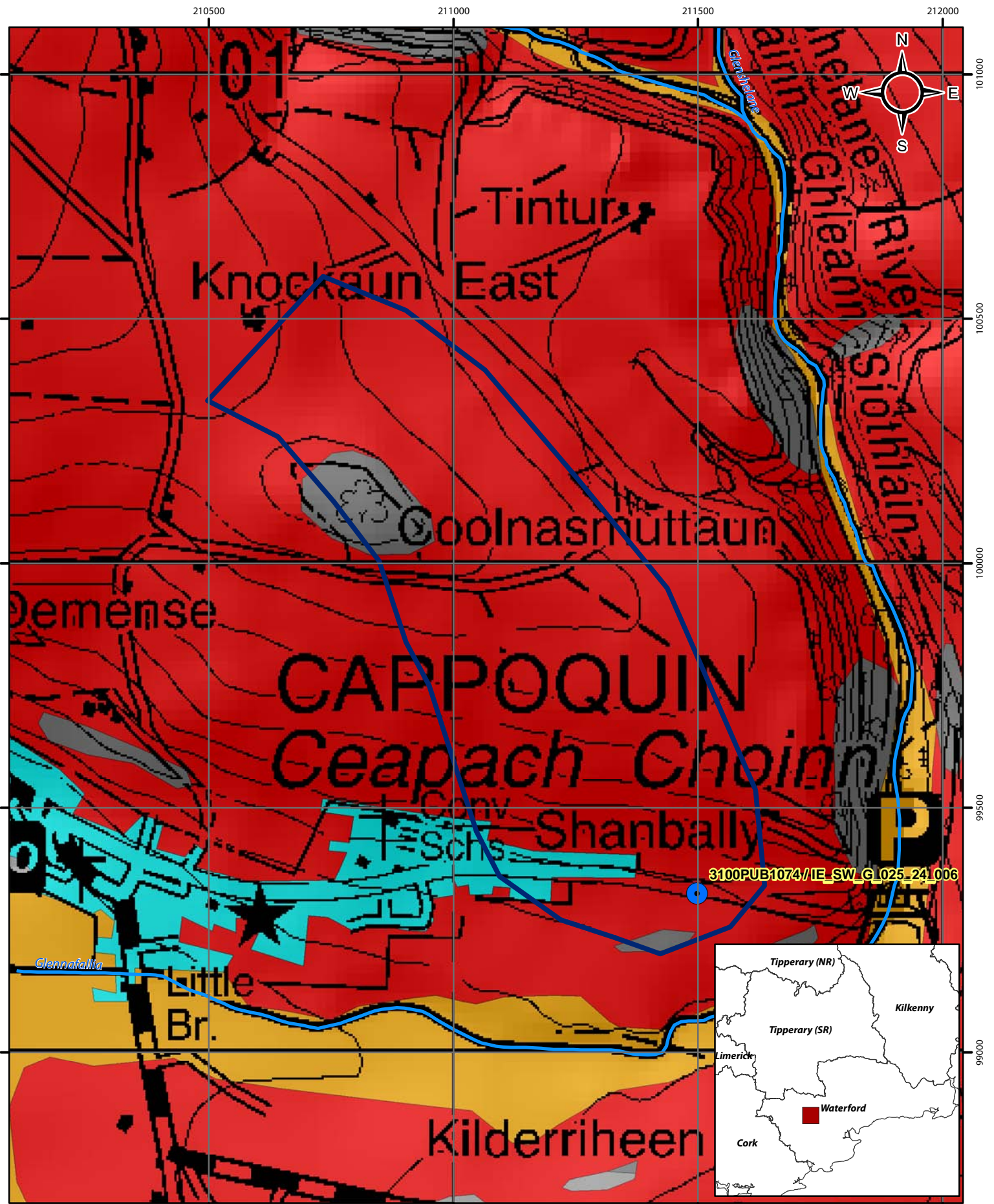
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|---------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------|
|  Abstractions |  Devonian Kiltorcan-type Sandstones |  Dinantian Lower Impure Limestones |
|  River |  Devonian Old Red Sandstones |  Dinantian Pure Unbedded Limestones |
|  Zone of Contribution |  Dinantian (early) Sandstones, Shales and Limestones |  Fault |

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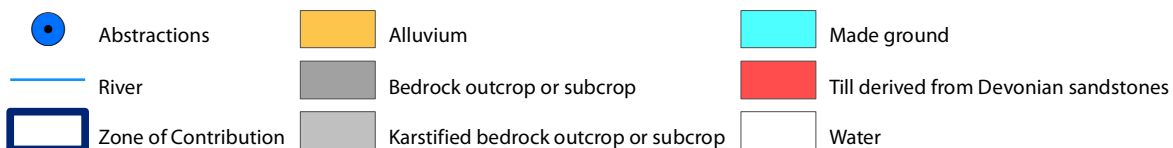
0 0.25 0.5 1 km



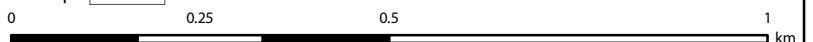


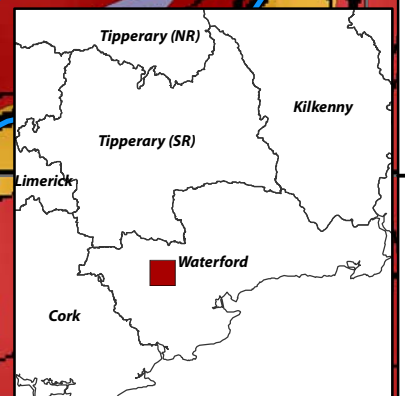
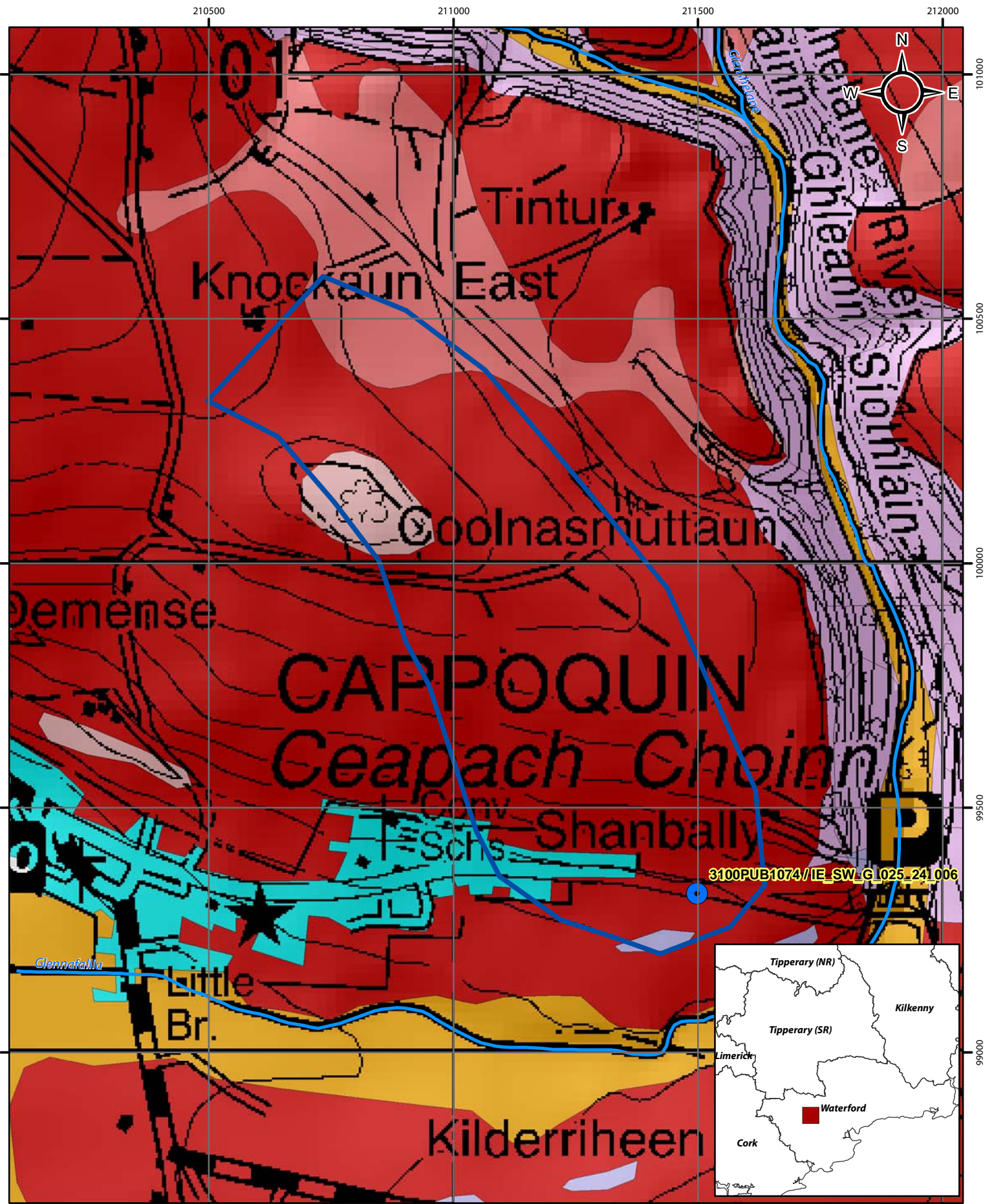


Subsoils Map for Cappoquin WS

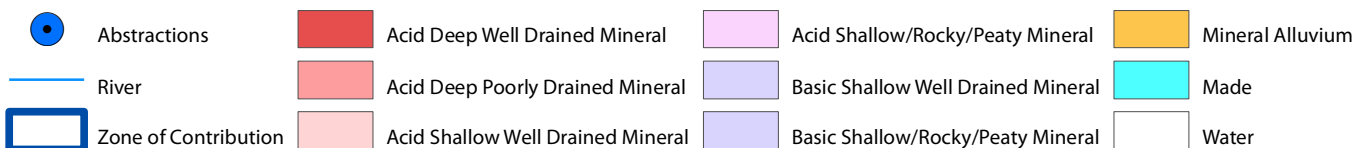


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Soils Map for Cappoquin WS



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