

## Water Framework Directive Groundwater Monitoring Programme

### Site Information

### Banteer PWS (Poulgorm Spring)



Banteer PWS (Poulgorm Spring) is a spring with an abstraction rate of 364m<sup>3</sup>/day. Total outflow in the order of 3000m<sup>3</sup>/d. A source report was prepared for the site in 2006.



Cork

August 2011

SITE INFORMATION					
Site Name:	Banteer PWS (Poulgorm Spring)		County:	Cork	
RBD:	SWRBD		EU Reporting Code:	IE_SW_G_018_04_004	
Easting:	140014		GWB Name:	Banteer	
Northing:	98706		GWB Code:	IE_SW_G_018	
Site Use:	Drinking Water (PWS)		Drinking Water Code:	0500PUB1401	
Hydrometric Area:	18		Water Level Monitoring Network:	Level	Flow
Townland:	INCHIDALY			N	N
Ownership:	Cork County Council				
Water Quality Monitoring Network:	Surveillance	Operational (Point)		Operational (Diffuse)	
	Y	N		N	
Site Comments:	Banteer PWS (Poulgorm Spring) is a spring on a geological boundary and is used as a public water supply. The borehole is included in the surveillance chemical network.				

SITE DIRECTIONS	
Location and Access Information:	---
Additional Comments:	---

WELL INFORMATION					
Monitoring Point Type:	Spring	Abstraction Rate (m³/d):	364	Ground Elevation (m OD):	69
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:	Overflow and other springs suggest total discharge in the order of 3500m³/day.		
Specific Capacity (m³/d/m):	---				
Static Water Level (m bgl):	---				
Scheme Name:	Banteer / Dromohane PWSS	Number of Abstraction Points in the Scheme:	2	Source Report Available	Y
Source Report Info:	Source Report by Tobin 2006.				
Scheme Summary:	Scheme comprises Poulgorm spring at Banteer and a borehole at Dromohane.				

HYDROGEOLOGY								
GEOLOGY	Soil:	Alluviums (AlluvMIN)					Subsoil Permeability:	n/a
	Subsoil:	Alluvium (A)						
	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):	3.39	ZOC Delineated By:	TOBIN (CK)			Recharge Estimate (mm/yr):	460
	ZOC Delineation Comments:	According the source report, the spring occurs at a boundary between the Waulsortian and Ballysteen Limestones. Additionally, there are other springs occurring on the same geological boundary a little to the east of the main spring. The ZOC is delineated for all the springs. The western boundary is based on topography. The eastern boundary is difficult to define as there are streams flowing off the hills but which dry up. The southern boundary is based on the water balance, recharge and topography. Overflow and other springs suggest total discharge in the order of 3500m³/day.						
Groundwater Vulnerability within ZOC (% area):	Extreme (X)	Extreme (E)	High	Moderate	Low	High to Low	Unclassified	
	13.06	8.9	0	0	0	78.04	0	
HYDROCHEMISTRY								
Hydrochemical Signature:	Ca-HCO3			Additional Water Chemistry Information:	During the monitoring period: The average nitrate concentration was 12 mg/l NO3 and the maximum nitrate concentration was 15 mg/l NO3. The average ammonium concentration was 0.041 mg/l N and the maximum ammonium concentration was 0.186 mg/l N. The average molybdate reductive phosphorus (MRP) concentration was 0.007 mg/l P and the maximum MRP concentration was 0.016 mg/l P. The average chloride concentration was 16.4 mg/l Cl and the maximum chloride concentration was 21 mg/l Cl.			
Alkalinity (mg/l HCO3):	Average:	Range:						
	216	175-270						
Hardness (mg/l CaCO3):	Average:	Range:						
	235	202-270						
Conductivity (uS/cm):	Average:	Range:						
	446	178-537						
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	73.64		0.00		0.00		26.36
OTHER INFORMATION								
---								





Spring



Spring



Site Location

## 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 NO<sub>3</sub>)

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).

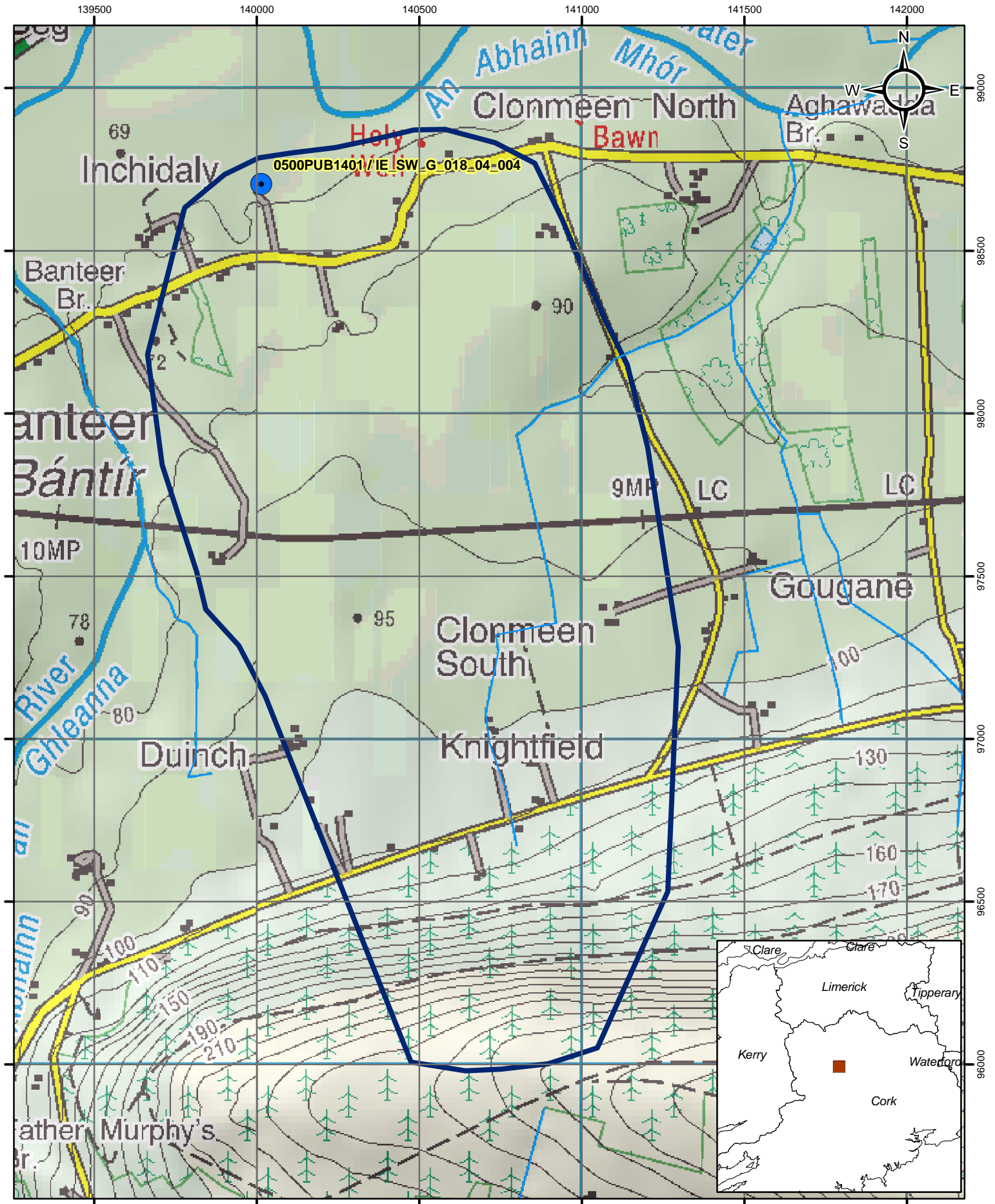
### General Downgradient Distances

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
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	Tobin	Date:	
Version 1:	Prepared by	Tobin (CK)	Date:	Apr 2011
Version 2:	Prepared by		Date:	
Version 3:	Prepared by		Date:	
Version 4:	Prepared by		Date:	



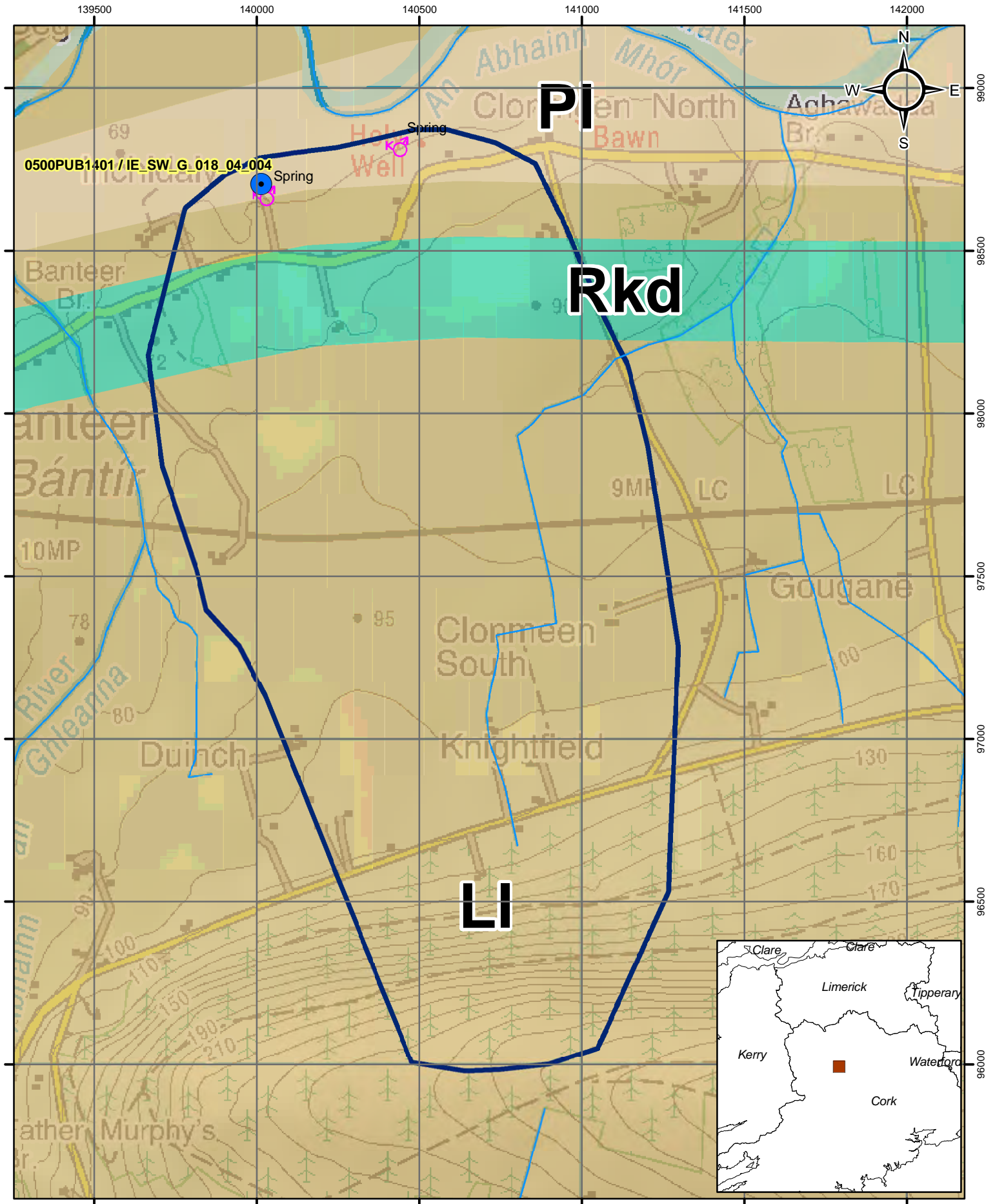
## Location Map for Banteer PWS (Poulgorm Spring)

- Abstractions
- River
- Zone of Contribution

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0 0.25 0.5 1 km

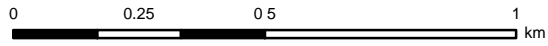


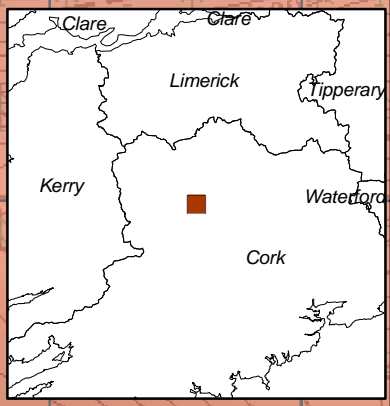
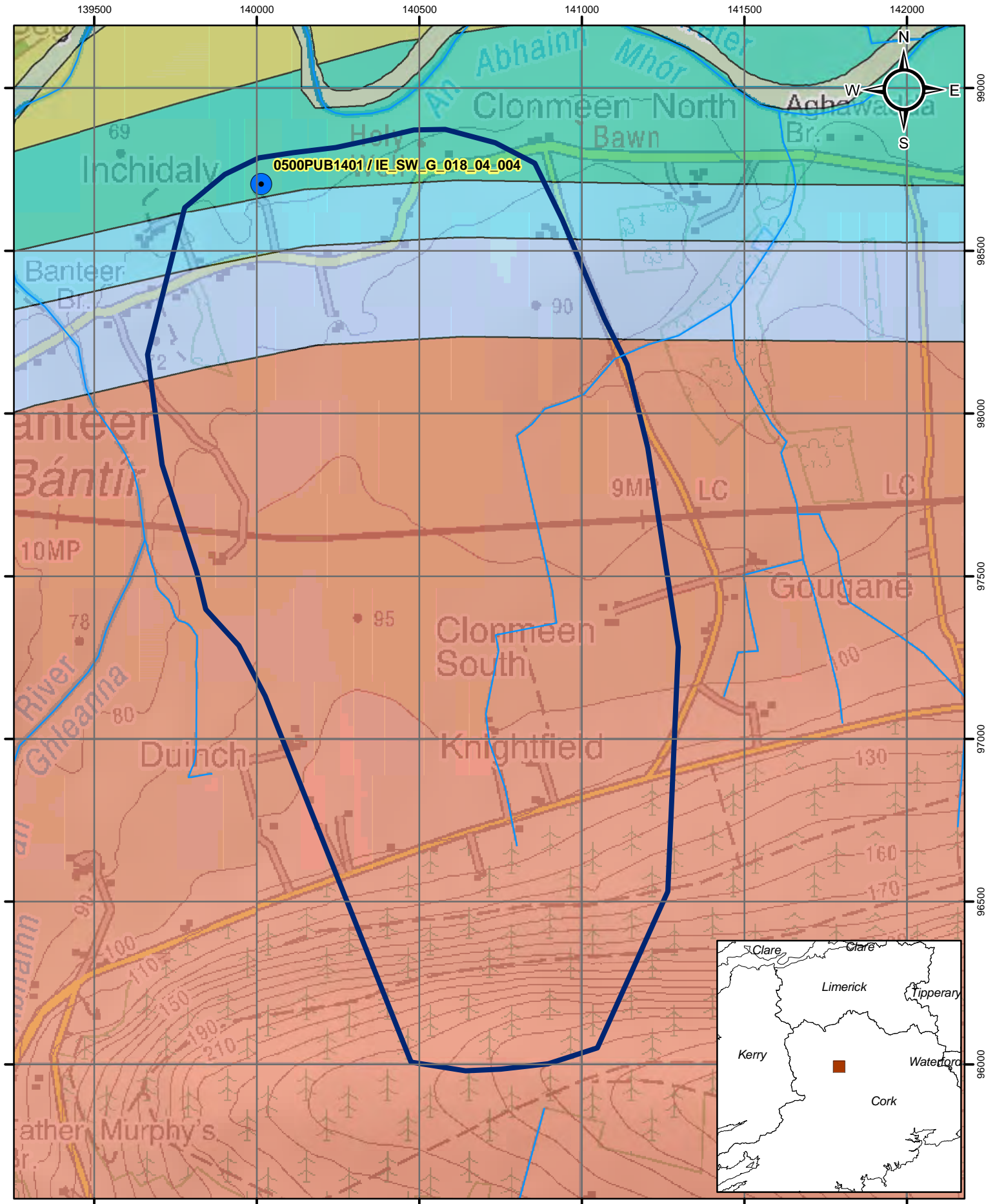


# Aquifer Category for Banteer PWS (Poulgorm Spring)

-  Abstractions
-  Spring
-  Rkd
-  River
-  LI
-  Zone of Contribution
-  PI

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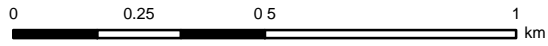




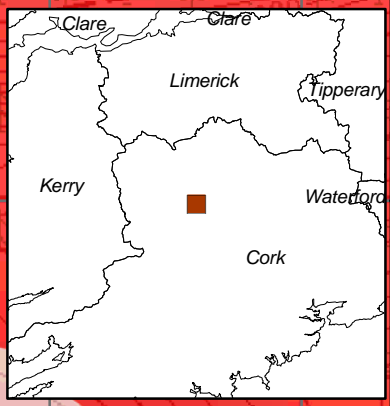
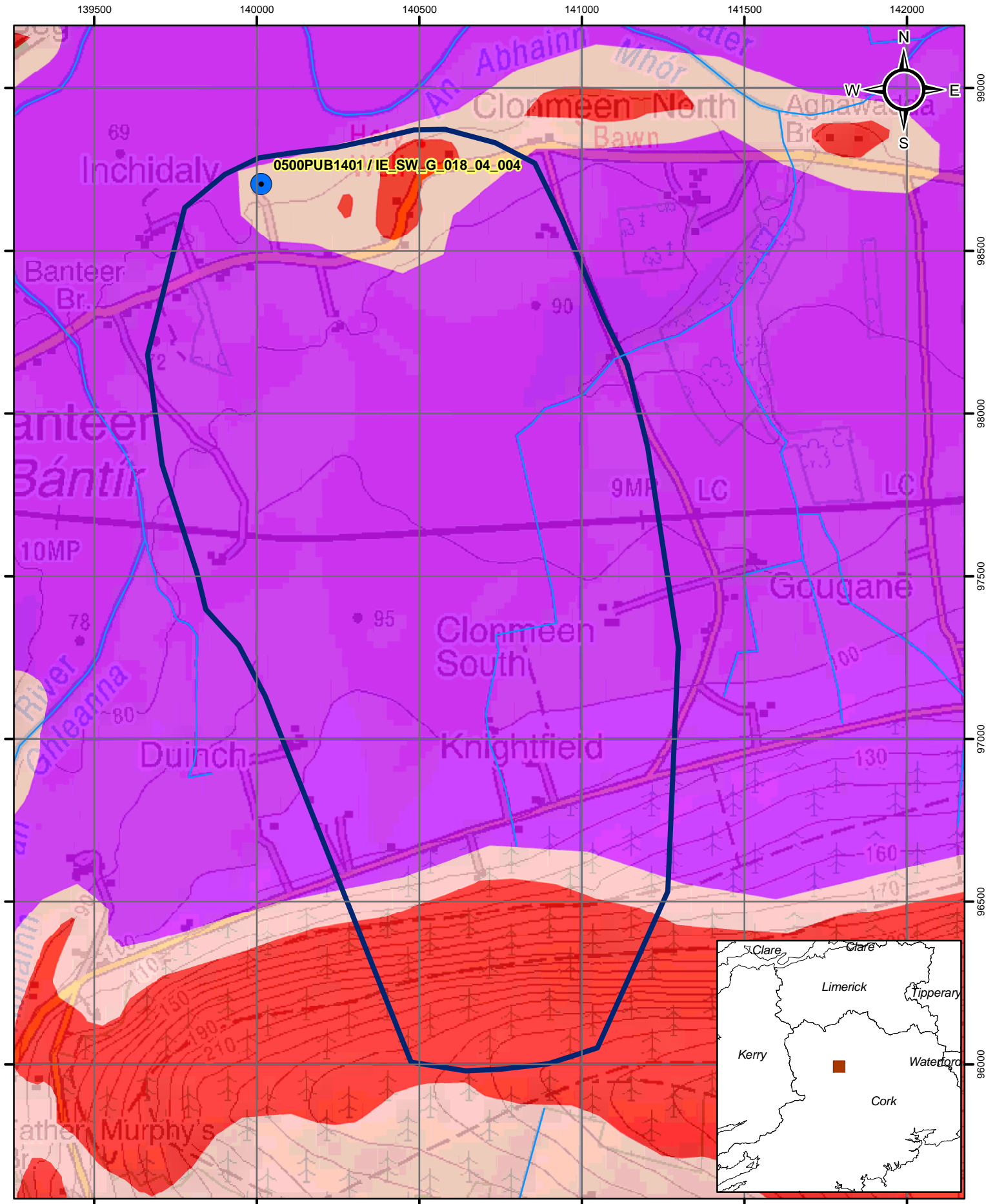
# Bedrock Map for Banteer PWS (Poulgorm Spring)

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

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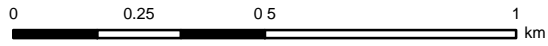




# Groundwater Vulnerability for Banteer PWS (Poulgorm Spring)

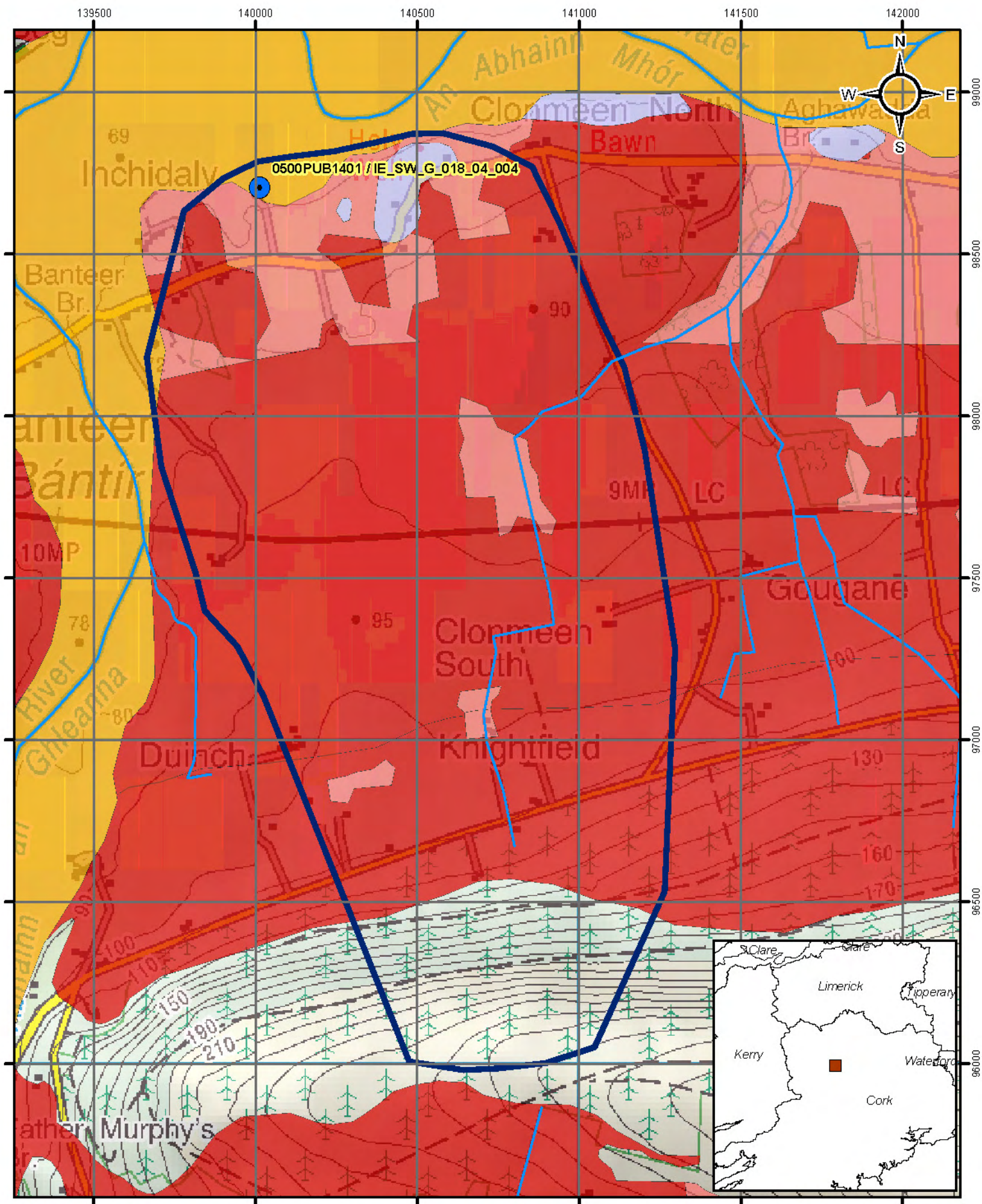
- Abstractions
- River
- Zone of Contribution
- E (Extreme)
- HL (unmapped - High to Low)
- E (Rock near surface or Karst)

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## Soils Map for Banteer PWS (Poulgorm Spring)

- Abstractions
- River
- Zone of Contribution
- Acid Deep Well Drained Mineral
- Acid Deep Poorly Drained Mineral
- Basic Shallow Well Drained Mineral
- Mineral Alluvium

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0 0.25 0.5 1 km