

## Water Framework Directive Groundwater Monitoring Programme

### Site Information

### Bruff - Moloneys Field



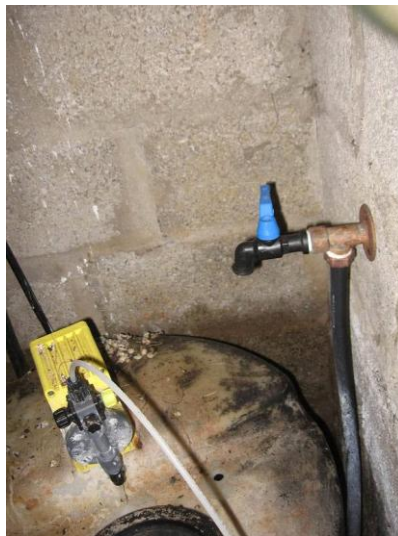
Bruff PWS is supplied from two sources: a well field in Ballygrennan and a well in a field to the north of the village - referred to as the Moloney's field well. Groundwater is supplied through the boreholes with a combined abstraction of 600m<sup>3</sup>/day. Moloney's field well - is included in the surveillance monitoring network.

SITE INFORMATION					
Site Name:	Bruff - Moloneys Field		County:	Limerick	
RBD:	Shannon IRBD		EU Reporting Code:	IE_SH_G_109_13_002	
Easting:	162621		GWB Name:	Hospital_3	
Northing:	136820		GWB Code:	IE_SH_G_109	
Site Use:	Drinking Water (PWS)		Drinking Water Code:	1900PUB1013	
Hydrometric Area:	24		Water Level Monitoring Network:	Level	Flow
Townland:	NEWTOWN (ED Bruff)			N	N
Ownership:	Limerick County Council				
Water Quality Monitoring Network:	Surveillance		Operational (Point)		Operational (Diffuse)
	Y		N		N
Site Comments:	Bruff PWS is situated in a Locally Important Aquifer (LI) / Dinantian Lower Impure Limestone.				
SITE DIRECTIONS					
Location and Access Information:	Take R512 north out of Bruff village. Immediately passed Sadliers garage on the left hand side there is a farm access. Cross field to fenced off pumhouse compound. Can see pumhouse from the road along far ditch.				
Additional Comments:	---				
WELL INFORMATION					
Monitoring Point Type:	BH	Abstraction Rate (m³/d):	256	Ground Elevation (m OD):	---
Borehole Log Available:	---	Total Drilled Depth (m bgl):	122	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:	This well is feeding the scheme due to pipe distribution issues; if it were not for these it is likely that this well would be abandoned (see hydrochemistry) and the scheme would be supplied only by the well field at Ballygrennan.		
Specific Capacity (m³/d/m):	---				
Static Water Level (m bgl):	---				
Scheme Name:	Bruff	Number of Abstraction Points in the Scheme:	2	Source Report Available	Y
Source Report Info:	Source report prepared by GSI.				
Scheme Summary:	Bruff PWS is supplied from two sources: a well field in Ballygrennan and a well in a field to the north of the village - referred to as the Moloney's field well. Groundwater is supplied through the boreholes with a combined abstraction of 600m³/day. Moloney's field well - is included in the GW surveillance monitoring network.				

HYDROGEOLOGY								
GEOLOGY	Soil:	Deep well drained mineral (BminDW)					Subsoil Permeability:	n/a
	Subsoil:	Tills (diamictos) (TLs)						
	Bedrock:	Dinantian Lower Impure Limestones						
HYDROGEOLOGY	Aquifer Category:	LI	Vulnerability at Monitoring site:	Extreme			Flow Regime:	Poorly productive
ZONE OF CONTRIBUTION	Estimated ZOC Size (km²):	0.53	ZOC Delineated By:	GSI			Recharge Estimate (mm/yr):	190
	ZOC Delineation Comments:	ZOC delineated by the GSI. Both Inner and Outer Source Protection Areas were defined. Report available from the groundwater section at GSI. Note that for the well field in Ballygrennan, the geology is different to what is mapped. According to logs (Dball) the Lower Limestone shales extend across to the well field.						
Groundwater Vulnerability within ZOC (% area):	Extreme (X)	Extreme (E)	High	Moderate	Low	High to Low	Unclassified	
	6.38	93.62	0	0	0	0	0	
HYDROCHEMISTRY								
Hydrochemical Signature:	Ca-HCO3			Additional Water Chemistry Information:	During the monitoring period: The average nitrate concentration was 17 mg/l NO3 and the maximum nitrate concentration was 25 mg/l NO3. The average ammonium concentration was 0.015 mg/l N and the maximum ammonium concentration was 0.036 mg/l N. The average molybdate reductive phosphorus (MRP) concentration was 0.007 mg/l P and the maximum MRP concentration was 0.013 mg/l P. The average chloride concentration was 30.7 mg/l Cl and the maximum chloride concentration was 38.5 mg/l Cl.			
Alkalinity (mg/l HCO3):	Average:	Range:						
	369	334-420						
Hardness (mg/l CaCO3):	Average:	Range:						
	379	138-430						
Conductivity (uS/cm):	Average:	Range:						
	791	584-965						
Monitoring Record Period:	From:	To:						
	2007	2010						
RISK ASSESSMENT								
Pressure (e.g., Nitrates, Phosphates, Abstractions):	---			Typical Contaminants:	---			
Risk Category:	At risk, low confidence			GWB Status:	Good			
Impact Potential within ZOC (% area):	Extreme:	High:		Moderate:		Low:		Negligible:
	0.00	94.74		0.00		0.00		5.26
OTHER INFORMATION								
---								



Site Location



Sample Point



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 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).

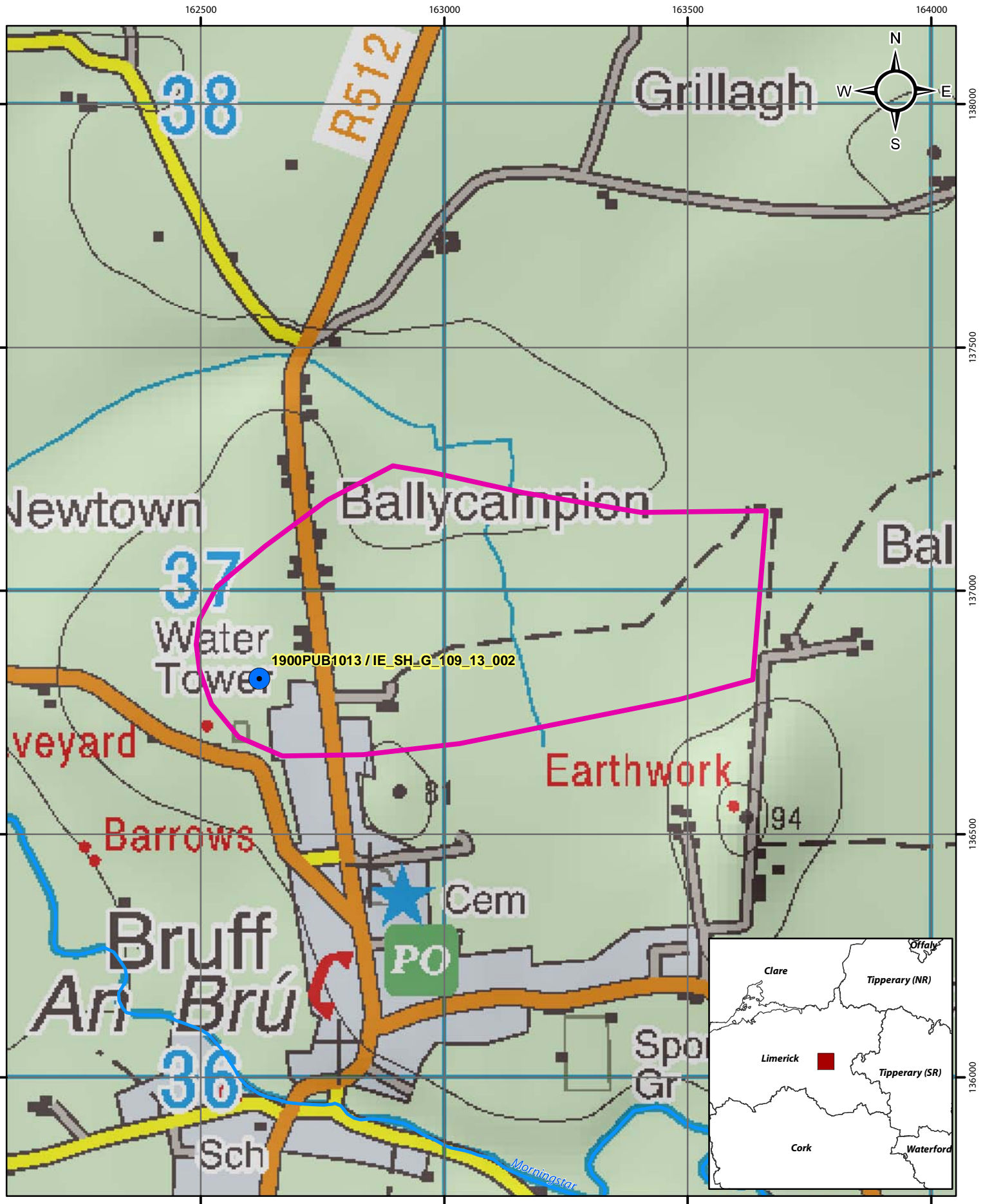
### General Downgradient Distances

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.

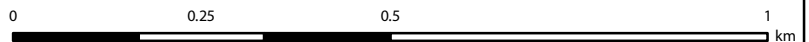
Version 0:	Prepared by	GSI	Date:	
Version 1:	Prepared by	Tobin (CK)	Date:	Apr 2011
Version 2:	Prepared by		Date:	
Version 3:	Prepared by		Date:	
Version 4:	Prepared by		Date:	

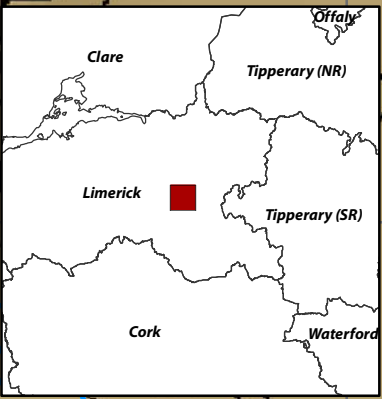
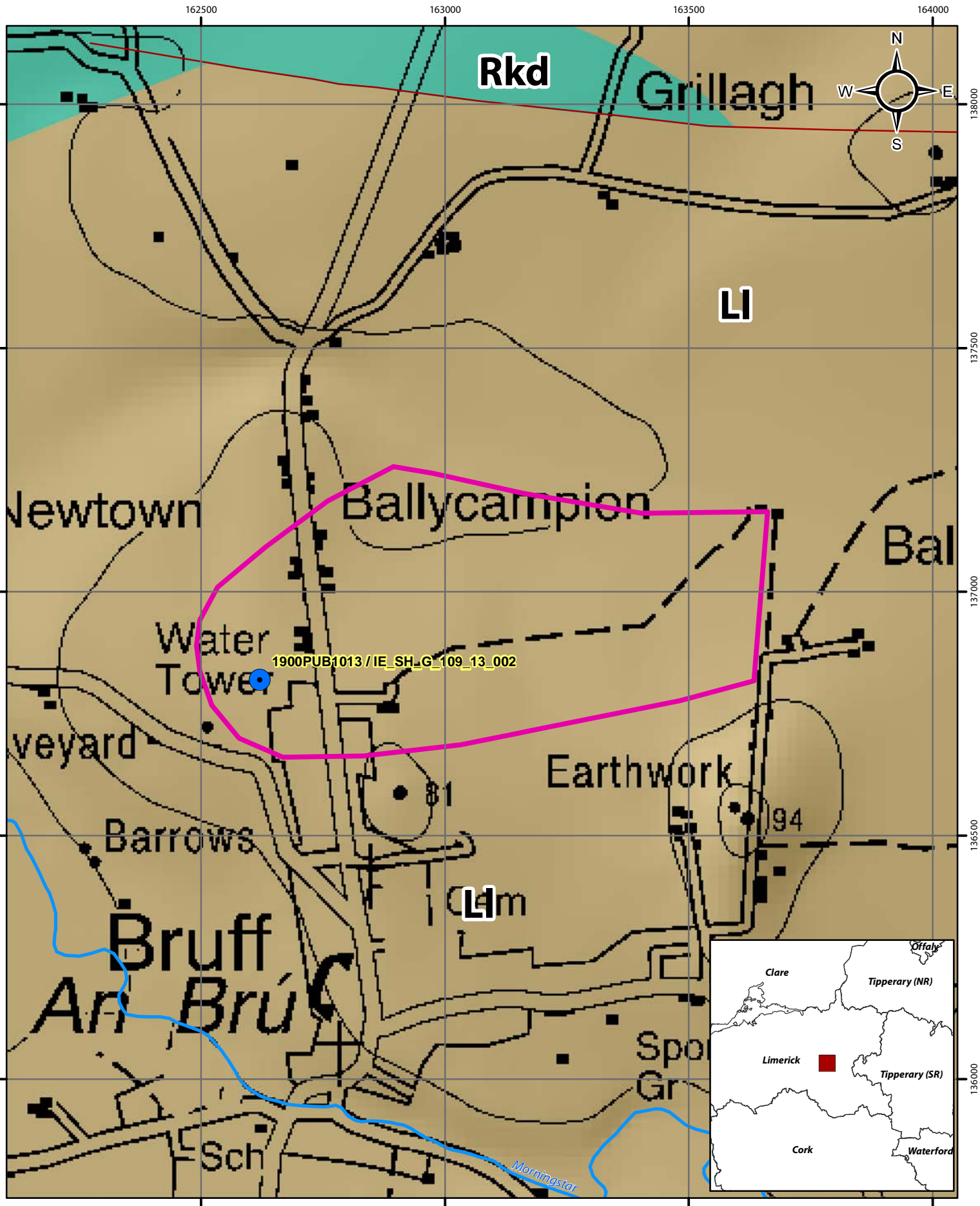


## Location Map for Bruff (Moloney's Field)

-  Abstractions
-  Lakes
-  River
-  Zone of Contribution

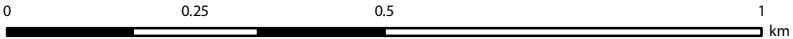
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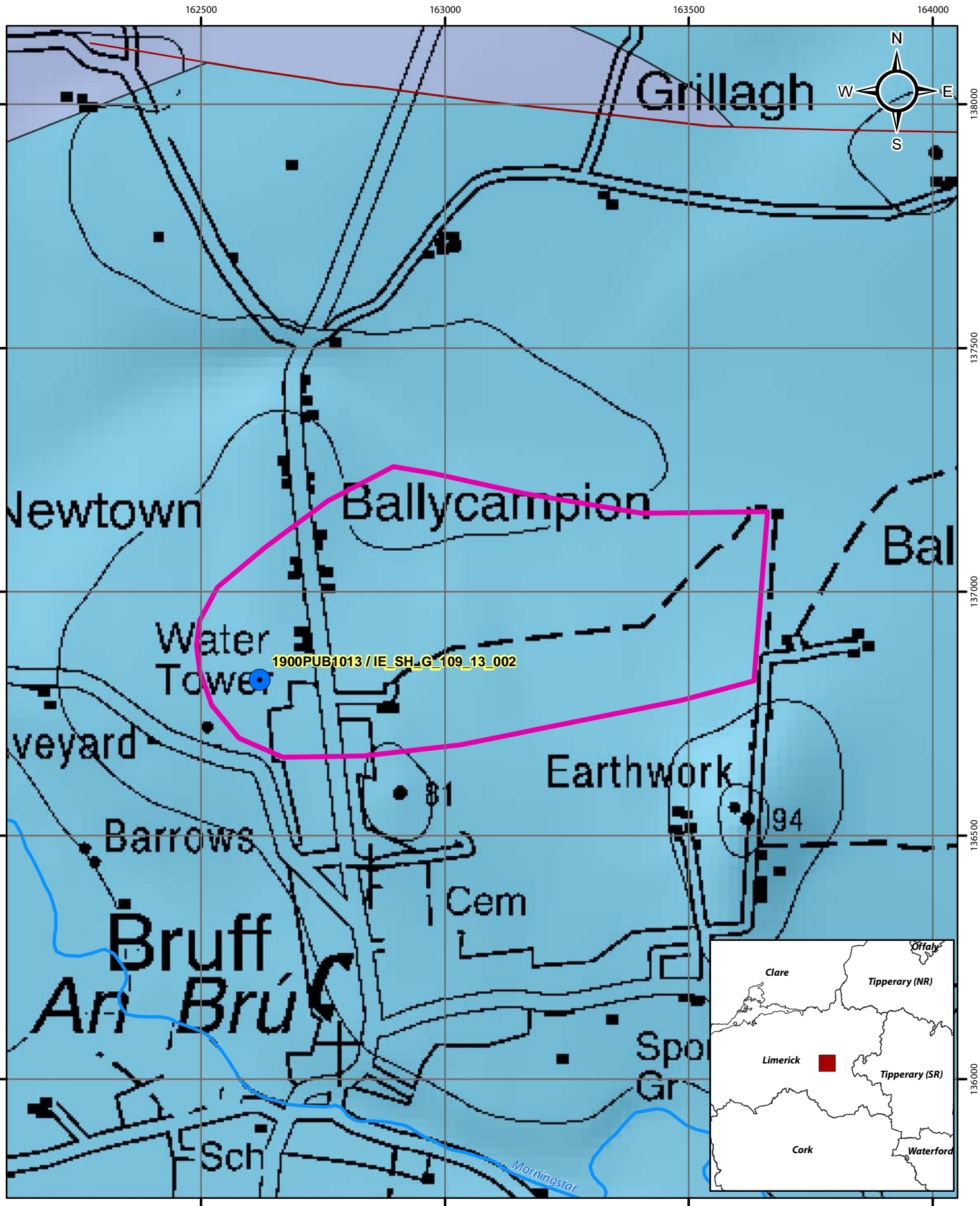


# Aquifer Category Map for Bruff (Moloney's Field)

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



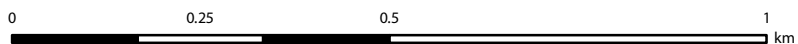




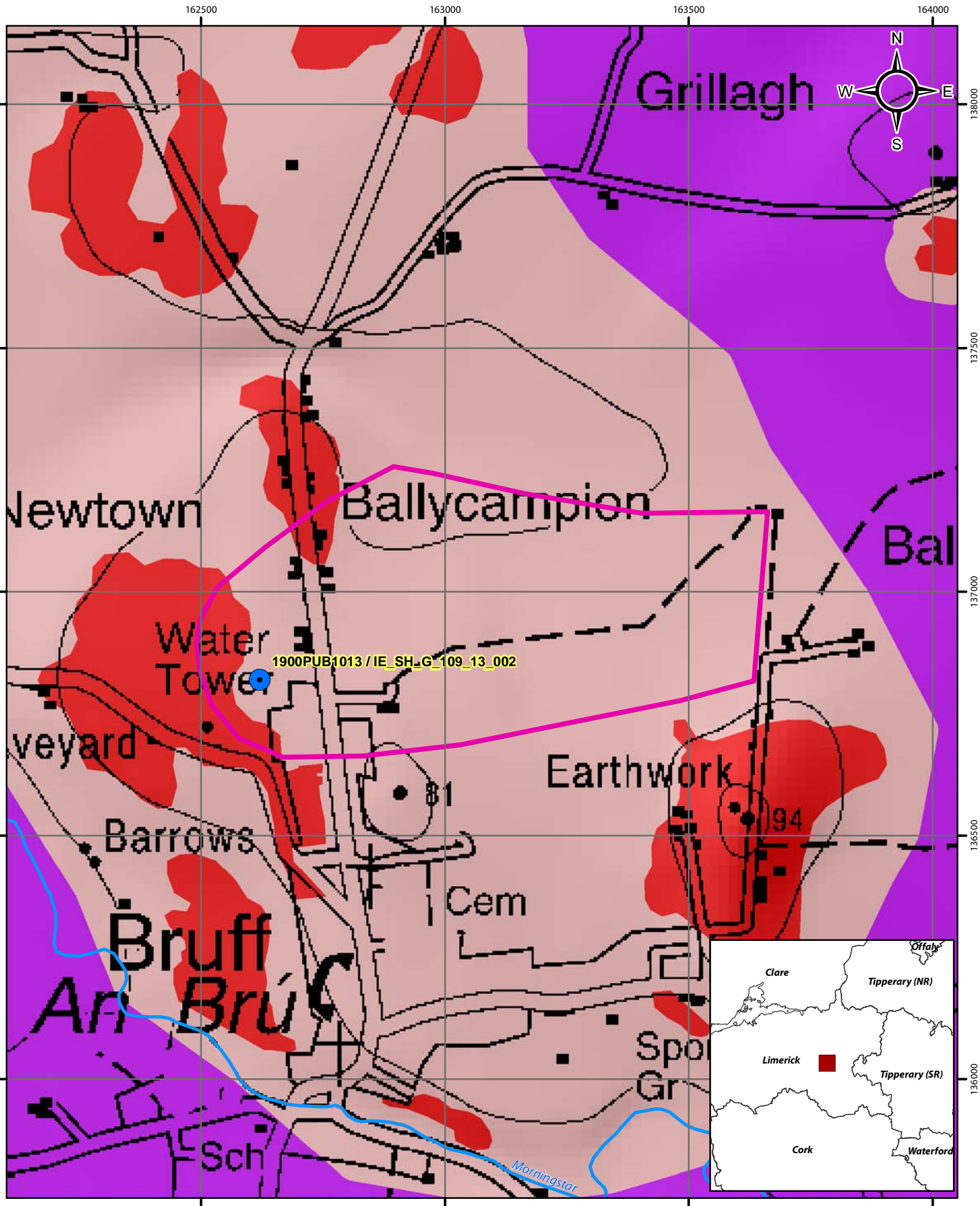
## Bedrock Map for Bruff (Moloney's Field)

- Abstractions
- River
- Zone of Contribution
- Fault
- Dinantian Lower Impure Limestones
- Dinantian Pure Unbedded Limestones

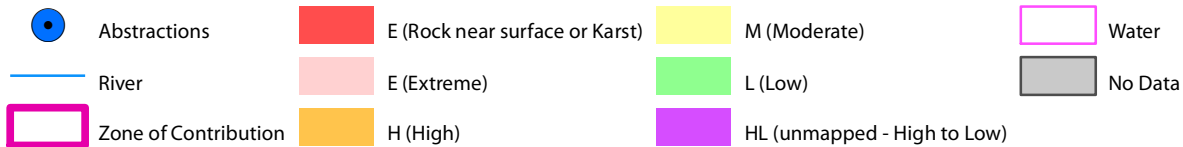
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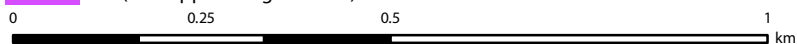


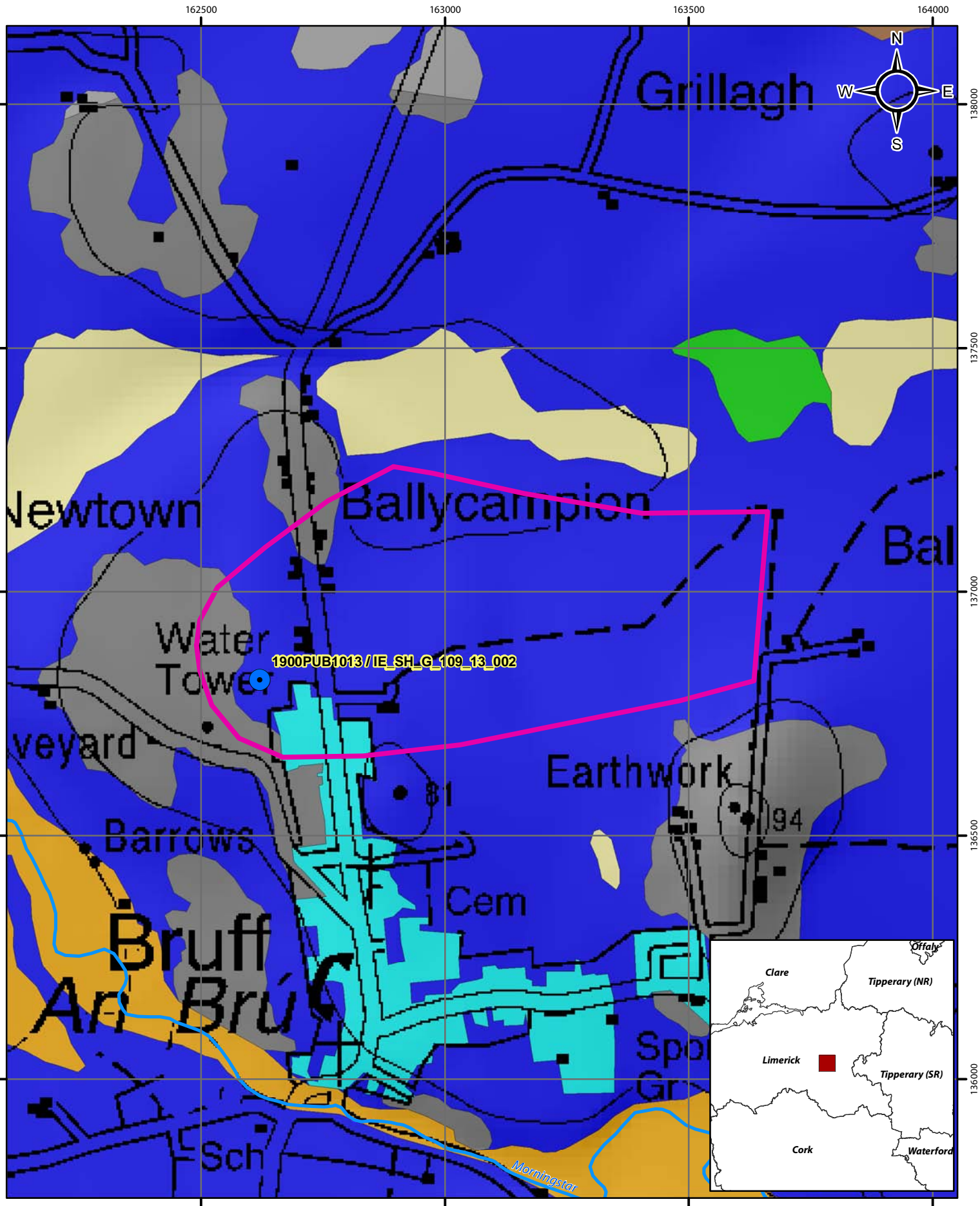


## Groundwater Vulnerability Map for Bruff (Moloney's Field)














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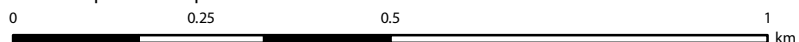




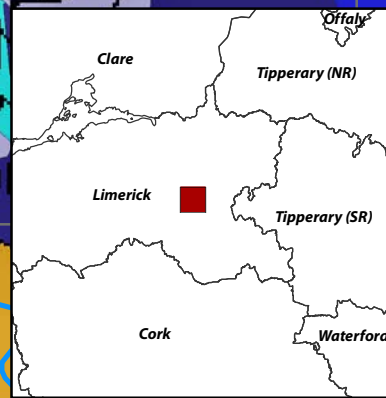
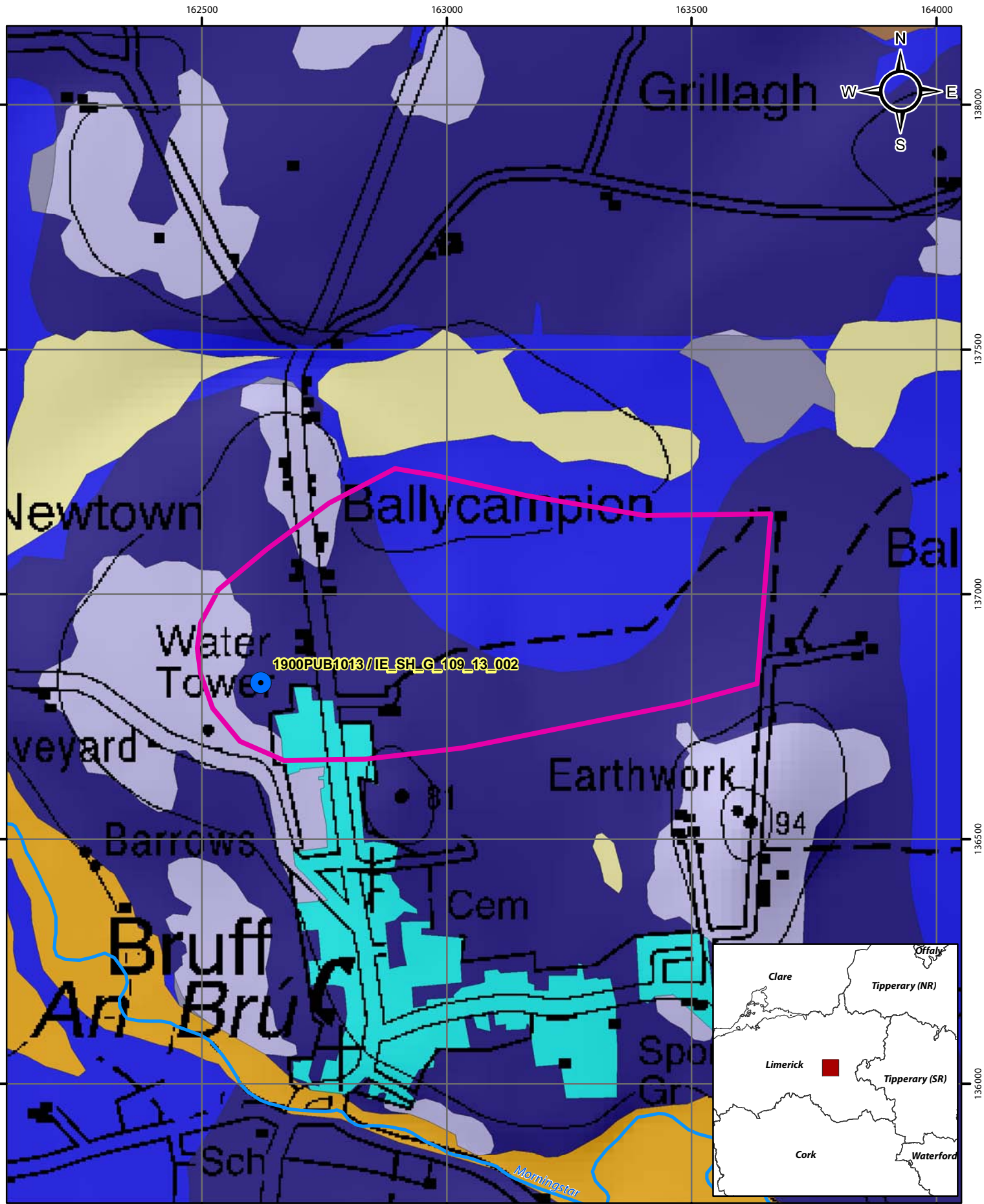
## Subsoils Map for Bruff (Moloney's Field)

- |   |   |   |  |
|---|---|---|--|
|  Abstractions         |  Alluvium    |  Lacustrine sediments            |  Karstified bedrock outcrop or subcrop |
|  River                 |  Fen peat    |  Gravels derived from limestones |  Till derived from limestones          |
|  Zone of Contribution |  Made ground |  Bedrock outcrop or subcrop      |  |

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## Soils Map for Bruff (Moloney's Field)

