

## Water Framework Directive Groundwater Monitoring Programme

### Site Information

### Clouncagh (Rathkeale)



Clouncagh (Rathkeale) PWS is supplied through a borehole with an abstraction of 590 m<sup>3</sup>/day. The GSI produced a source report for the site.

SITE INFORMATION					
Site Name:	Clouncagh (Rathkeale)		County:	Limerick	
RBD:	Shannon IRBD		EU Reporting Code:	IE_SH_G_128_13_006	
Easting:	137081		GWB Name:	Knockaderry	
Northing:	134480		GWB Code:	IE_SH_G_128	
Site Use:	Drinking Water (PWS)		Drinking Water Code:	1900PUB1046	
Hydrometric Area:	24		Water Level Monitoring Network:	Level	Flow
Townland:	CLONCAGH			N	N
Ownership:	Limerick County Council				
Water Quality Monitoring Network:	Surveillance		Operational (Point)		Operational (Diffuse)
	N		N		Y
Site Comments:	Clouncagh (Rathkeale) PWS is situated in a Regionally Important Fissured Aquifer (Rf) / Dinantian (early) Sandstone, Shales and Limestone. The PWS is included in the diffuse GW quality monitoring network.				
SITE DIRECTIONS					
Location and Access Information:	Take N21 out of Limerick toward Tralee. At Newcastlewest village take R520 east for 8km then take a left for Cloncagh village. Go passed the church, and drive until arrive a large disused building (creamery). The borehole is located behind the building.				
Additional Comments:	---				
WELL INFORMATION					
Monitoring Point Type:	BH	Abstraction Rate (m³/d):	590	Ground Elevation (m OD):	82
Borehole Log Available:	---	Total Drilled Depth (m bgl):	45	Depth to Bedrock (m bgl):	15
Top of Casing (m agl):	-0.41	Upper Casing Diameter (mm):	203	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):	57-63				
Static Water Level (m bgl):	4-5				
Scheme Name:	Clouncagh	Number of Abstraction Points in the Scheme:	1	Source Report Available	Y
Source Report Info:	Source report prepared by GSI.				
Scheme Summary:	A single borehole finished below ground surface pumps 24 hours / day to the scheme. An old shallow well was also present in the yard but it was abandoned and filled in.				

HYDROGEOLOGY								
GEOLOGY	Soil:	Deep poorly drained mineral (AminPD)					Subsoil Permeability:	Low
	Subsoil:	Tills (diamictos) (TDSs)						
	Bedrock:	Dinantian (early) Sandstones, Shales and Limestones						
HYDROGEOLOGY	Aquifer Category:	Rf	Vulnerability at Monitoring site:	High to Low		Flow Regime:	Productive fissured bedrock	
ZONE OF CONTRIBUTION	Estimated ZOC Size (km <sup>2</sup> ):	1.29	ZOC Delineated By:	GSI		Recharge Estimate (mm/yr):	350	
	ZOC Delineation Comments:	ZOC delineated by the GSI. Both Inner and Outer Source Protection Areas were defined. Available from the groundwater section at GSI. Recharge based on source report value. Area accommodates an area greater than 150% abstraction rate.						
Groundwater Vulnerability within ZOC (% area):	Extreme (X)	Extreme (E)	High	Moderate	Low	High to Low	Unclassified	
	12.51	49.71	0	0	0	37.77	0	
HYDROCHEMISTRY								
Hydrochemical Signature:	Ca-HCO <sub>3</sub>		Additional Water Chemistry Information:	During the monitoring period: The average nitrate concentration was 20 mg/l NO <sub>3</sub> and the maximum nitrate concentration was 39 mg/l NO <sub>3</sub> . The average ammonium concentration was 0.023 mg/l N and the maximum ammonium concentration was 0.251 mg/l N. The average molybdate reductive phosphorus (MRP) concentration was 0.017 mg/l P and the maximum MRP concentration was 0.046 mg/l P. The average chloride concentration was 26 mg/l Cl and the maximum chloride concentration was 33.6 mg/l Cl.				
Alkalinity (mg/l HCO <sub>3</sub> ):	Average:	Range:						
	271	168-353						
Hardness (mg/l CaCO <sub>3</sub> ):	Average:	Range:						
	305	181-395						
Conductivity (uS/cm):	Average:	Range:						
	591	405-767						
Monitoring Record Period:	From:	To:						
	1996	2009						
RISK ASSESSMENT								
Pressure (e.g., Nitrates, Phosphates, Abstractions):	Diffuse		Typical Contaminants:	Nitrates, Mobile chemicals				
Risk Category:	Not at risk, low confidence		GWB Status:	Good				
Impact Potential within ZOC (% area):	Extreme:	High:	Moderate:	Low:	Negligible:			
	0.00	44.20	0.00	0.00	55.80			
OTHER INFORMATION								
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Site Location



Site



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  $\mu$ S/cm) / Drinking Water Test (1,875  $\mu$ S/cm)

Further information on groundwater threshold values is contained in the Groundwater Regulations (S.I. No.9 of 2010).

### General Downgradient Distances

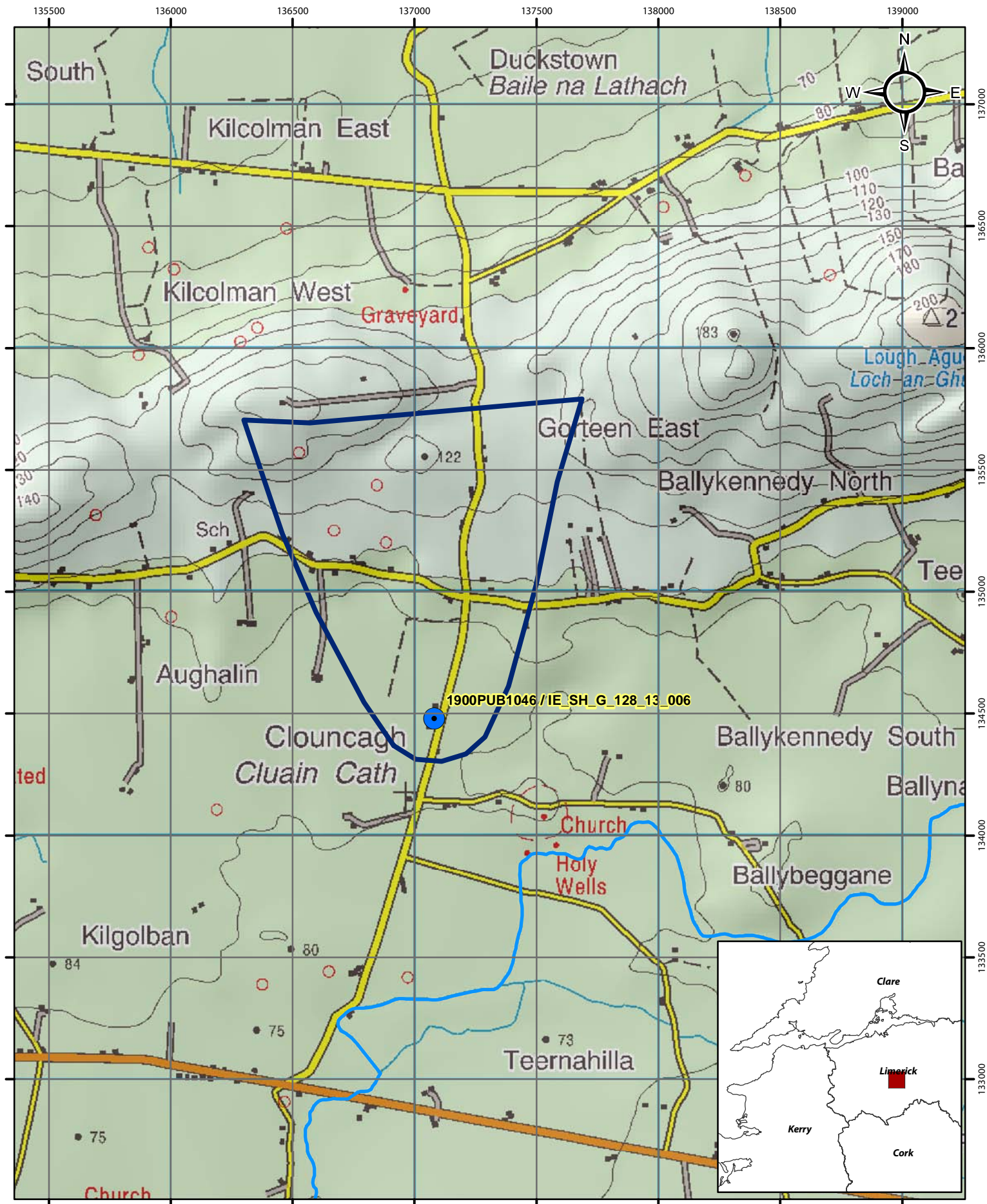
General Downgradient Distances (XL) applied to boreholes sourced in bedrock aquifers are constrained to estimate approximate limits based on data at the GSI. In some cases they may be higher or lower depending on local conditions.

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





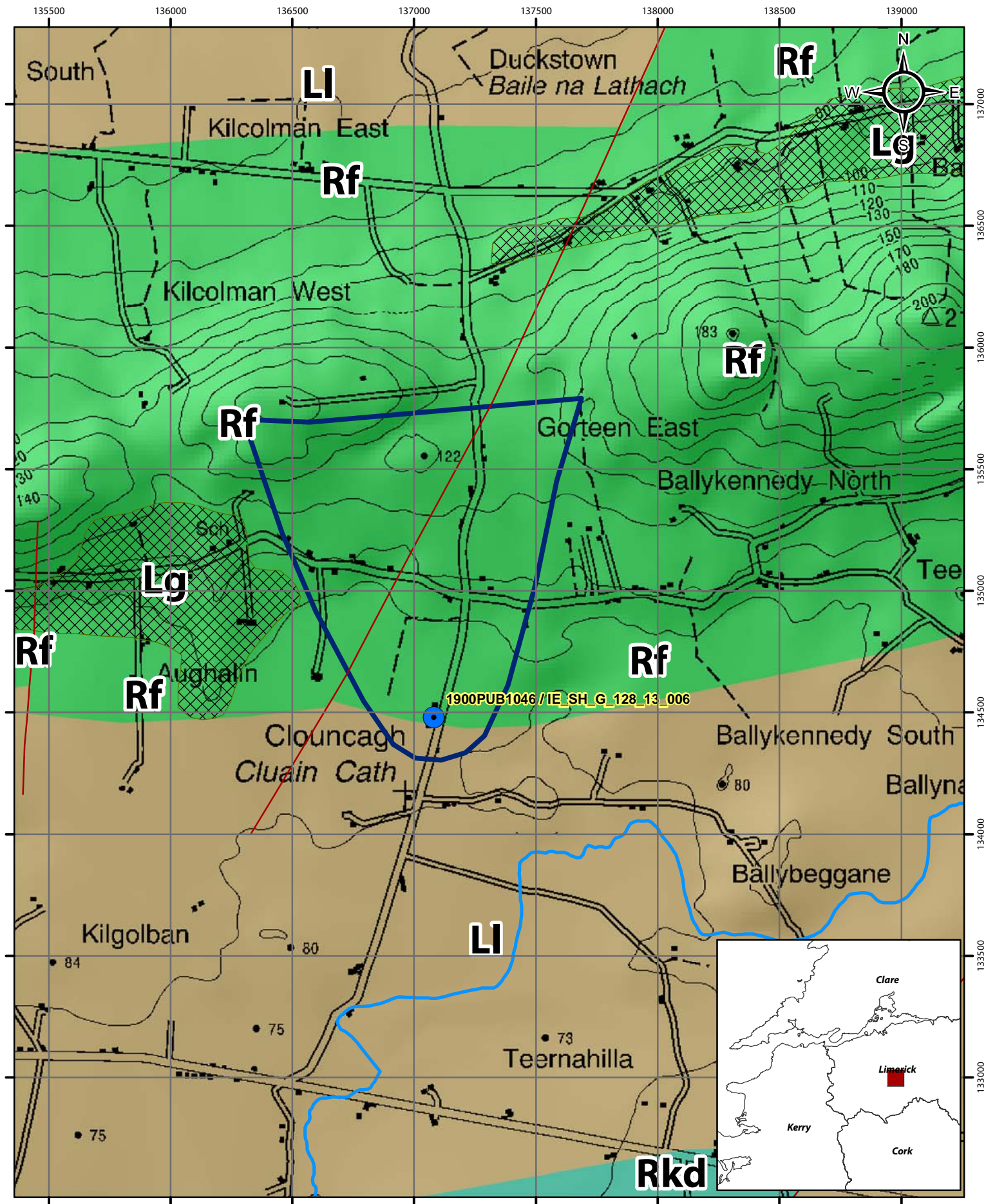
## Location Map for Clouncagh/Rathkeale

-  Abstractions
-  Zone of Contribution
-  River









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0 0.25 0.5 1 km

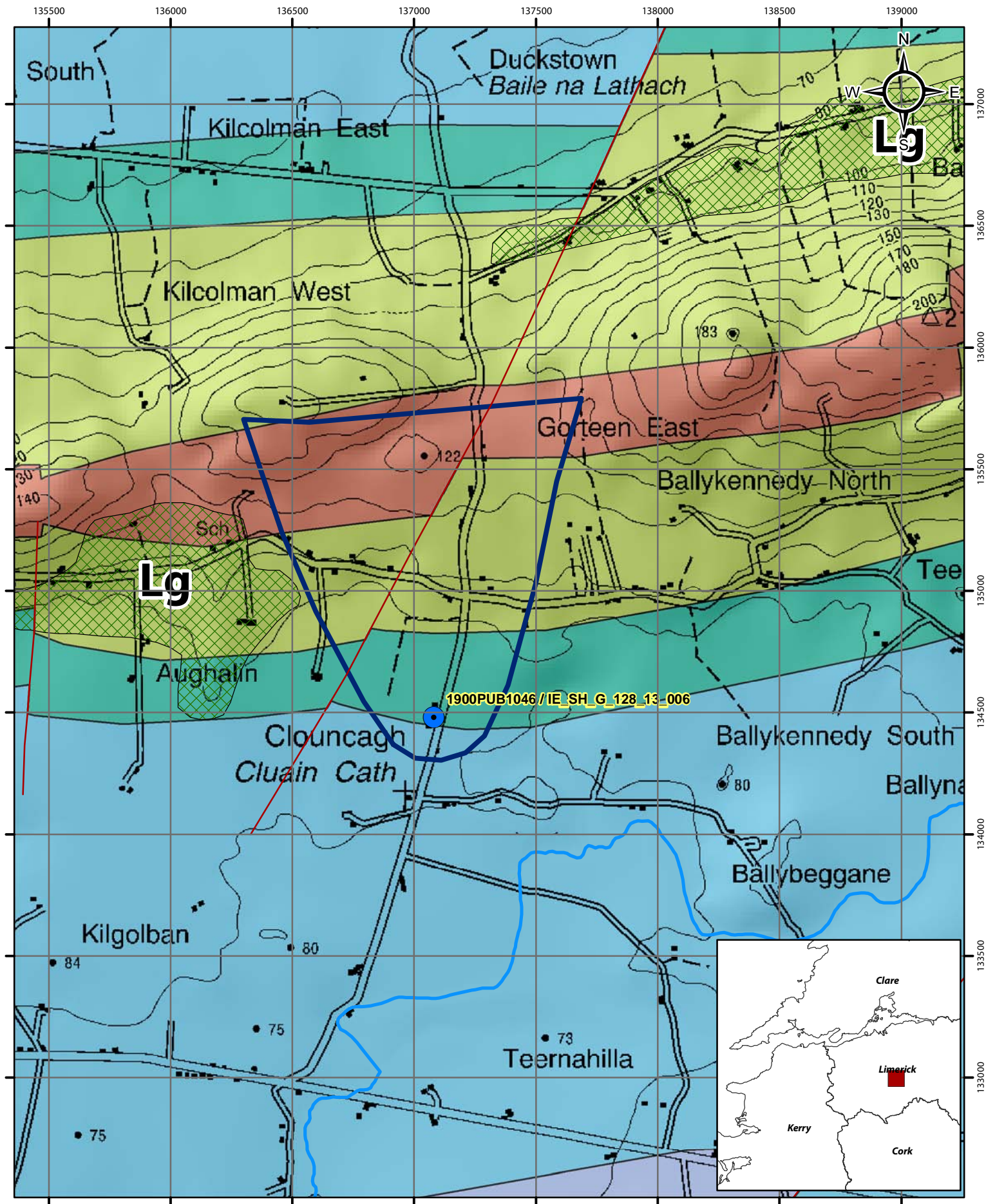




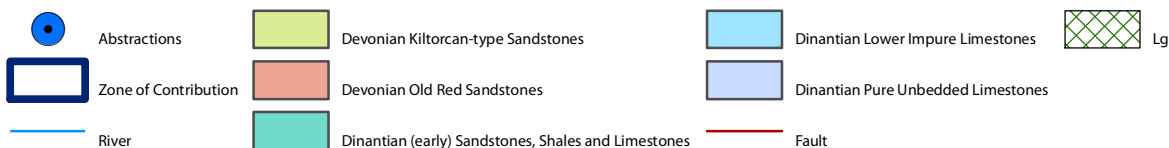
## Location Map for Clouncagh/Rathkeale

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





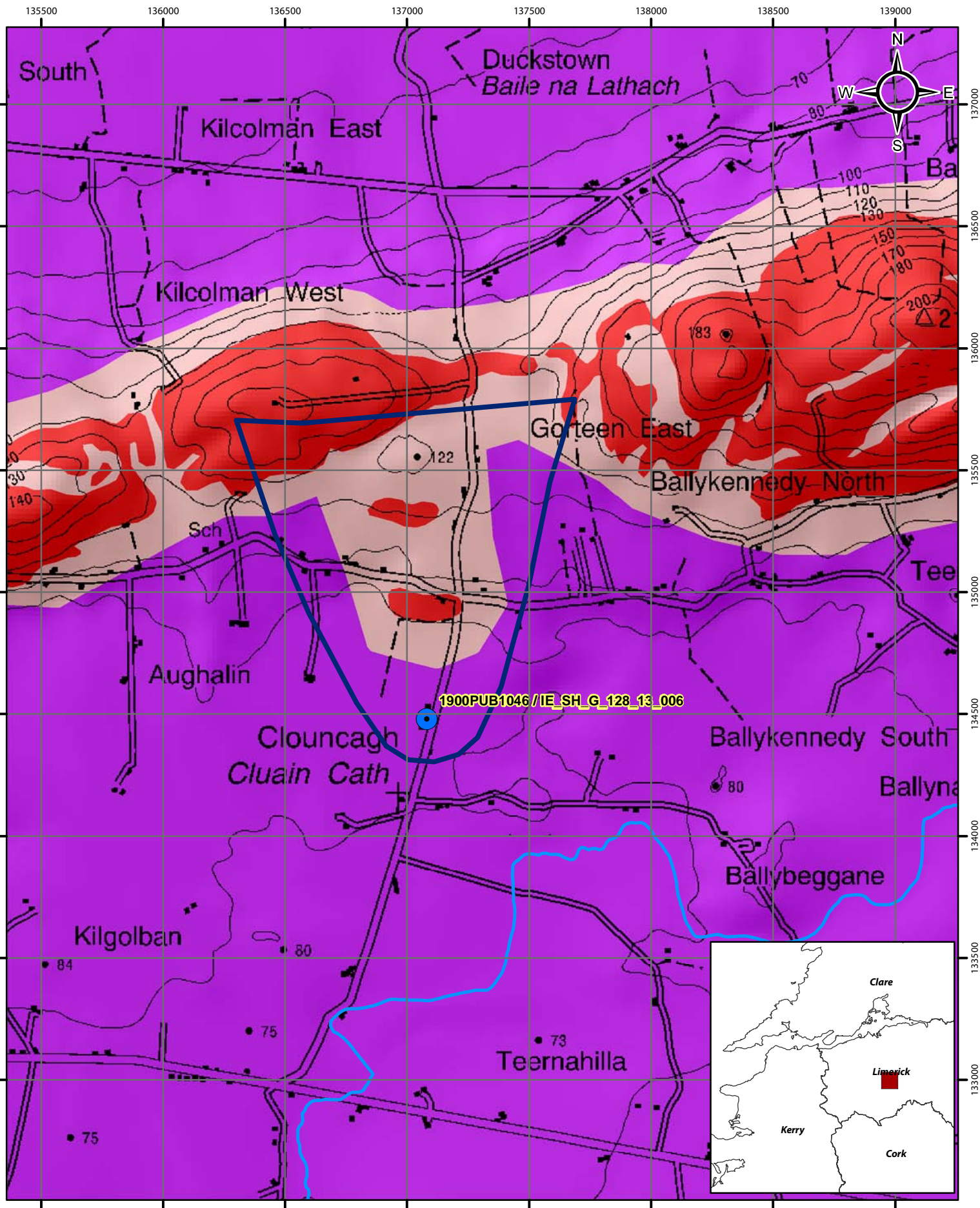
## Bedrock Map for Clouncagh/Rathkeale



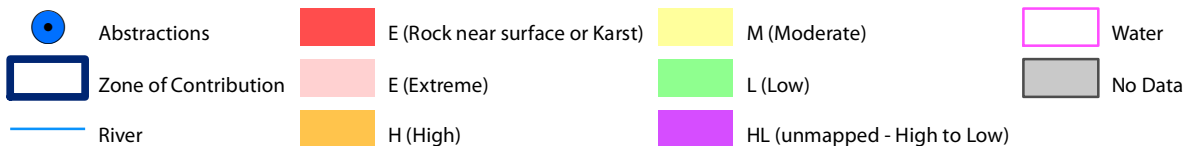
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0 0.25 0.5 1 km

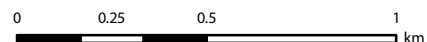




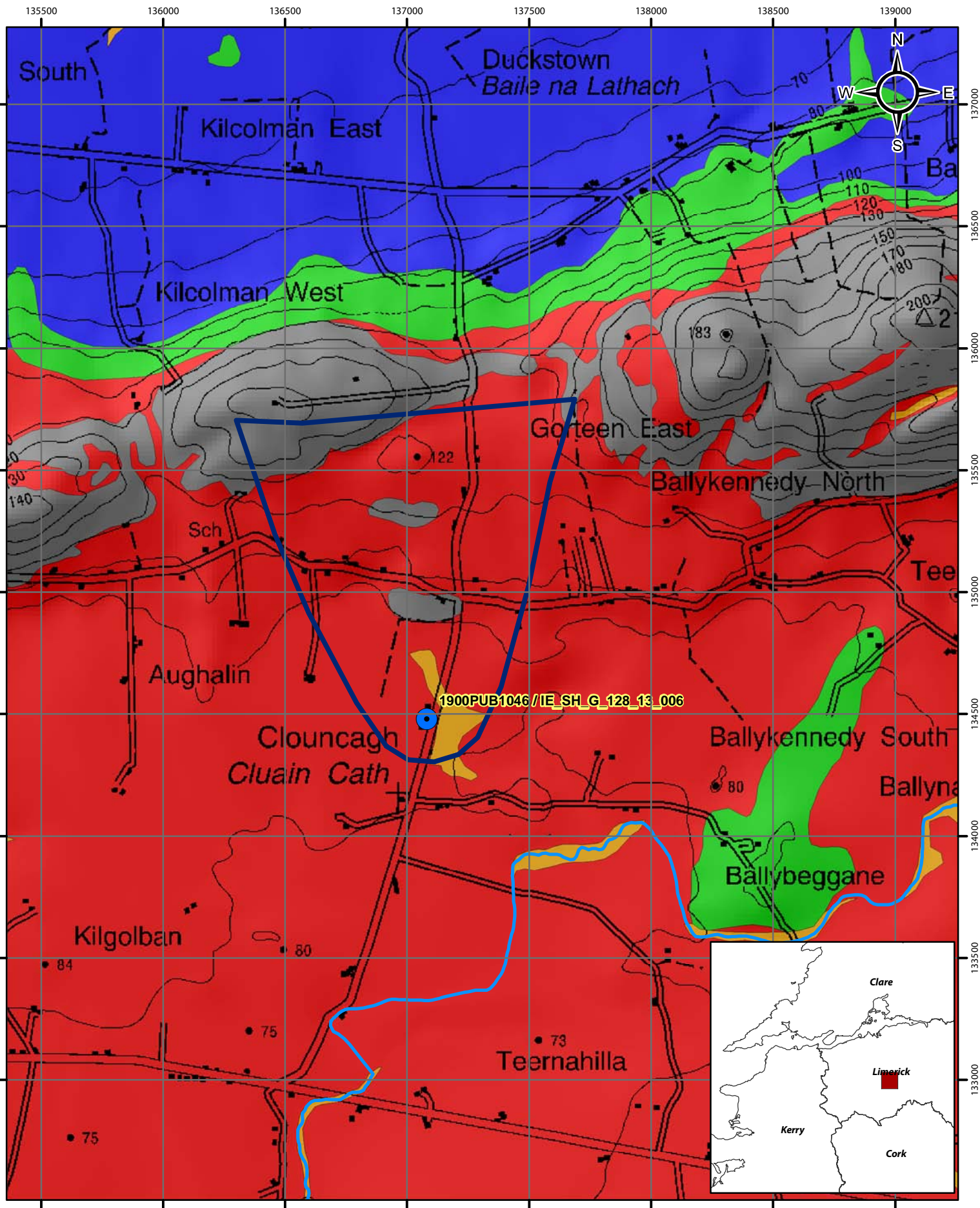
## Groundwater Vulnerability Map for Clouncagh/Rathkeale



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## Subsoils Map for Clouncagh/Rathkeale

