

Water Framework Directive Groundwater Monitoring Programme

Site Information

Ballinatona (Spring1)



Ballinatona Spring is a spring situated in Namurian Sandstones and is used as a public water supply. The abstraction rate is 7000m³/day.



Cork

August 2011

SITE INFORMATION					
Site Name:	Ballinatona (Spring1)		County:	Cork	
RBD:	SWRBD		EU Reporting Code:	IE_SW_G_070_04_002	
Easting:	128307		GWB Name:	Rathmore_W	
Northing:	112340		GWB Code:	IE_SW_G_070	
Site Use:	Drinking Water (PWS)		Drinking Water Code:	0500PUB1601	
Hydrometric Area:	18		Water Level Monitoring Network:	Level	Flow
Townland:	KNOCKDUFF UPPER (ED BARLEYHILL)			N	N
Ownership:	Cork County Council				
Water Quality Monitoring Network:	Surveillance		Operational (Point)		Operational (Diffuse)
	N		N		Y
Site Comments:	---				
SITE DIRECTIONS					
Location and Access Information:	Located 6km northwest of Newmarket and 1.5km west of Meelin. The springs are accessed from laneway east of the R576				
Additional Comments:	---				
WELL INFORMATION					
Monitoring Point Type:	Spring	Abstraction Rate (m³/d):	7000	Ground Elevation (m OD):	189
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:	---		
Specific Capacity (m³/d/m):	---				
Static Water Level (m bgl):	---				
Scheme Name:	Ballinatona Regional Wss	Number of Abstraction Points in the Scheme:	2	Source Report Available	N
Source Report Info:	---				
Scheme Summary:	The scheme is mainly supplied by Ballintona Springs. The scheme is augmented by Browne's Well only when there is a sharp increase in demand which cannot be met by the springs. The water is treated by chlorination.				

HYDROGEOLOGY								
GEOLOGY	Soil:	Poorly drained mineral soils with peaty topsoil (AminPDPT)					Subsoil Permeability:	Low
	Subsoil:	Tills (diamictos) (TNSSs)						
	Bedrock:	Namurian Sandstones						
HYDROGEOLOGY	Aquifer Category:	LI	Vulnerability at Monitoring site:	High to Low			Flow Regime:	Poorly productive
ZONE OF CONTRIBUTION	Estimated ZOC Size (km²):	5.81	ZOC Delineated By:	OCM (DC)			Recharge Estimate (mm/yr):	195
	ZOC Delineation Comments:	The ZOC was delineated based mainly on topography and the entire hydrogeological catchment was used. The boundaries are uncertain due to unknown discharge and actual recharge rates. There is expected to be increased flow along the fault in the west of the ZOC. The temperature is higher than expected for spring water and may indicate a contribution at depth.						
Groundwater Vulnerability within ZOC (% area):	Extreme (X)	Extreme (E)	High	Moderate	Low	High to Low	Unclassified	
	8.5	38.02	0	0	0	53.48	0	
HYDROCHEMISTRY								
Hydrochemical Signature:	Ca-HCO3		Additional Water Chemistry Information:	During the monitoring period: The average nitrate concentration was 3 mg/l NO3 and the maximum nitrate concentration was 32 mg/l NO3. The average ammonium concentration was 0.023 mg/l N and the maximum ammonium concentration was 0.168 mg/l N. The average molybdate reductive phosphorus (MRP) concentration was 0.009 mg/l P and the maximum MRP concentration was 0.046 mg/l P. The average chloride concentration was 16 mg/l Cl and the maximum chloride concentration was 45.9 mg/l Cl.				
Alkalinity (mg/l HCO3):	Average:	Range:						
	244	211-312						
Hardness (mg/l CaCO3):	Average:	Range:						
	244	214-351						
Conductivity (uS/cm):	Average:	Range:						
	467	249-549						
Monitoring Record Period:	From:	To:						
	1995	2010						
RISK ASSESSMENT								
Pressure (e.g., Nitrates, Phosphates, Abstractions):	---			Typical Contaminants:		---		
Risk Category:	Not at risk, low confidence			GWB Status:		Good		
Impact Potential within ZOC (% area):	Extreme:	High:	Moderate:		Low:	Negligible:		
	0.00	77.04	2.12		0.00	20.84		
OTHER INFORMATION								



Spring



Sampling 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 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).

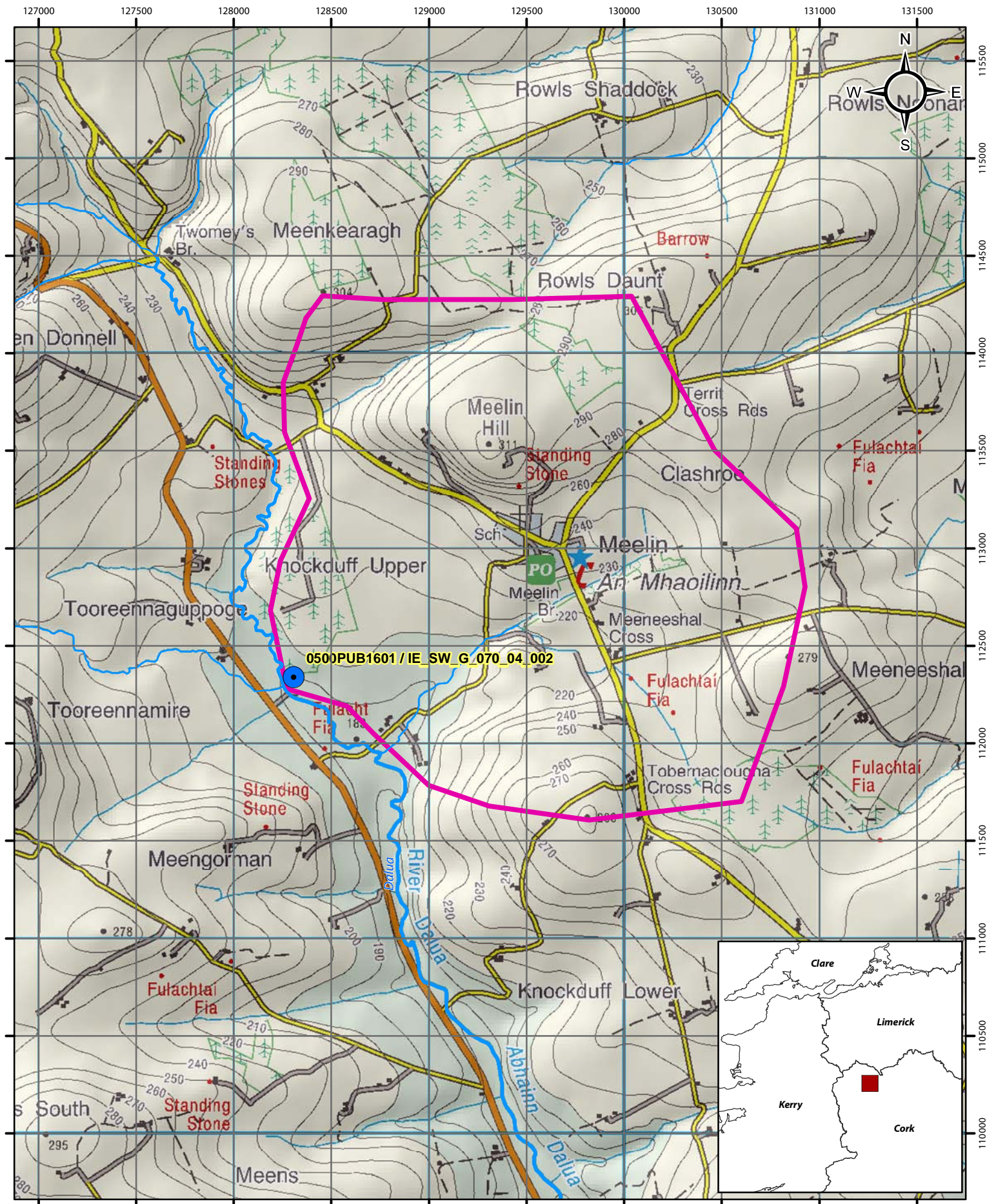
General Downgradient Distances

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:	

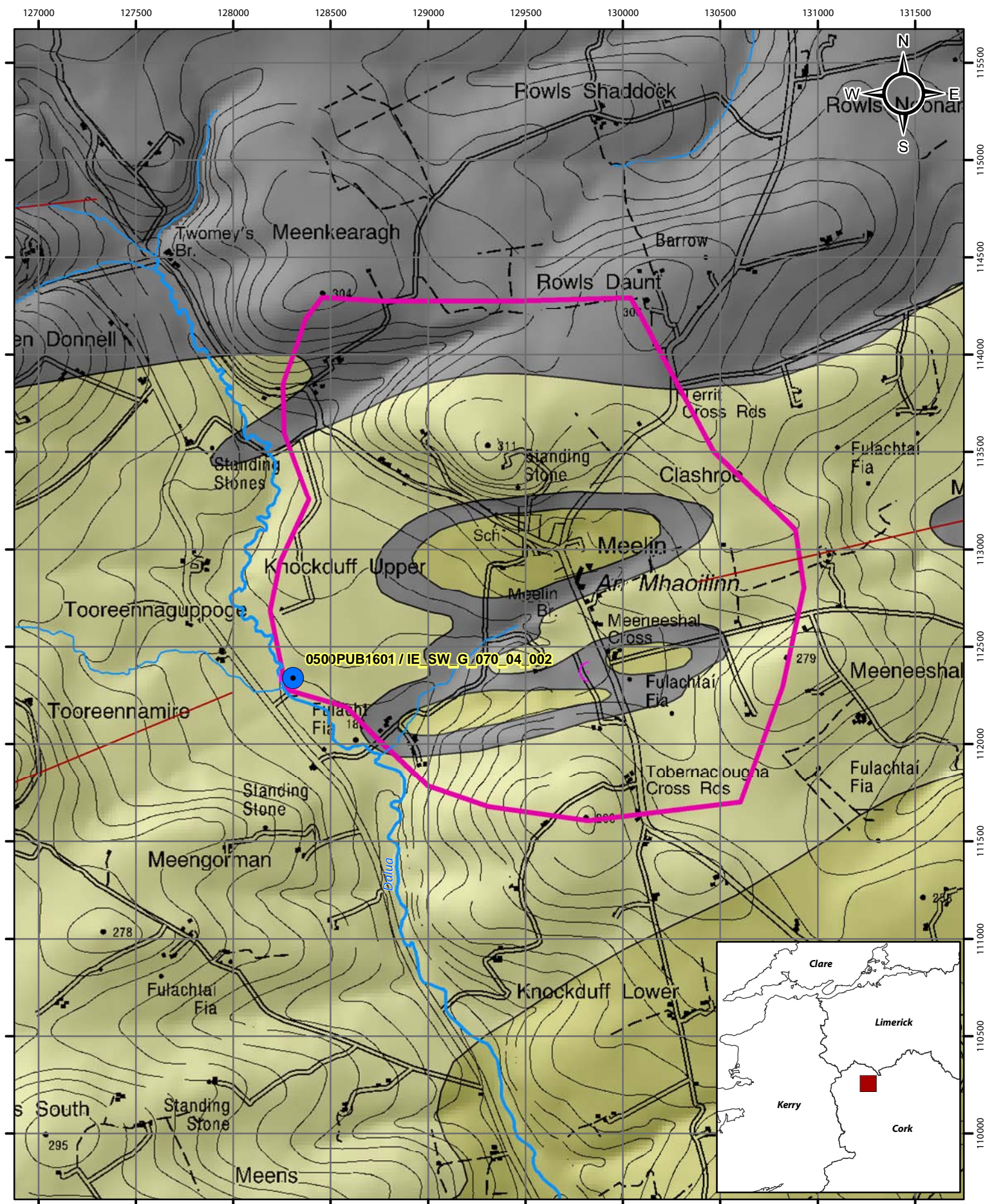


Location Map for Ballinatona

-  Abstractions
-  River
-  Zone of Contribution

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0 0.25 0.5 1 km

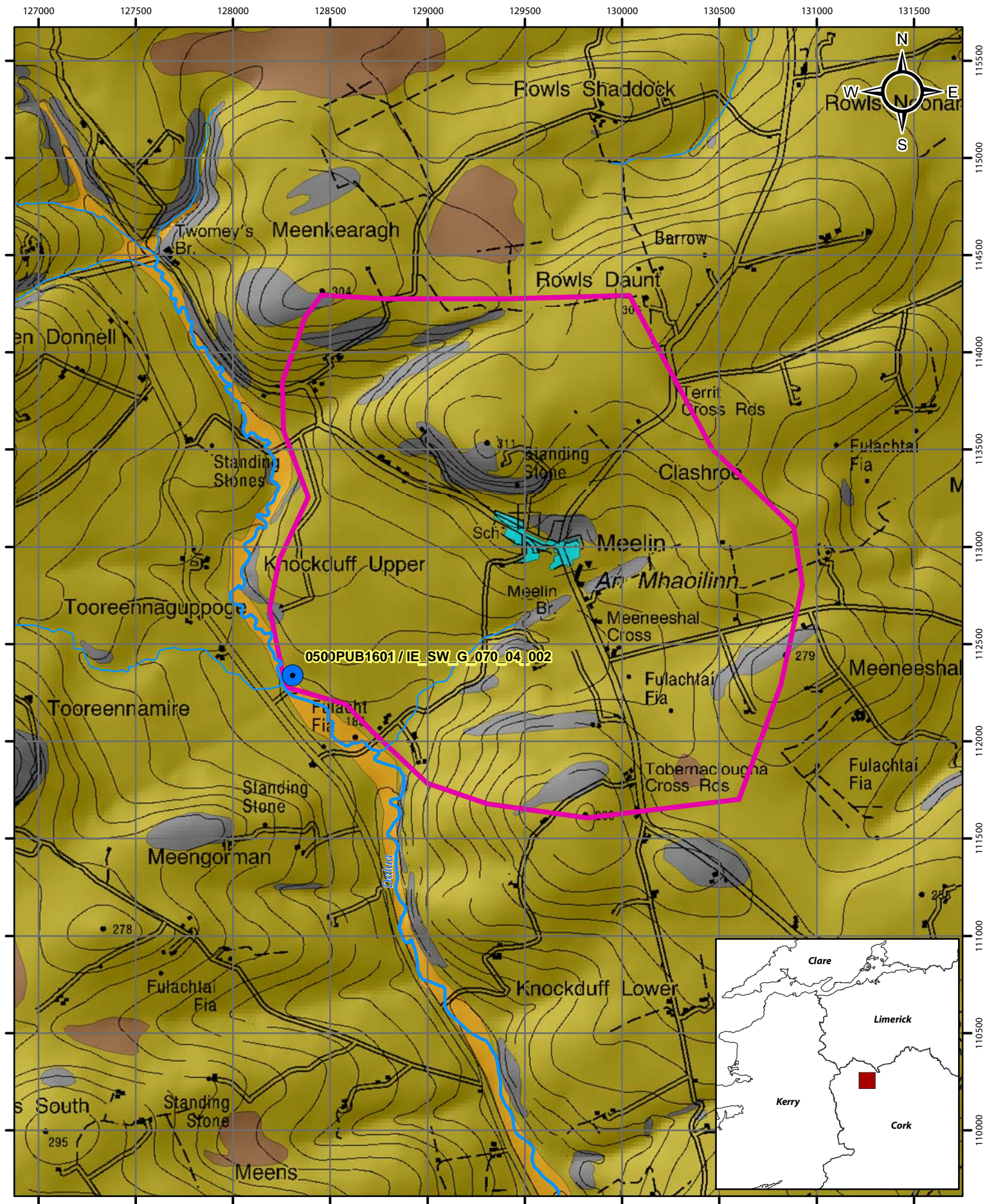


Bedrock Map for Ballinatona

- | | | | | | | | |
|--|----------------------|--|---------------------------|--|--------------|--|-------|
| | Abstractions | | Namurian Sandstones | | Spring | | Fault |
| | River | | Namurian Shales | | Swallow Hole | | |
| | Zone of Contribution | | Namurian Undifferentiated | | | | |

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0 0.25 0.5 1 km

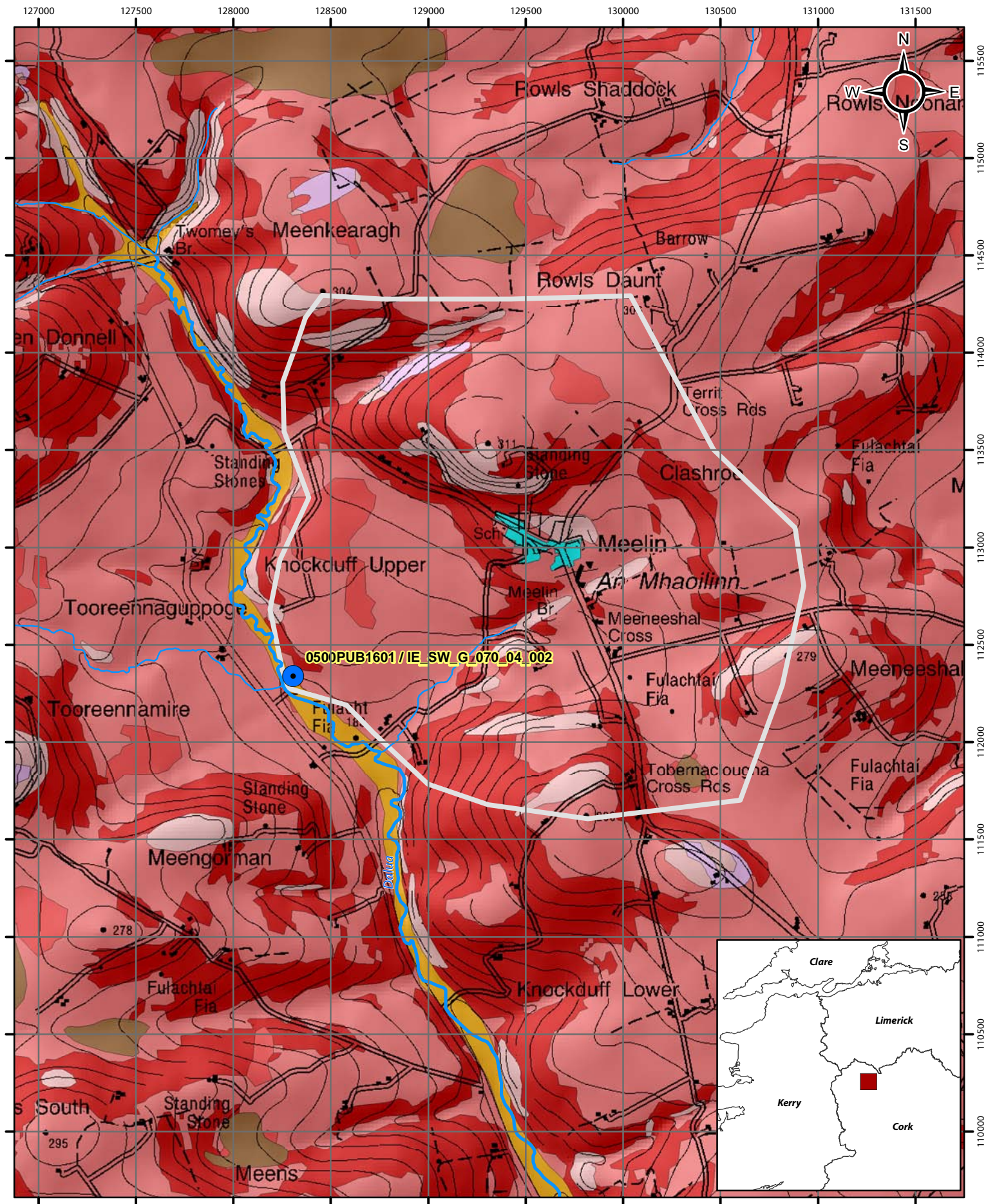


Subsoils Map for Ballinatona

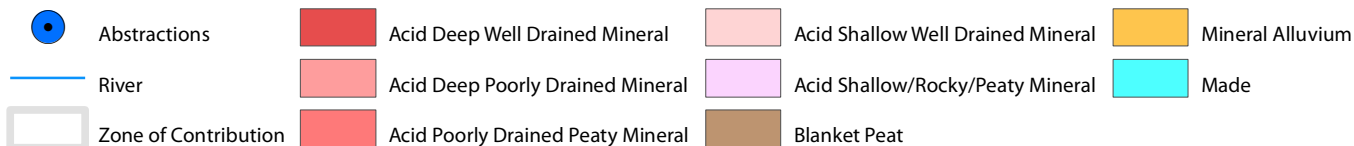
- Abstractions
- Alluvium
- Made ground
- River
- Blanket peat
- Till derived from Namurian sandstones and shales
- Zone of Contribution
- Bedrock outcrop or subcrop

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0 0.25 0.5 1 km



Soils Map for Ballinatona



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