

Water Framework Directive Groundwater Monitoring Programme

Site Information

Ballyagran



This monitoring point is a borehole that feeds the Ballyagran public water supply. The borehole has an abstraction of 1,090m³/day.

SITE INFORMATION					
Site Name:	Ballyagran		County:	Limerick	
RBD:	Shannon IRBD		EU Reporting Code:	IE_SH_G_046_13_001	
Easting:	147011		GWB Name:	Bruree	
Northing:	128080		GWB Code:	IE_SH_G_046	
Site Use:	Drinking Water (PWS)		Drinking Water Code:	1900PUB1022	
Hydrometric Area:	24		Water Level Monitoring Network:	Level	Flow
Townland:	DREWSCOURT EAST			N	N
Ownership:	Limerick County Council				
Water Quality Monitoring Network:	Surveillance		Operational (Point)		Operational (Diffuse)
	N		N		Y
Site Comments:	---				
SITE DIRECTIONS					
Location and Access Information:	---				
Additional Comments:	---				
WELL INFORMATION					
Monitoring Point Type:	BH	Abstraction Rate (m³/d):	1090	Ground Elevation (m OD):	100
Borehole Log Available:	Y	Total Drilled Depth (m bgl):	111	Depth to Bedrock (m bgl):	15
Top of Casing (m agl):	---	Upper Casing Diameter (mm):	203	Lower Casing Diameter (mm):	---
Final Borehole Depth (m):	111	Upper Casing Bottom Depth (m bgl) :	22	Lower Casing Bottom Depth (m bgl):	---
Screen Interval (m bgl):	22-32	Screen Type (PVC,Steel,other):	Boode PVC	Screen Slot Size (mm):	3
Grout Type (cement,bentonite):	Cement	Grouted above (m bgl):	17	Grout Volume Injected (m³):	1.8 tonnes
Gravel Pack Interval (m bgl):	17-32	Gravel Pack Volume (m³):	---	Open Hole Interval (m bgl):	32-111
Potential Yield (m³/day):	---	Comments on Monitoring Site:	Log for new borehole available. Gravel pack extends above screen interval. Pump set at 20mbgl approximately.		
Specific Capacity (m³/d/m):	---				
Static Water Level (m bgl):	---				
Scheme Name:	Ballyagran	Number of Abstraction Points in the Scheme:	1	Source Report Available	Y
Source Report Info:	Source report prepared by GSI for a now disused borehole (1995).				
Scheme Summary:	A new production borehole drilled in 2007 by David Ball feeds the Ballyagran PWS.				

HYDROGEOLOGY								
GEOLOGY	Soil:	Shallow well drained mineral (BminSW)					Subsoil Permeability:	High
	Subsoil:	Glaciofluvial sands and gravels (GLs)						
	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 (km²):	0.82	ZOC Delineated By:	GSI			Recharge Estimate (mm/yr):	282
	ZOC Delineation Comments:	It is considered that the original ZOC delineated by the GSI is adequate for the new borehole and should be reassessed on completion of Limerick GWPS update.						
Groundwater Vulnerability within ZOC (% area):	Extreme (X)	Extreme (E)	High	Moderate	Low	High to Low	Unclassified	
	0	18.18	0	0	0	81.82	0	
HYDROCHEMISTRY								
Hydrochemical Signature:	Ca-HCO3		Additional Water Chemistry Information:	During the monitoring period: The average nitrate concentration was 10 mg/l NO3 and the maximum nitrate concentration was 16 mg/l NO3. The average ammonium concentration was 0.016 mg/l N and the maximum ammonium concentration was 0.153 mg/l N. The average molybdate reductive phosphorus (MRP) concentration was 0.02 mg/l P and the maximum MRP concentration was 0.052 mg/l P. The average chloride concentration was 22.1 mg/l Cl and the maximum chloride concentration was 39.1 mg/l Cl.				
Alkalinity (mg/l HCO3):	Average:	Range:						
	299	35-360						
Hardness (mg/l CaCO3):	Average:	Range:						
	326	55-496						
Conductivity (uS/cm):	Average:	Range:						
	612	203-762						
Monitoring Record Period:	From:	To:						
	1995	2010						
RISK ASSESSMENT								
Pressure (e.g., Nitrates, Phosphates, Abstractions):	---			Typical Contaminants:		---		
Risk Category:	At risk, high confidence			GWB Status:		Good		
Impact Potential within ZOC (% area):	Extreme:	High:	Moderate:		Low:	Negligible:		
	0.00	17.82	66.79		0.00	15.39		
OTHER INFORMATION								
Ballyagran PWS is situated in a Regionally Important Fissured Aquifer (Rf). The GSI have published a source protection report for the site. The GSI source report for the site (1995) indicates that the borehole is supplied from the Devonian Kiltorcan-type Sandstones.								



Site



Well Head

Borehole Log by David Ball

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

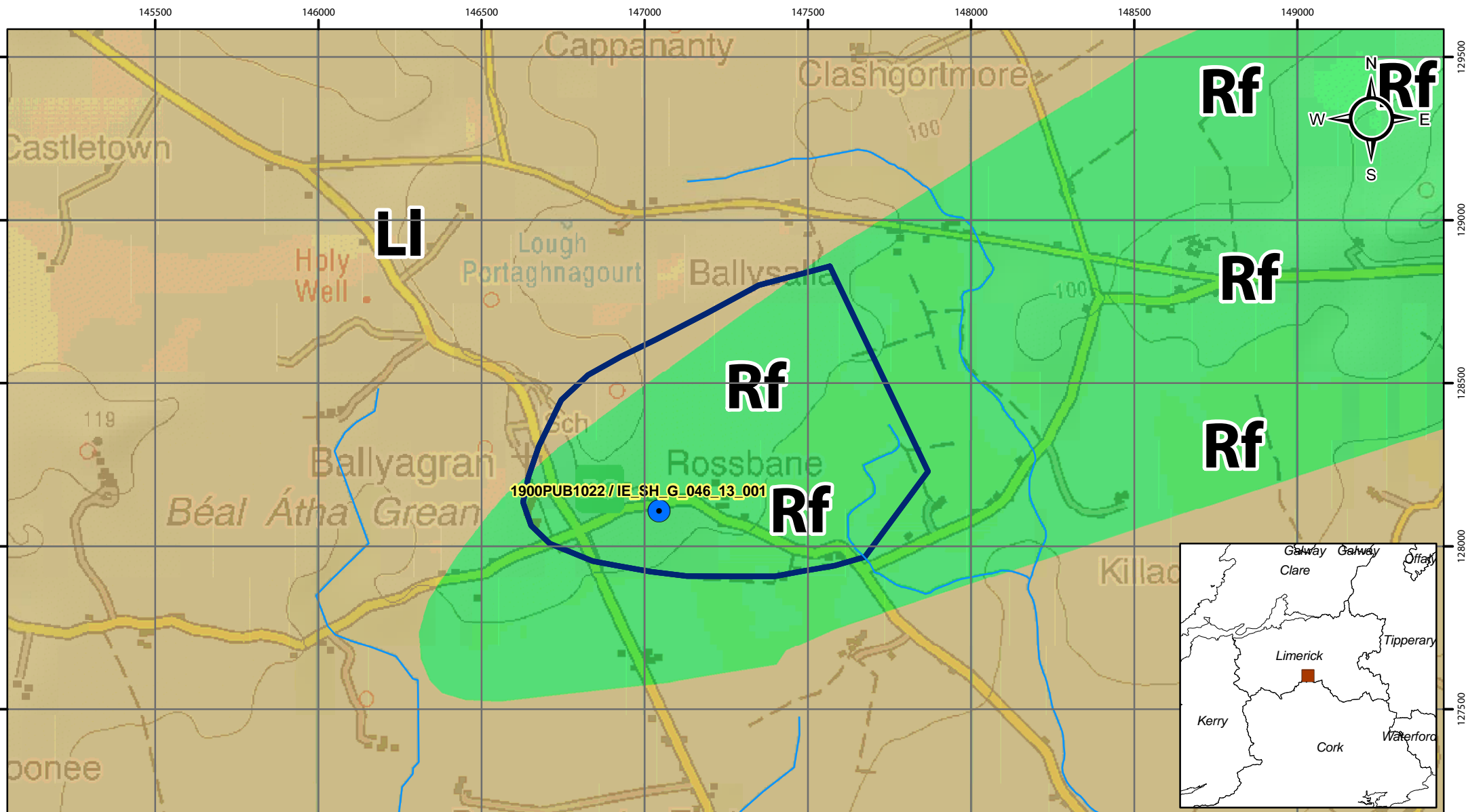
It is assumed that groundwater downgradient of a spring cannot flow back up to the spring, however a precautionary 30m buffer is generally applied which allows for instances where pumping under dry weather periods may induce a drawdown or where the ground may be sloping toward the spring from the downgradient side.

Version 0:	Prepared by	GSI	Date:	15/12/1995
Version 1:	Prepared by	OCM (DC)	Date:	Feb 2011
Version 2:	Prepared by		Date:	
Version 3:	Prepared by		Date:	
Version 4:	Prepared by		Date:	








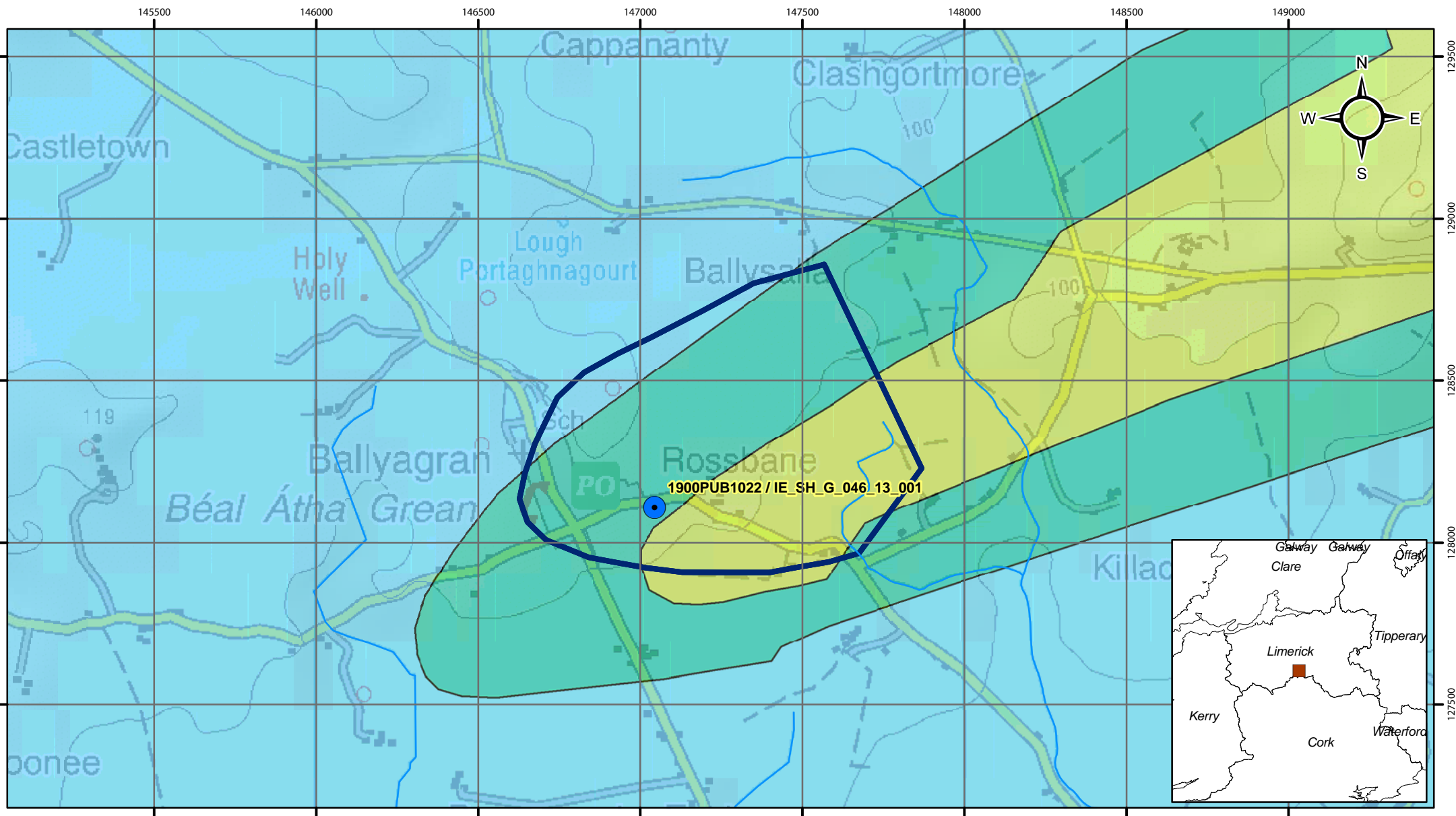
Location Map for Ballyagran

- Abstractions
- River
- Zone of Contribution









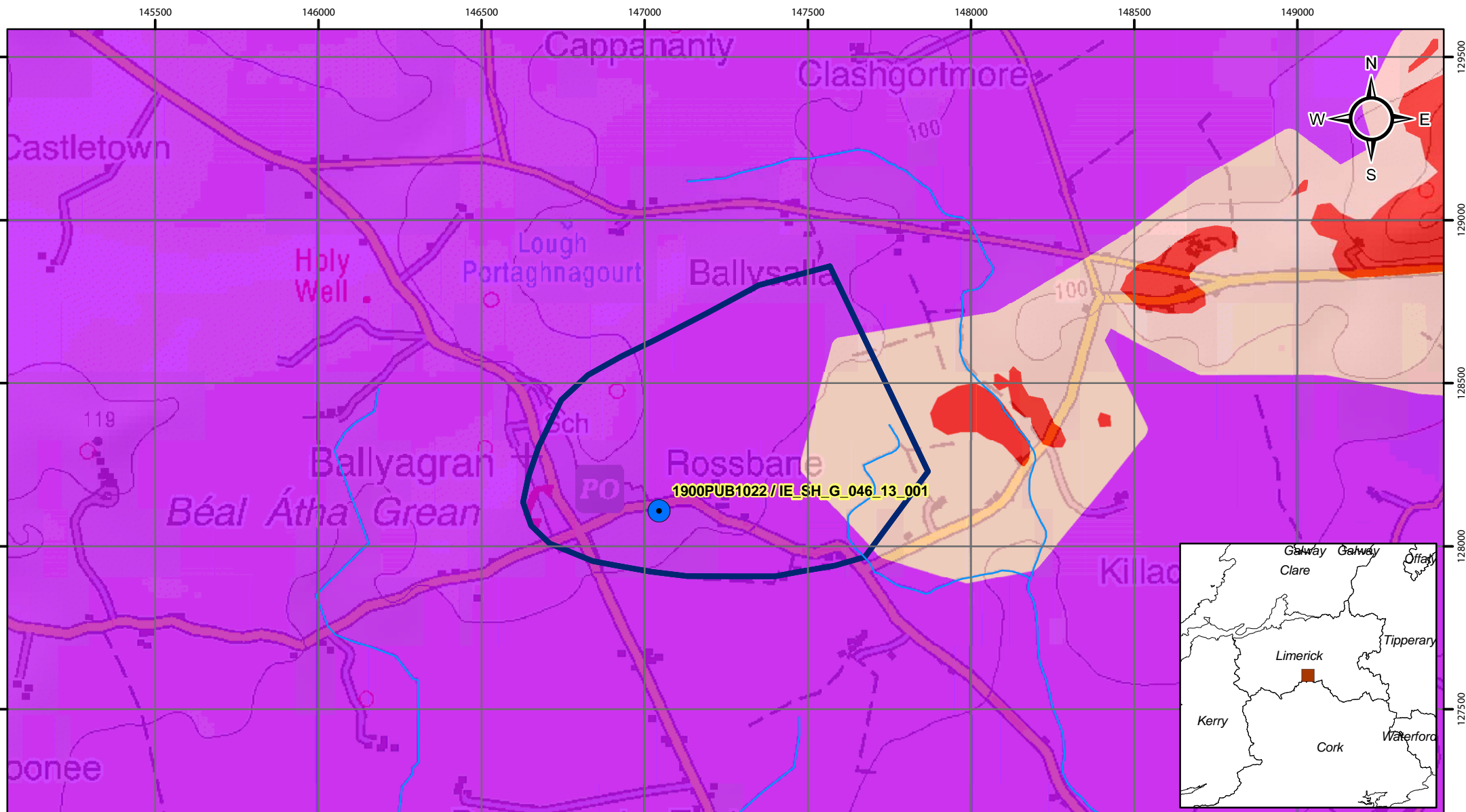
Aquifer Category for Ballyagran

-  Abstractions
-  River
-  Zone of Contribution
-  LI
-  Rf



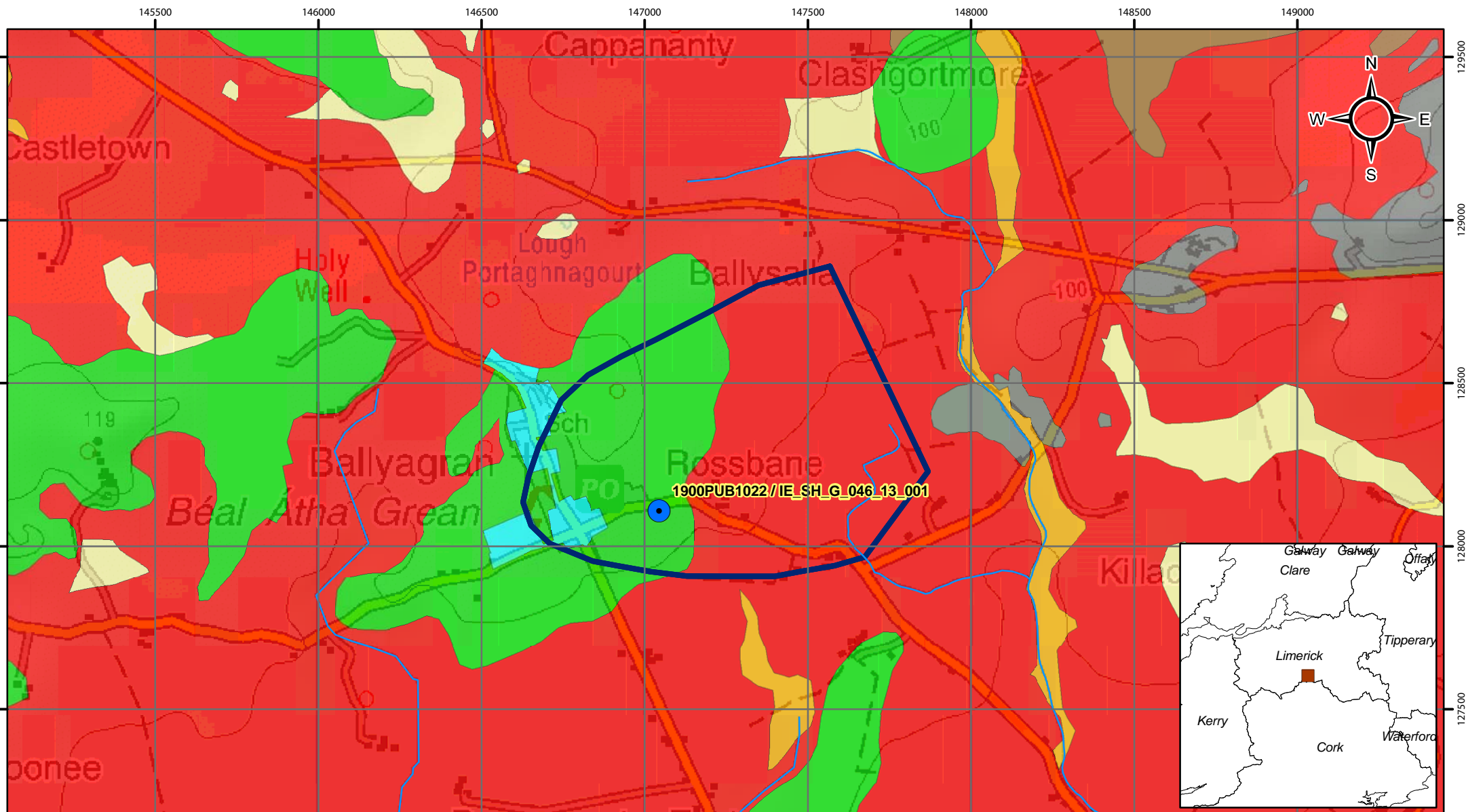
Bedrock Map for Ballyagran

-  Abstractions
-  River
-  Zone of Contribution
-  Devonian Kiltorcan-type Sandstones
-  Dinantian (early) Sandstones, Shales and Limestones
-  Dinantian Lower Impure Limestones



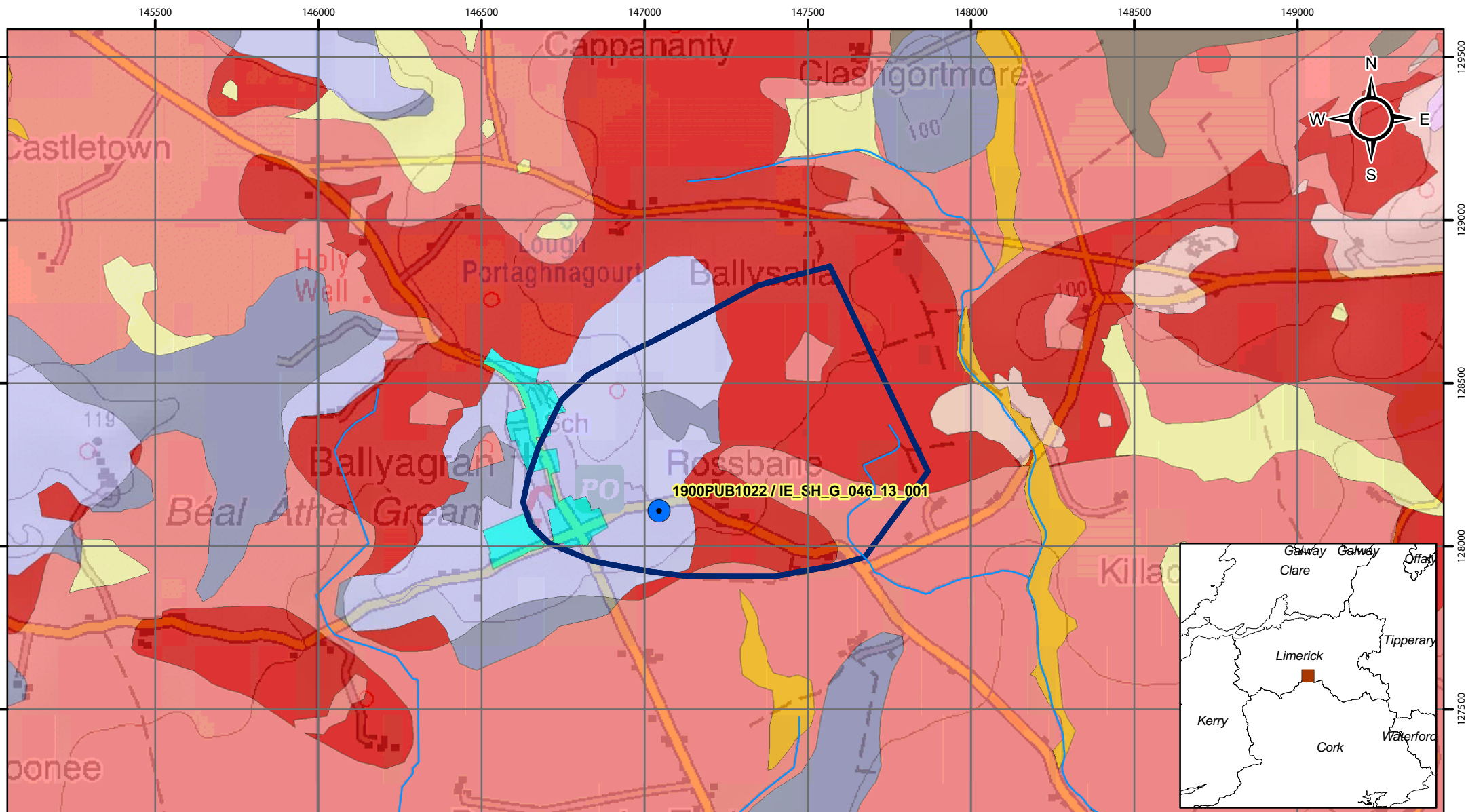
Groundwater Vulnerability for Ballyagran

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

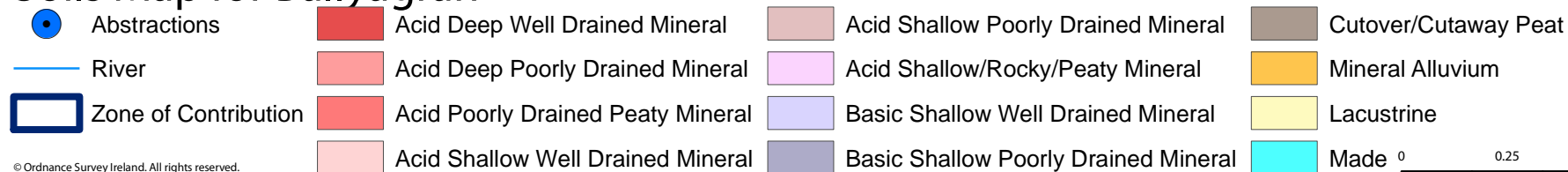


Subsoils Map for Ballyagran

- | | | | |
|---|---|---|---|
|  Abstractions |  Alluvium |  Bedrock outcrop or subcrop |  Till derived from Devonian sandstones |
|  River |  Cutover raised peat |  Lacustrine sediments | |
|  Zone of Contribution |  Gravels derived from limestones |  Made ground | |



Soils Map for Ballyagran



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