

Water Framework Directive Groundwater Monitoring Programme

Site Information

Baganelstown PWS (BH-C)



Baganelstown PWS (BH-C) is one of four boreholes that is used as a public water supply. The abstraction rate is 884m³/day. A source report has been prepared for the scheme.

SITE INFORMATION					
Site Name:	Baganelstown PWS (BH-C)		County:	Carlow	
RBD:	SERBD		EU Reporting Code:	IE_SE_G_004_01_001	
Easting:	270992		GWB Name:	Bagenalstown_3	
Northing:	162410		GWB Code:	IE_SE_G_004	
Site Use:	Drinking Water (PWS)		Drinking Water Code:	0100PUB1161	
Hydrometric Area:	14		Water Level Monitoring Network:	Level	Flow
Townland:	DUNLECKNY			Y	N
Ownership:	Carlow County Council				
Water Quality Monitoring Network:	Surveillance	Operational (Point)		Operational (Diffuse)	
	N	N		Y	
Site Comments:	---				
SITE DIRECTIONS					
Location and Access Information:	Well C is located approximately 450m north/north-east of Wells A and Well B. The well is situated with a fenced compound adjacent to the McGrath Memorial Park in the townland of Dunleckny in the northern part of Baganelstown				
Additional Comments:	---				
WELL INFORMATION					
Monitoring Point Type:	Borehole	Abstraction Rate (m³/d):	884	Ground Elevation (m OD):	160
Borehole Log Available:	---	Total Drilled Depth (m bgl):	72	Depth to Bedrock (m bgl):	---
Top of Casing (m agl):	---	Upper Casing Diameter (mm):	200	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:	Baganelstown	Number of Abstraction Points in the Scheme:	4	Source Report Available	Y
Source Report Info:	GES have completed a 2010 source report BH-A , B and C. A 2006 report by GES is available for BH-D.				
Scheme Summary:	The scheme comprises four boreholes (BH-A, B ,C and D) pumping together. BH-C is located 450 north of BH-A and B. BH-D is located to the west of the town. It is occasionally augmented by a shallow sump which pipes water from St. John's Spring.				

HYDROGEOLOGY								
GEOLOGY	Soil:	Shallow well drained mineral (BminSW)					Subsoil Permeability:	High
	Subsoil:	Glaciofluvial sands and gravels (GLs)						
	Bedrock:	Dinantian Dolomitised Limestones						
HYDROGEOLOGY	Aquifer Category:	Rkd	Vulnerability at Monitoring site:	High to Low			Flow Regime:	Karstified
ZONE OF CONTRIBUTION	Estimated ZOC Size (km²):	1.58	ZOC Delineated By:	GES			Recharge Estimate (mm/yr):	359
	ZOC Delineation Comments:	Geotechnical & Environmental Services Ltd. (GES) delineated a ZOC for the Baganelstown BH-C. See report for detailed delineation description.						
Groundwater Vulnerability within ZOC (% area):	Extreme (X)	Extreme (E)	High	Moderate	Low	High to Low	Unclassified	
	0.29	1.06	0	0	0	98.65	0	
HYDROCHEMISTRY								
Hydrochemical Signature:	Ca-HCO3			Additional Water Chemistry Information:	During the monitoring period: The average nitrate concentration was 38 mg/l NO3 and the maximum nitrate concentration was 53 mg/l NO3. The average ammonium concentration was 0.023 mg/l N and the maximum ammonium concentration was 0.35 mg/l N. The average molybdate reductive phosphorus (MRP) concentration was 0.022 mg/l P and the maximum MRP concentration was 0.3 mg/l P. The average chloride concentration was 24.9 mg/l Cl and the maximum chloride concentration was 99.5 mg/l Cl.			
Alkalinity (mg/l HCO3):	Average:	Range:						
	275	33-328						
Hardness (mg/l CaCO3):	Average:	Range:						
	364	152-1034						
Conductivity (uS/cm):	Average:	Range:						
	608	231-711						
Monitoring Record Period:	From:	To:						
	1993	2010						
RISK ASSESSMENT								
Pressure (e.g., Nitrates, Phosphates, Abstractions):	Diffuse			Typical Contaminants:		Nitrates		
Risk Category:	At risk, high confidence			GWB Status:		Good		
Impact Potential within ZOC (% area):	Extreme:	High:		Moderate:		Low:		Negligible:
	0.00	57.90		42.10		0.00		0.00
OTHER INFORMATION								



Pump House



Borehole Housing



Borehole Housing

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).

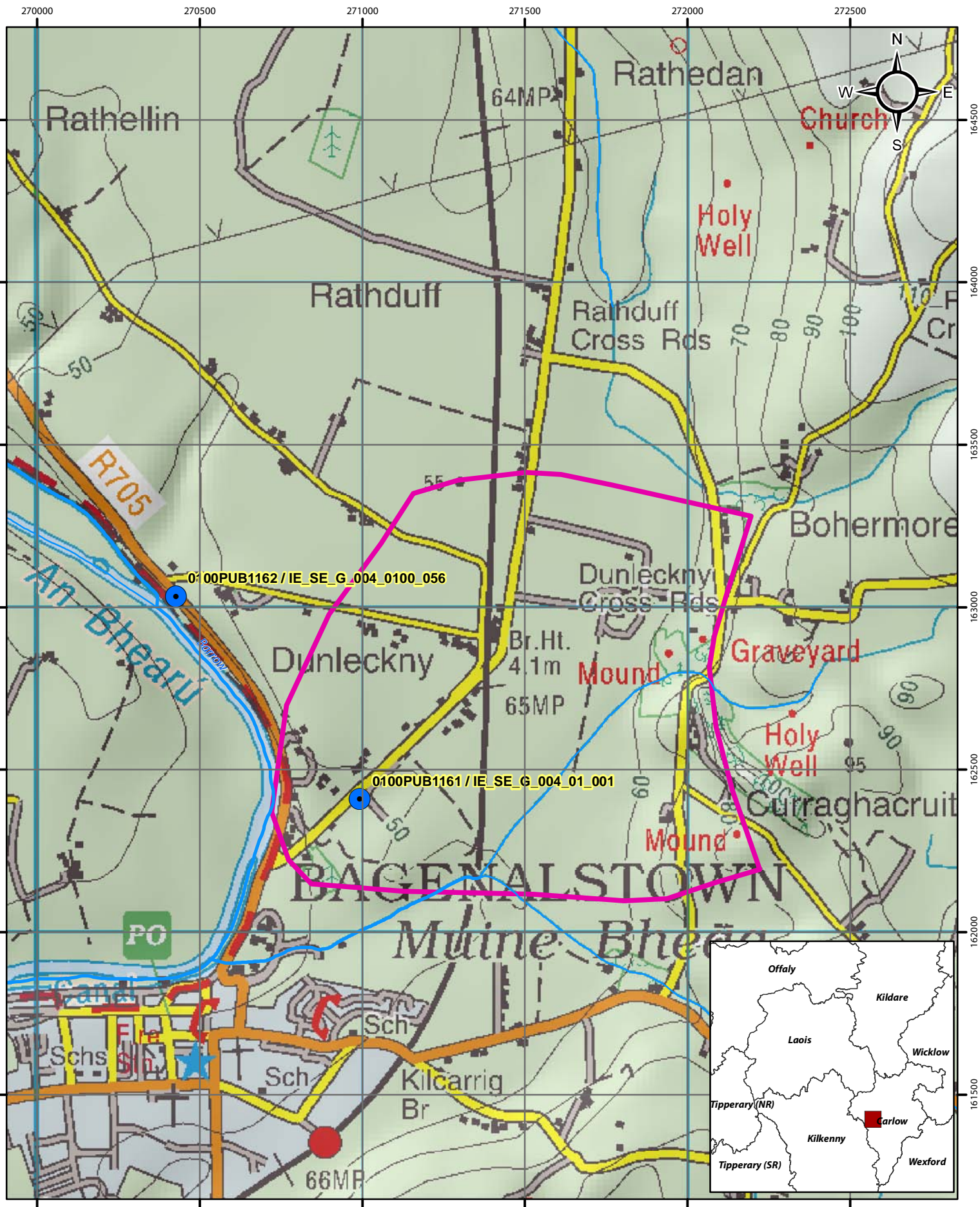
General Downgradient Distances

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
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	GES	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:	

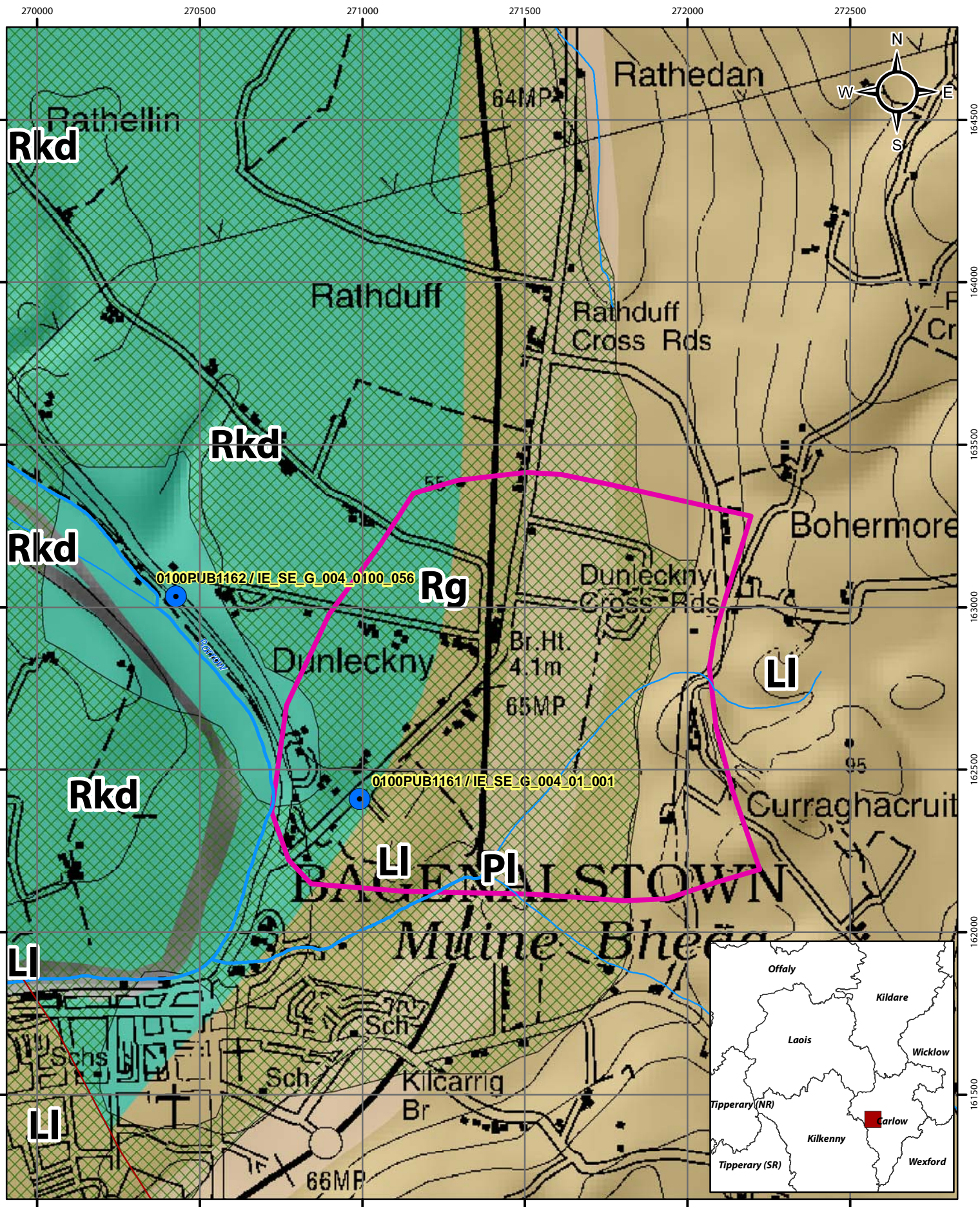


Location Map for Baginbally PWS

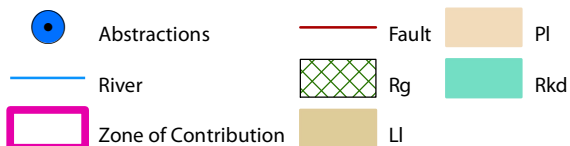
- Abstractions
- River
- Zone of Contribution

© Ordnance Survey Ireland. All rights reserved.
Licence number EN0059208

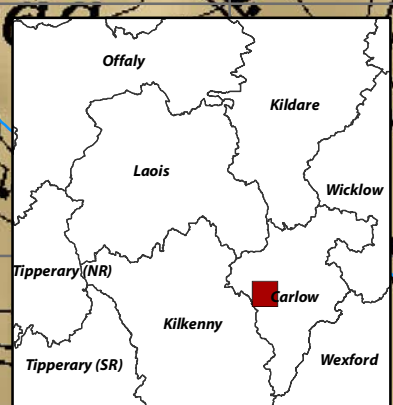
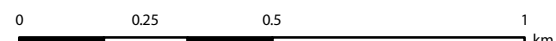
0 0.25 0.5 1 km

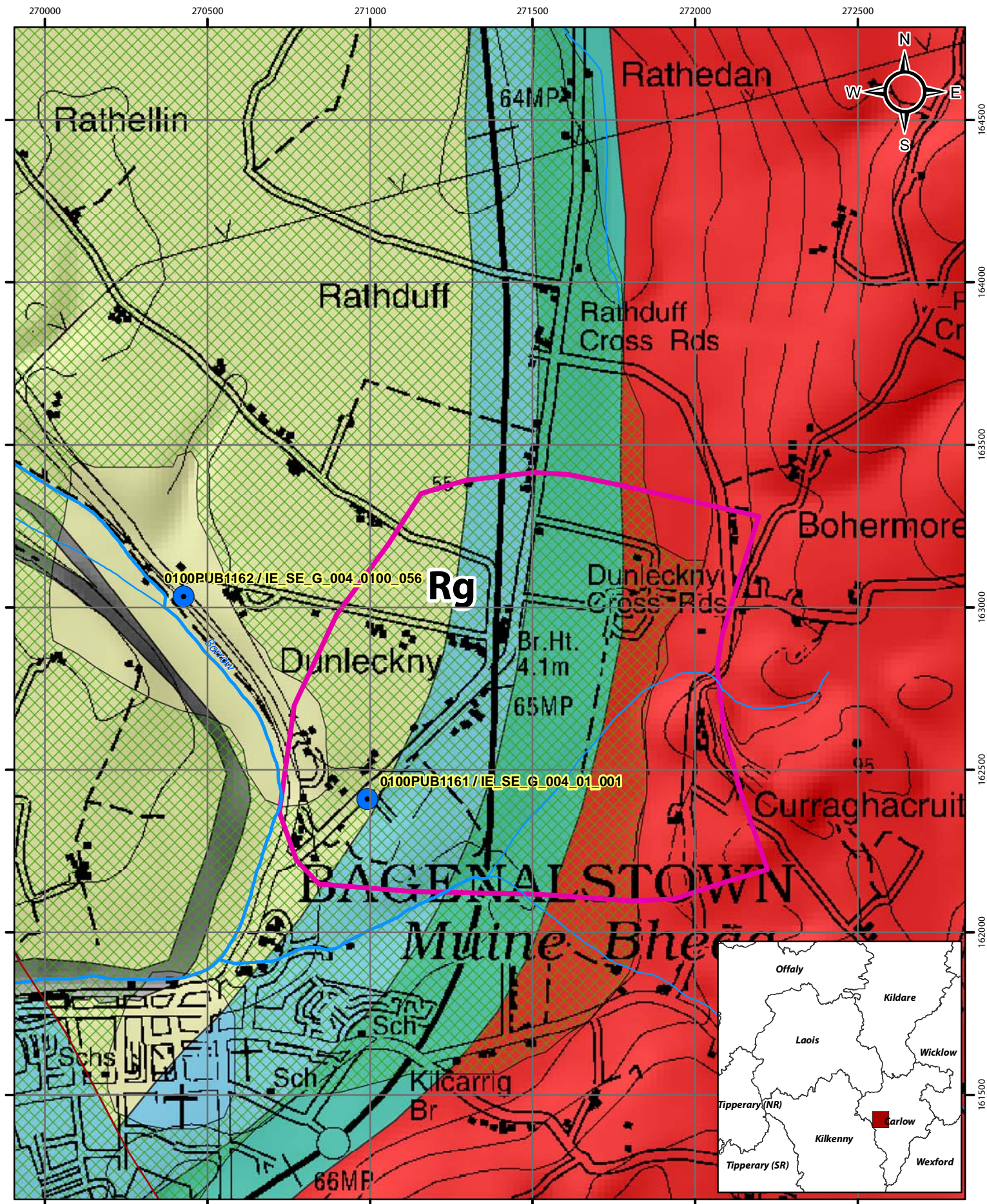


Aquifer Category Map for Baganelstown PWS



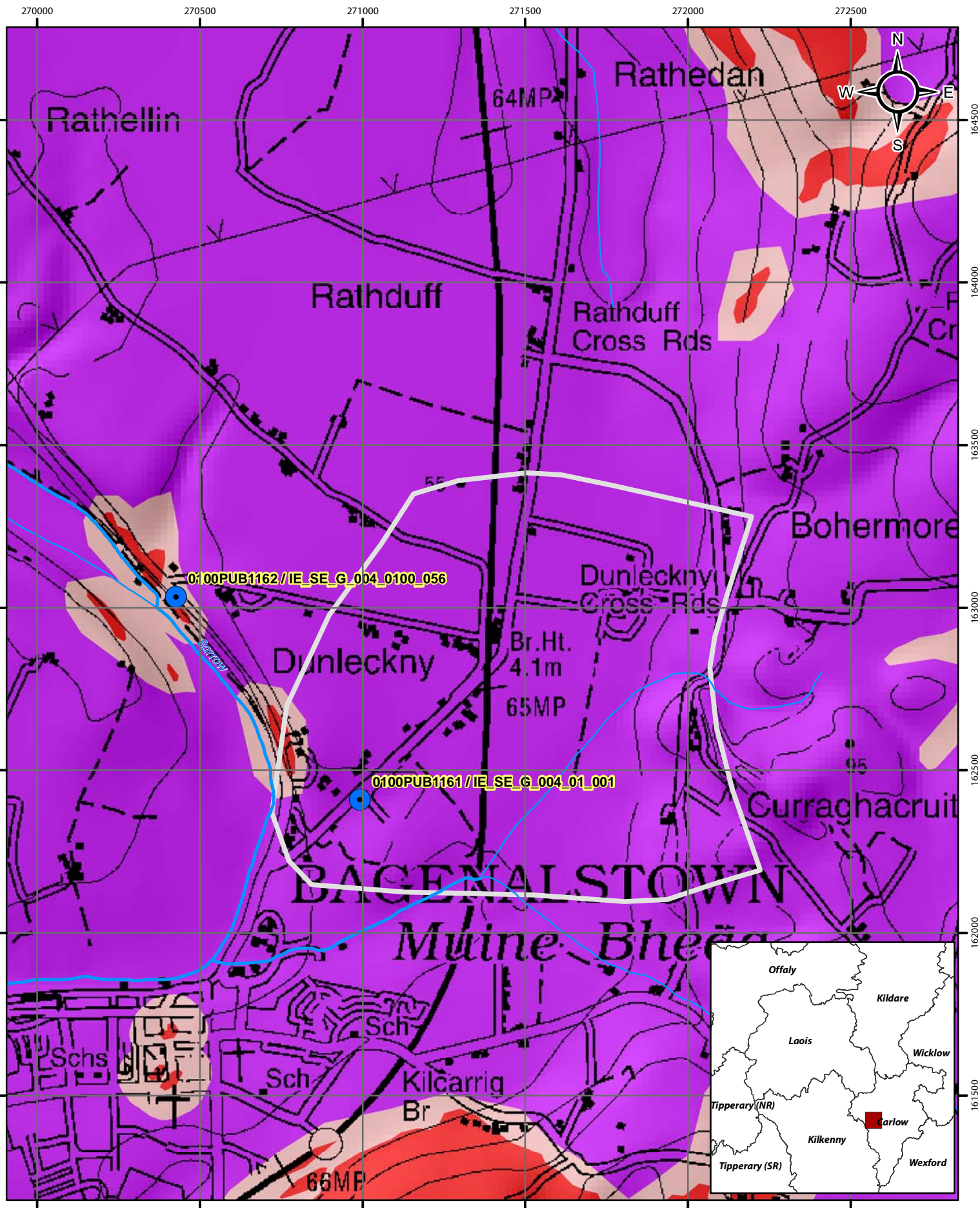
© Ordnance Survey Ireland. All rights reserved.
Licence number EN0059208



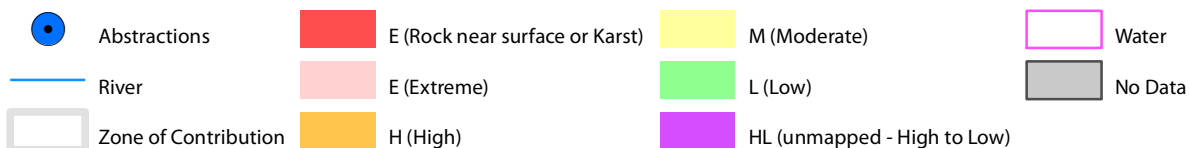


Bedrock Map for Baganelstown PWS

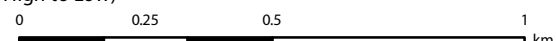
- Abstractions
- River
- Zone of Contribution
- Fault
- Dinantian (early) Sandstones, Shales and Limestones
- Dinantian Dolomitised Limestones
- Dinantian Lower Impure Limestones
- Granites & other Igneous Intrusive rocks
- Rg

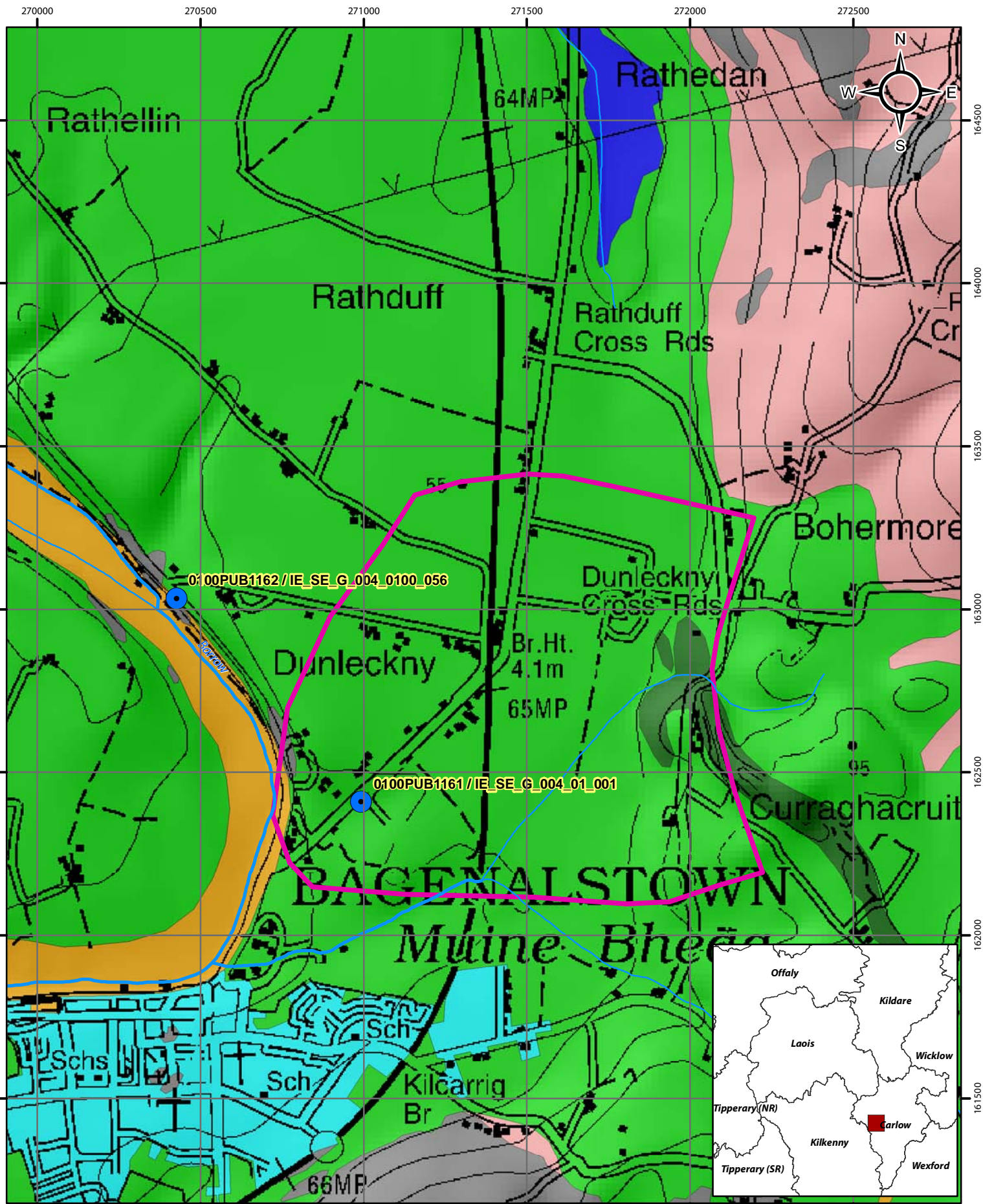


Groundwater Vulnerability Map for Baganelstown PWS

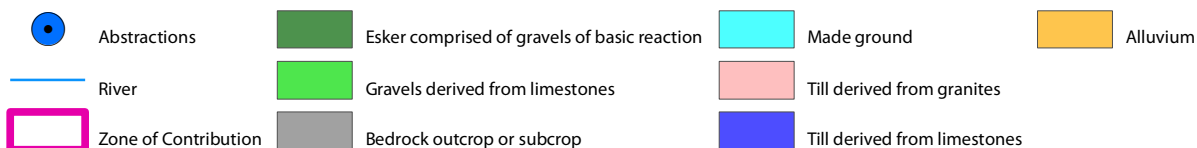


© Ordnance Survey Ireland. All rights reserved.
Licence number EN0059208

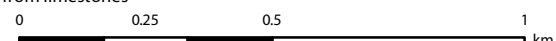


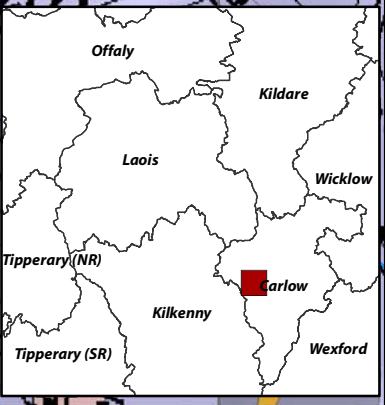
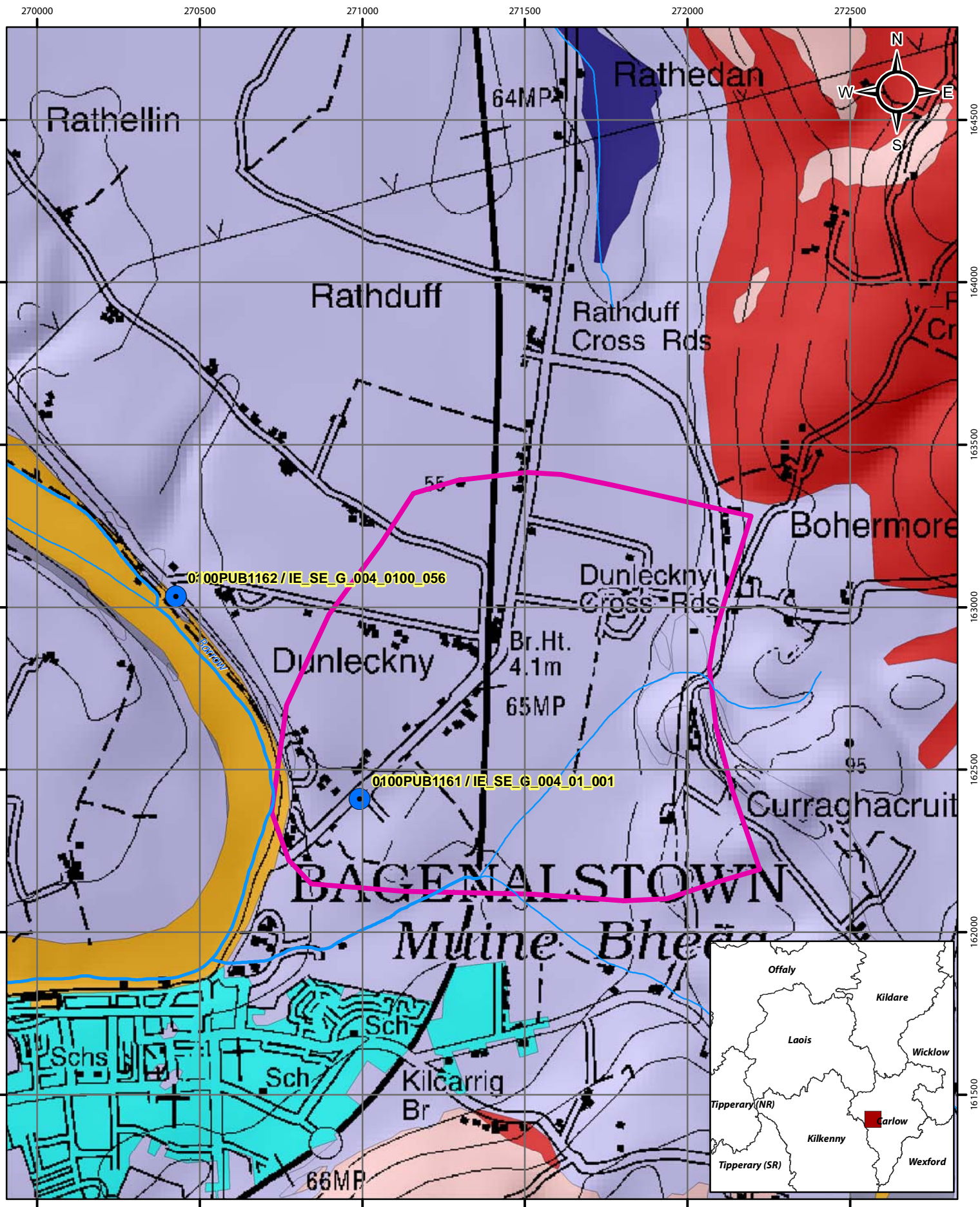


Subsoils Map for Baganelstown PWS



© Ordnance Survey Ireland. All rights reserved.
Licence number EN0059208





Soils Map for Baginbally PWS

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