

Water Framework Directive Groundwater Monitoring Programme

Site Information **Ballyragget PWS**



Ballyragget PWS is an infiltration gallery situated in gravels and is used as a public water supply. The abstraction rate is 480m³/day.



Kilkenny

August 2011

SITE INFORMATION					
Site Name:	Ballyragget PWS		County:	Kilkenny	
RBD:	SERBD		EU Reporting Code:	IE_SE_G_066_10_003	
Easting:	244570		GWB Name:	Freshford_1	
Northing:	171090		GWB Code:	IE_SE_G_066	
Site Use:	Drinking Water (PWS)		Drinking Water Code:	1500PUB1001	
Hydrometric Area:	15		Water Level Monitoring Network:	Level	Flow
Townland:	BALLYRAGGET			N	N
Ownership:	Kilkenny County Council				
Water Quality Monitoring Network:	Surveillance		Operational (Point)		Operational (Diffuse)
	N		N		Y
Site Comments:	Ballyragget PWS is an infiltration gallery situated in gravels and is used as a public water supply. The abstraction rate is 480m³/day.				

SITE DIRECTIONS					
Location and Access Information:	Located just north of Ballyragget village. The site is in a field just to the east of Ballyragget Bridge and the River Nore and north of the N71				
Additional Comments:	---				

WELL INFORMATION					
Monitoring Point Type:	Infiltration Gallery	Abstraction Rate (m³/d):	480	Ground Elevation (m OD):	69
Borehole Log Available:	---	Total Drilled Depth (m bgl):	Infiltration Gallery	Depth to Bedrock (m bgl):	---
Top of Casing (m agl):	---	Upper Casing Diameter (mm):	---	Lower Casing Diameter (mm):	---
Final Borehole Depth (m):	Infiltration Gallery	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:	Ballyragget	Number of Abstraction Points in the Scheme:	1	Source Report Available	N
Source Report Info:	---				
Scheme Summary:	The scheme consists of an infiltration galley supplying a group scheme. The water is chlorination and fluorinated before distribution.				

HYDROGEOLOGY								
GEOLOGY	Soil:	Shallow well drained mineral (BminSW)					Subsoil Permeability:	High
	Subsoil:	Glaciofluvial sands and gravels (GLs)						
	Bedrock:	Sand and Gravel						
HYDROGEOLOGY	Aquifer Category:	Rg	Vulnerability at Monitoring site:	High	Flow Regime:	Intergranular		
ZONE OF CONTRIBUTION	Estimated ZOC Size (km ²):	0.61	ZOC Delineated By:	OCM (DC)	Recharge Estimate (mm/yr):	439		
	ZOC Delineation Comments:	The ZOC was delineated based on abstraction rate, topography and recharge. It is based on 150% of the abstraction rate to account for increases in demand and uncertainties in the delineation process.						
Groundwater Vulnerability within ZOC (% area):	Extreme (X)	Extreme (E)	High	Moderate	Low	High to Low	Unclassified	
	1.43	2.32	96.25	0	0	0	0	
HYDROCHEMISTRY								
Hydrochemical Signature:	Ca-HCO ₃		Additional Water Chemistry Information:	During the monitoring period: The average nitrate concentration was 24 mg/l NO ₃ and the maximum nitrate concentration was 39 mg/l NO ₃ . The average ammonium concentration was 0.019 mg/l N and the maximum ammonium concentration was 0.038 mg/l N. The average molybdate reductive phosphorus (MRP) concentration was 0.016 mg/l P and the maximum MRP concentration was 0.033 mg/l P. The average chloride concentration was 18 mg/l Cl and the maximum chloride concentration was 22 mg/l Cl.				
Alkalinity (mg/l HCO ₃):	Average:	Range:						
	311	260-370						
Hardness (mg/l CaCO ₃):	Average:	Range:						
	362	317-422						
Conductivity (uS/cm):	Average:	Range:						
	657	352-777						
Monitoring Record Period:	From:	To:						
	2007	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	95.25	0.00	0.00	4.75			
OTHER INFORMATION								



Site Location during flooding

Infiltration gallery



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).

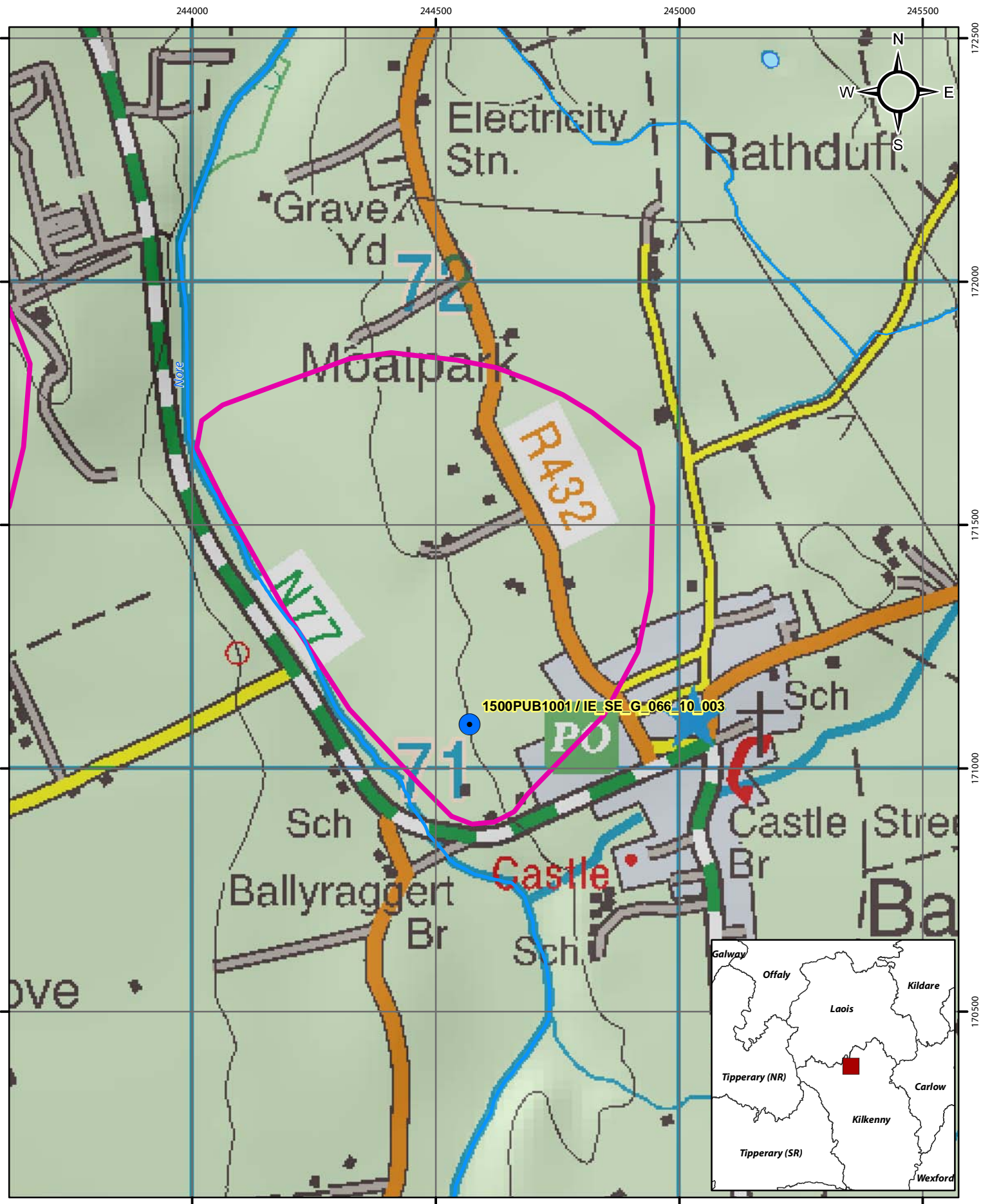
General Downgradient Distances

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.

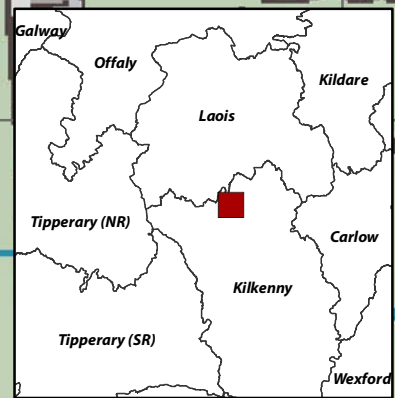
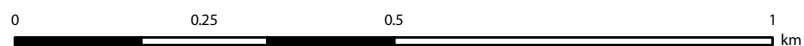
Version 0:	Prepared by		Date:	
Version 1:	Prepared by	OCM (DC)	Date:	Feb 2011
Version 2:	Prepared by		Date:	
Version 3:	Prepared by		Date:	
Version 4:	Prepared by		Date:	

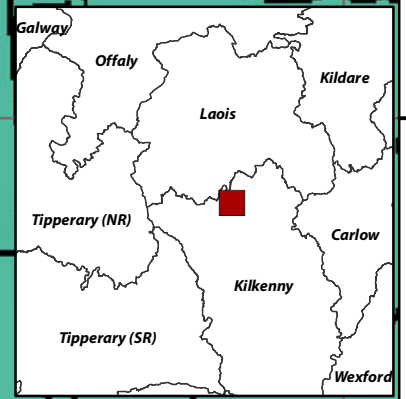
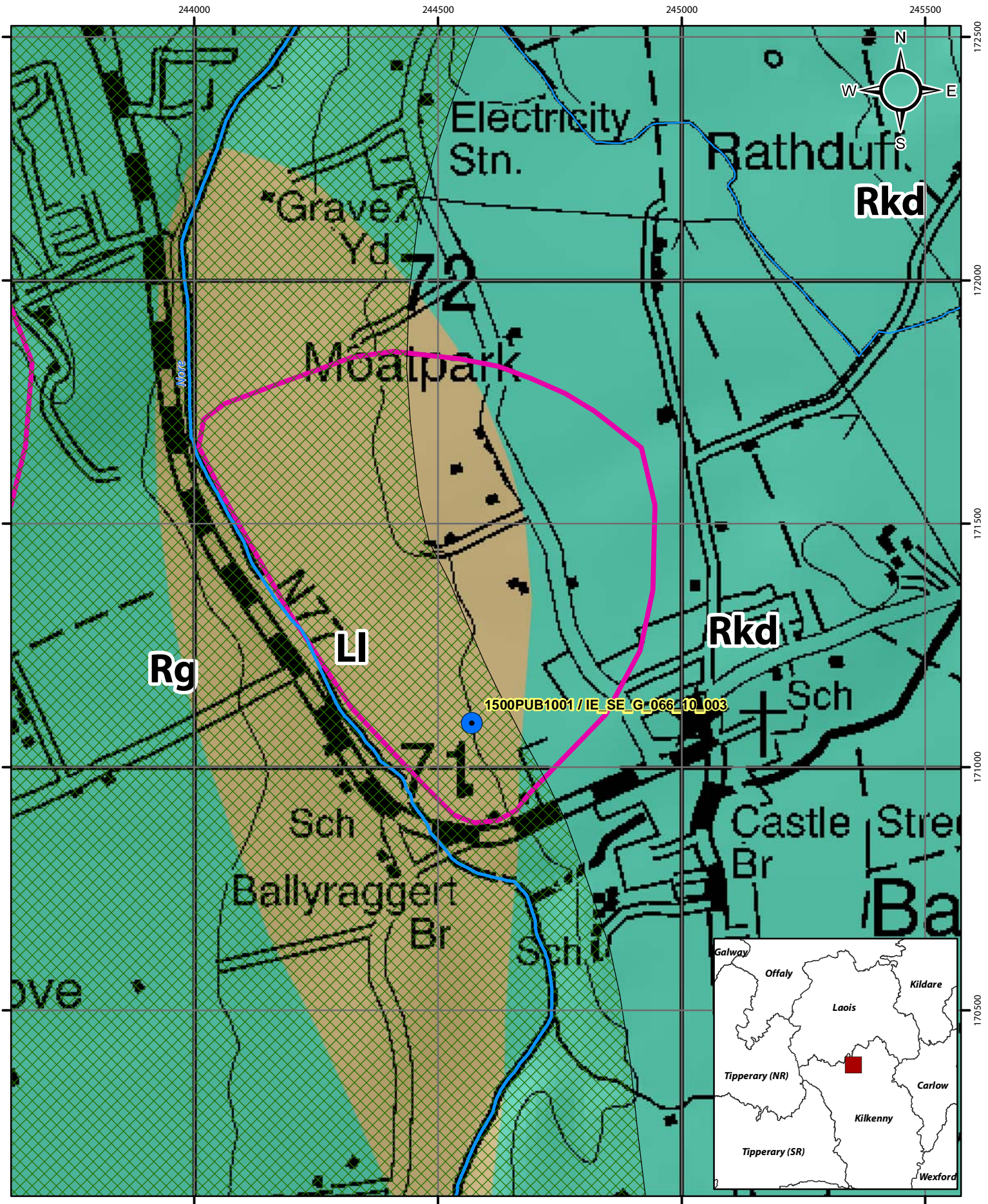


Location Map for Ballyragget PWS







-  Abstractions
-  River
-  Zone of Contribution

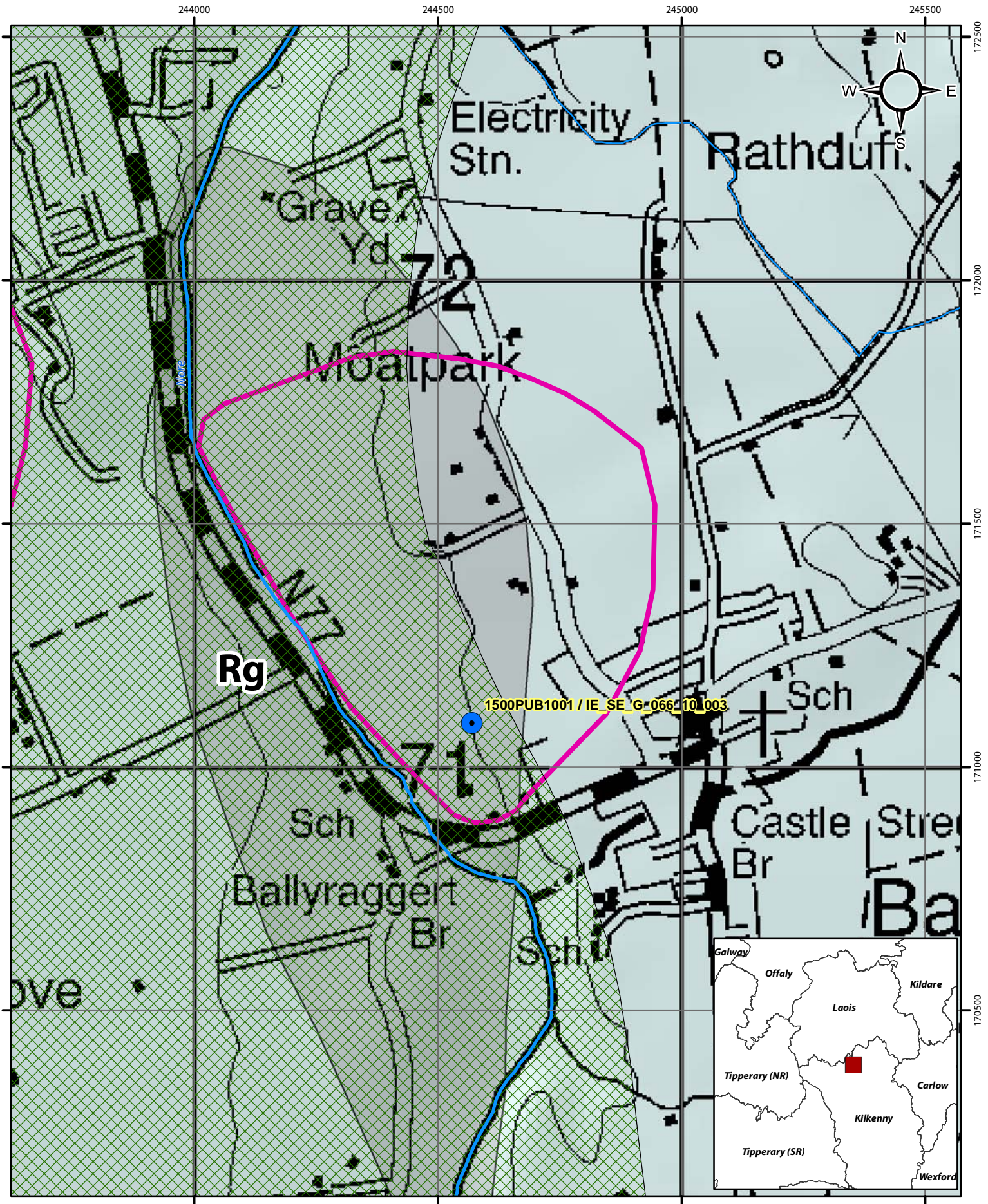
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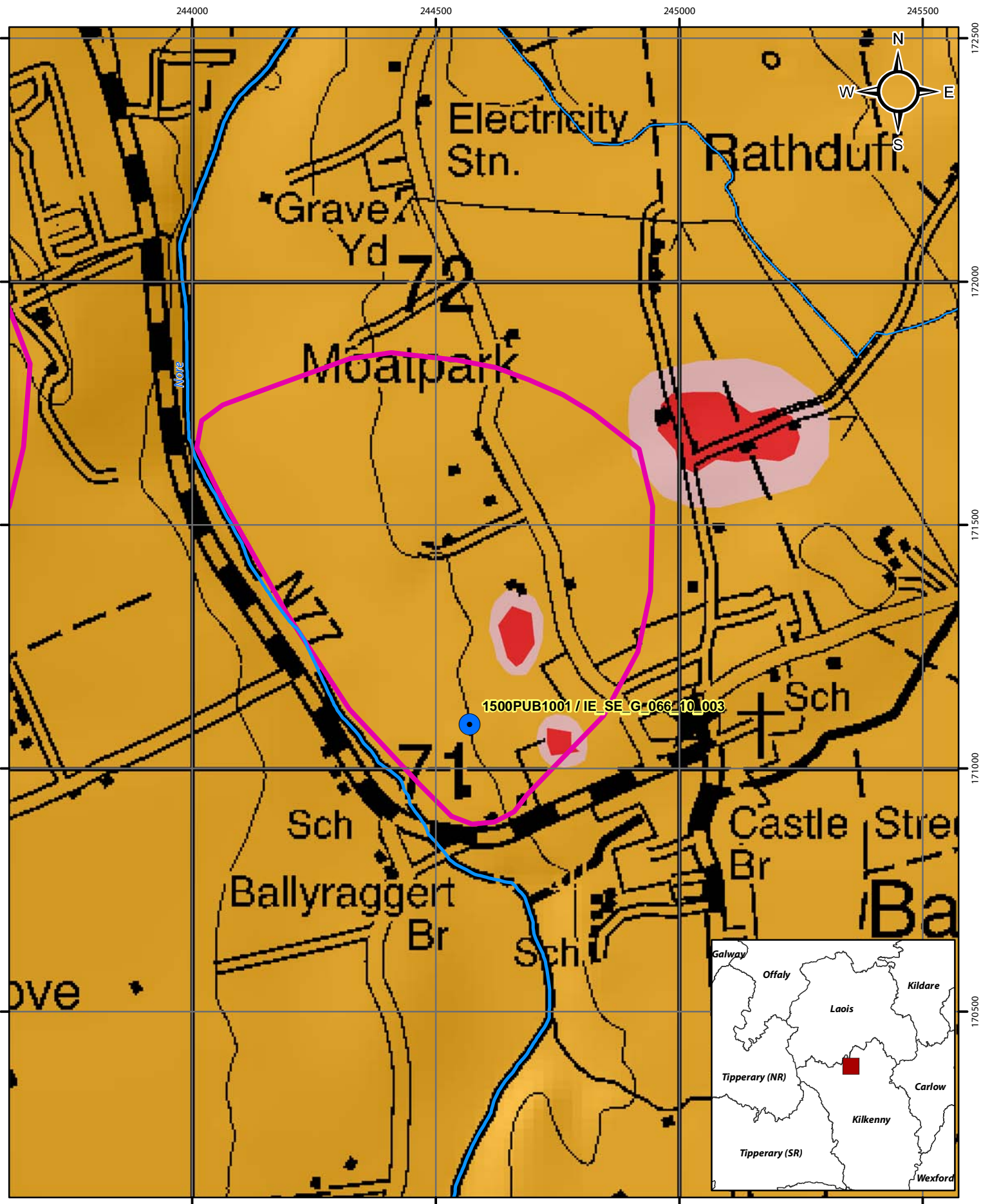
Aquifer Category Map for Ballyragget PWS

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

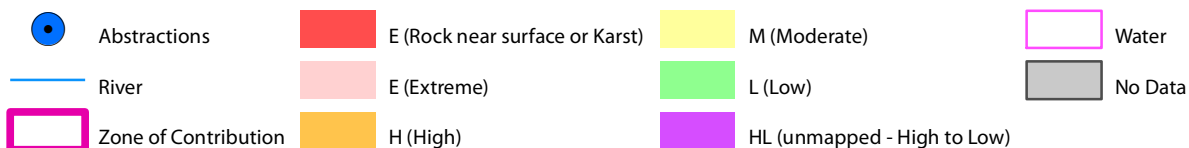


Bedrock Map for Ballyragget PWS

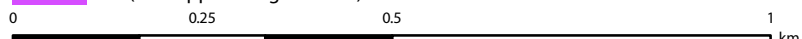
-  Abstractions
-  Zone of Contribution
-  River
-  Dinantian Pure Bedded Limestones
-  Dinantian Upper Impure Limestones
-  Rg

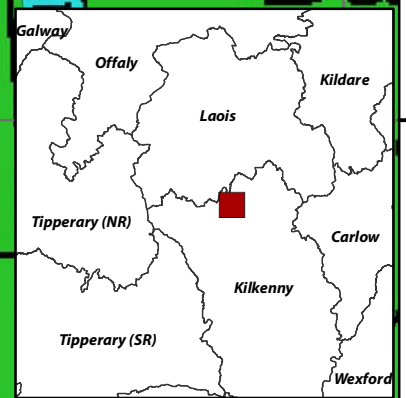
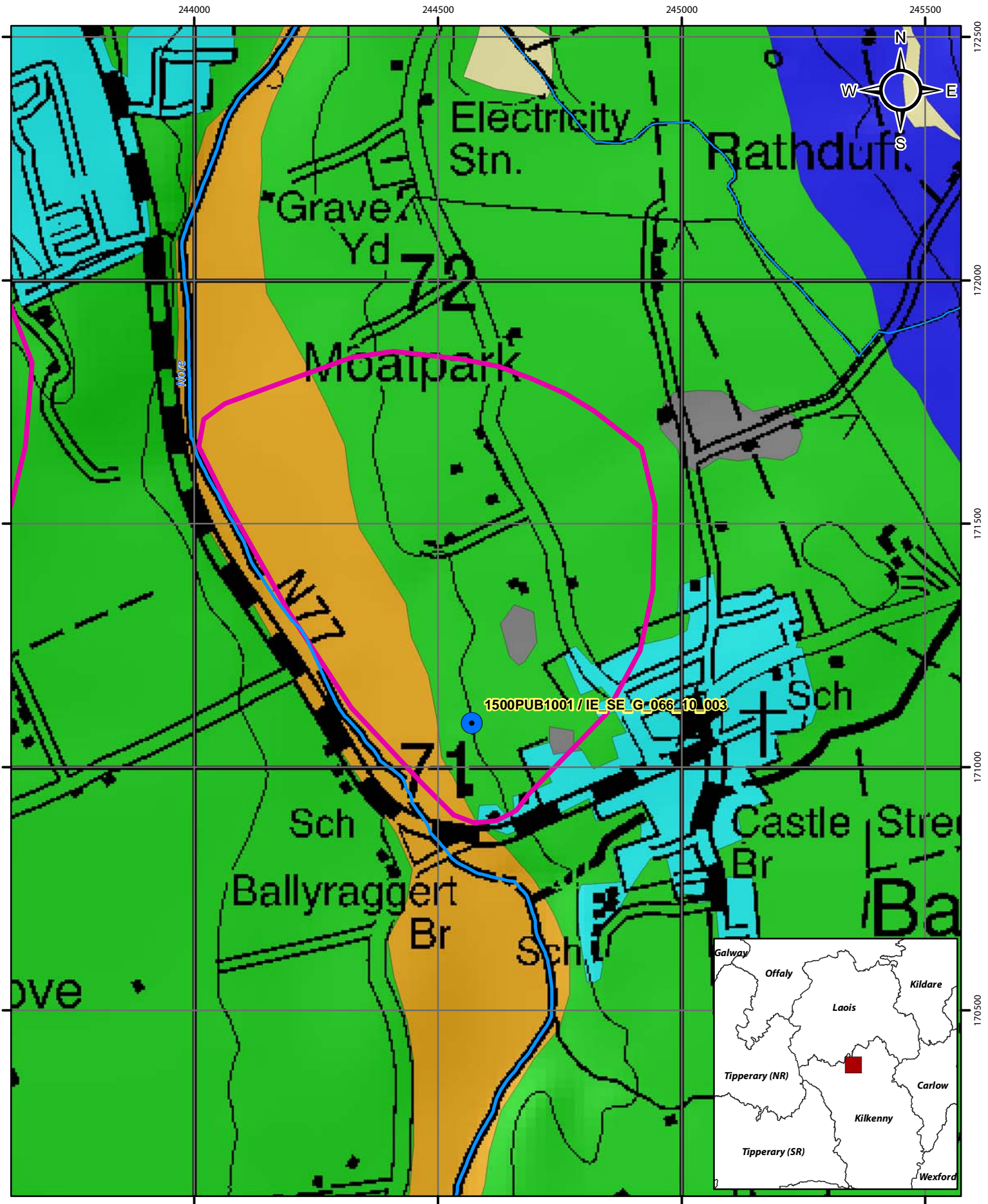


Groundwater Vulnerability Map for Ballyragget PWS



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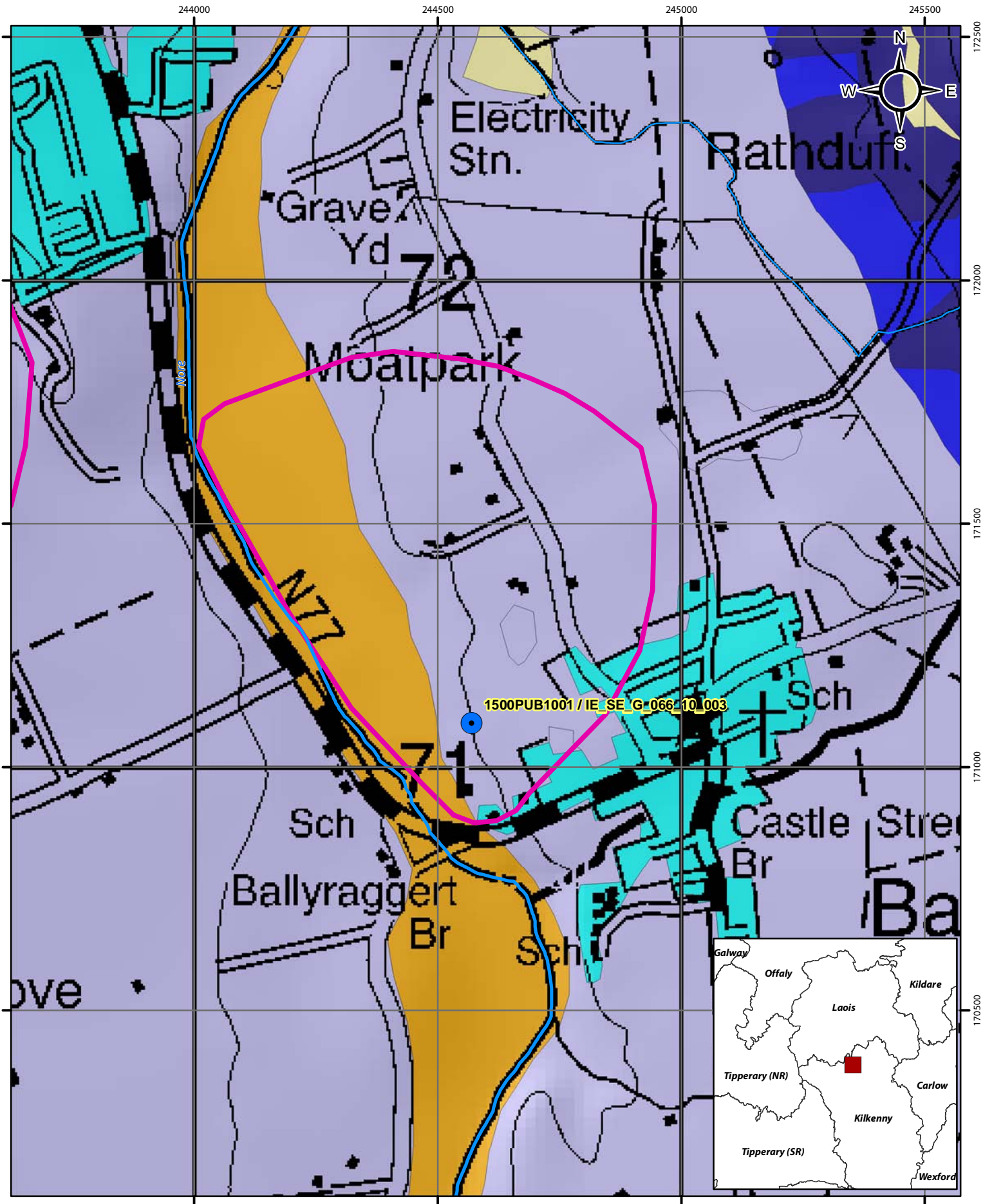


Subsoils Map for Ballyragget PWS










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

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0 0.25 0.5 1 km



Soils Map for Ballyragget PWS

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

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