

Water Framework Directive Groundwater Monitoring Programme

Site Information

Dunkerrin - Guilfoyles Well



Dunkerrin/ Guilfoyles Well PWS is a spring abstracting 1100m³/day from a combined bedrock / gravel regime. The GSI have produced a source protection report for the site.



Offaly

August 2011

SITE INFORMATION					
Site Name:	Dunkerrin - Guilfoyles Well		County:	Offaly	
RBD:	Shannon IRBD		EU Reporting Code:	IE_SH_G_096_19_005	
Easting:	201600		GWB Name:	GL4 South Offaly	
Northing:	181200		GWB Code:	IE_SH_G_096	
Site Use:	Drinking Water (PWS)		Drinking Water Code:	2500PUB1007	
Hydrometric Area:	25		Water Level Monitoring Network:	Level	Flow
Townland:	CULLEENWAINE			N	N
Ownership:	Offaly County Council				
Water Quality Monitoring Network:	Surveillance		Operational (Point)		Operational (Diffuse)
	N		N		Y
Site Comments:	Dunkerrin /Guilfoyles Well PWS is a spring supply.				

SITE DIRECTIONS	
Location and Access Information:	Take M7 to limerick. After passing through Dunkerrin Village, keep going, and go through Moneygall village and take the next right. Approx 200m on the right is a dirt track with a gated entrance - see photos.
Additional Comments:	---

WELL INFORMATION					
Monitoring Point Type:	Spring	Abstraction Rate (m³/d):	1100	Ground Elevation (m OD):	118
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:	Lisduff-Dunkerrin	Number of Abstraction Points in the Scheme:	1	Source Report Available	Y
Source Report Info:	Source report prepared by GSI.				
Scheme Summary:	Guilfoyles Well is located 1 km west of Moneygall village, in the townland of Cullenwaine. The source is located close to the County Tipperary (North Riding) boundary. The main Dublin - Limerick road passes within 500 m of the source. Guilfoyles Well comprises a cylindrical sump, of approximately 1 m in diameter, collecting water that emerges at the bottom of the sump. This source originally had been a spring, which Offaly County Council then dug out and deepened.				

HYDROGEOLOGY								
GEOLOGY	Soil:	shallow, lithosolic or podzolic type soils potentially with peaty topsoil (BminSRPT)					Subsoil Permeability:	High
	Subsoil:	Glaciofluvial sands and gravels (GLs)						
	Bedrock:	Dinantian Lower Impure Limestones						
HYDROGEOLOGY	Aquifer Category:	LI / Lg	Vulnerability at Monitoring site:	Moderate	Flow Regime:	Poorly productive bedrock /		
ZONE OF CONTRIBUTION	Estimated ZOC Size (km²):	0.92	ZOC Delineated By:	GSI	Recharge Estimate (mm/yr):	523		
	ZOC Delineation Comments:	GSI delineated a ZOC primarily on topography and assumed groundwater flow directions and water balance. It accounts for 120% of current discharge. There is no overflow at present.						
Groundwater Vulnerability within ZOC (% area):	Extreme (X)	Extreme (E)	High	Moderate	Low	High to Low	Unclassified	
	0	0	85.05	14.95	0	0	0	
HYDROCHEMISTRY								
Hydrochemical Signature:	Ca-HCO3		Additional Water Chemistry Information:	During the monitoring period: The average nitrate concentration was 39 mg/l NO3 and the maximum nitrate concentration was 55 mg/l NO3. The average ammonium concentration was 0.023 mg/l N and the maximum ammonium concentration was 0.09 mg/l N. The average molybdate reductive phosphorus (MRP) concentration was 0.009 mg/l P and the maximum MRP concentration was 0.042 mg/l P. The average chloride concentration was 26.9 mg/l Cl and the maximum chloride concentration was 32 mg/l Cl.				
Alkalinity (mg/l HCO3):	Average:	Range:						
	341	250-425						
Hardness (mg/l CaCO3):	Average:	Range:						
	411	357-534						
Conductivity (uS/cm):	Average:	Range:						
	777	609-952						
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	54.61	14.91	28.49	1.98			
OTHER INFORMATION								
<p>The site area is closed off with a fence. The sump is covered with a metal cover, which has manhole covers that allow access to the sump itself. There is a pump house on-site, which contains the control panels for the pump and allows for the automatic chlorination of the water. There is a second sunken chamber along side the main sump chamber, in which the pipe taking the water to the treatment house can be accessed. There is a discharge meter attached to the pipe here. There is a metal cover also in place over this chamber with an access manhole. There is a small derelict weir in the source overflow channel. There has been no discharge from the spring in recent years. The rest of the site is grassed over.</p>								



Pump House



Sampling Tap



Site Location

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 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).

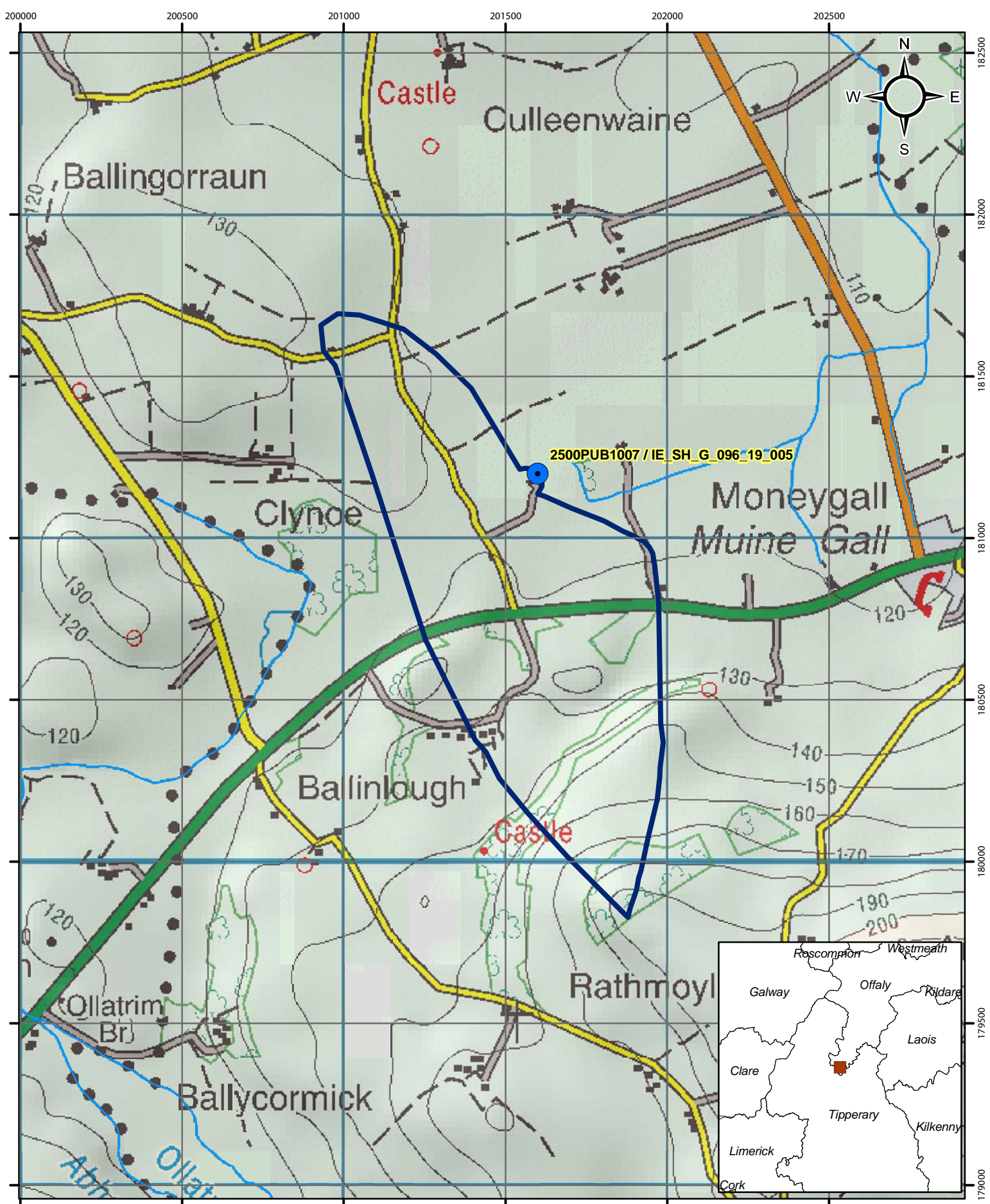
General Downgradient Distances

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.

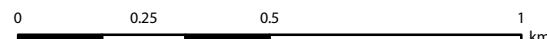
Version 0:	Prepared by	GSI	Date:	
Version 1:	Prepared by	Tobin (CK)	Date:	Apr 2011
Version 2:	Prepared by		Date:	
Version 3:	Prepared by		Date:	
Version 4:	Prepared by		Date:	

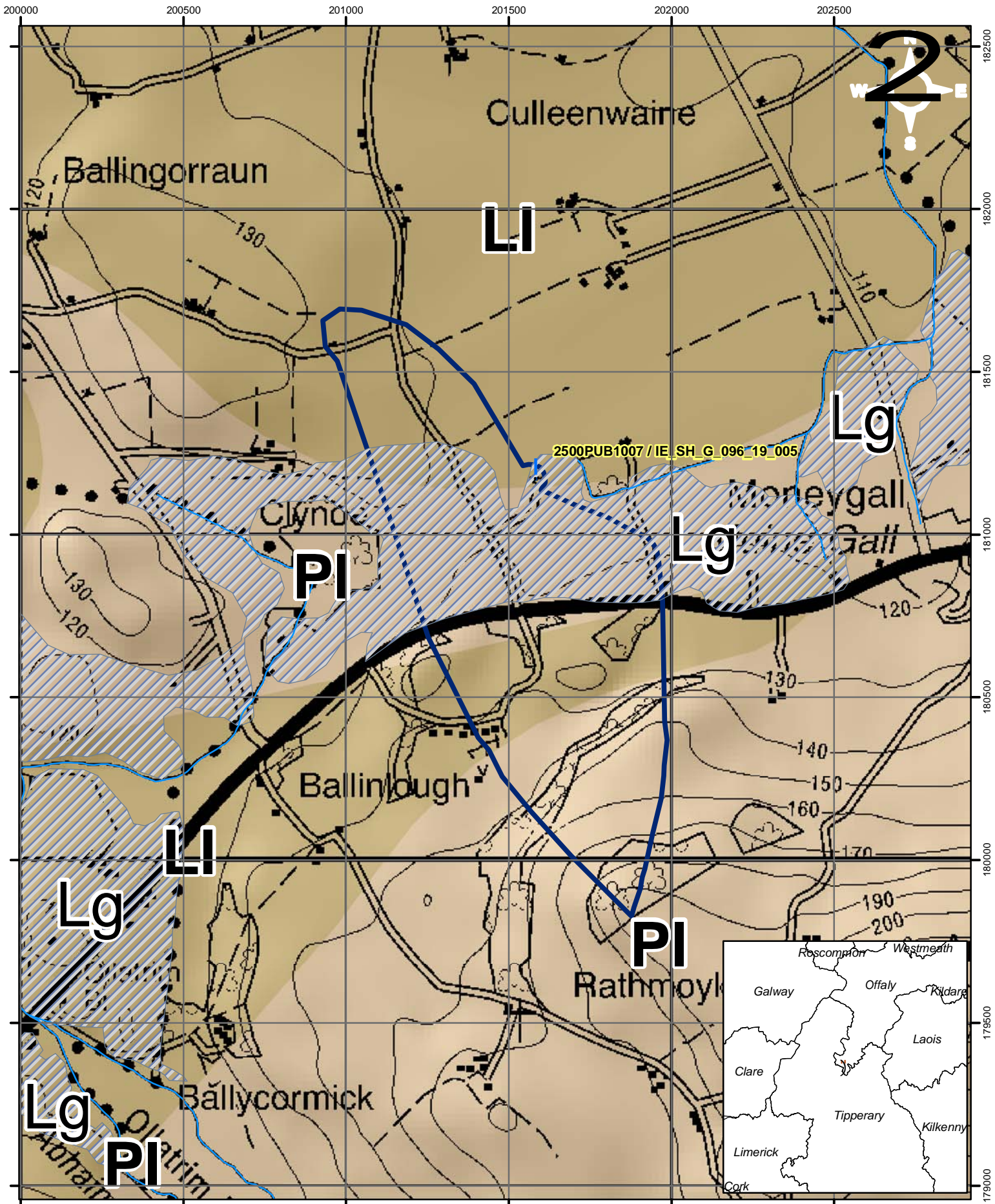


Location Map for Dunkerrin - Guilfoyles Well

-  Abstractions
-  River
-  Zone of Contribution

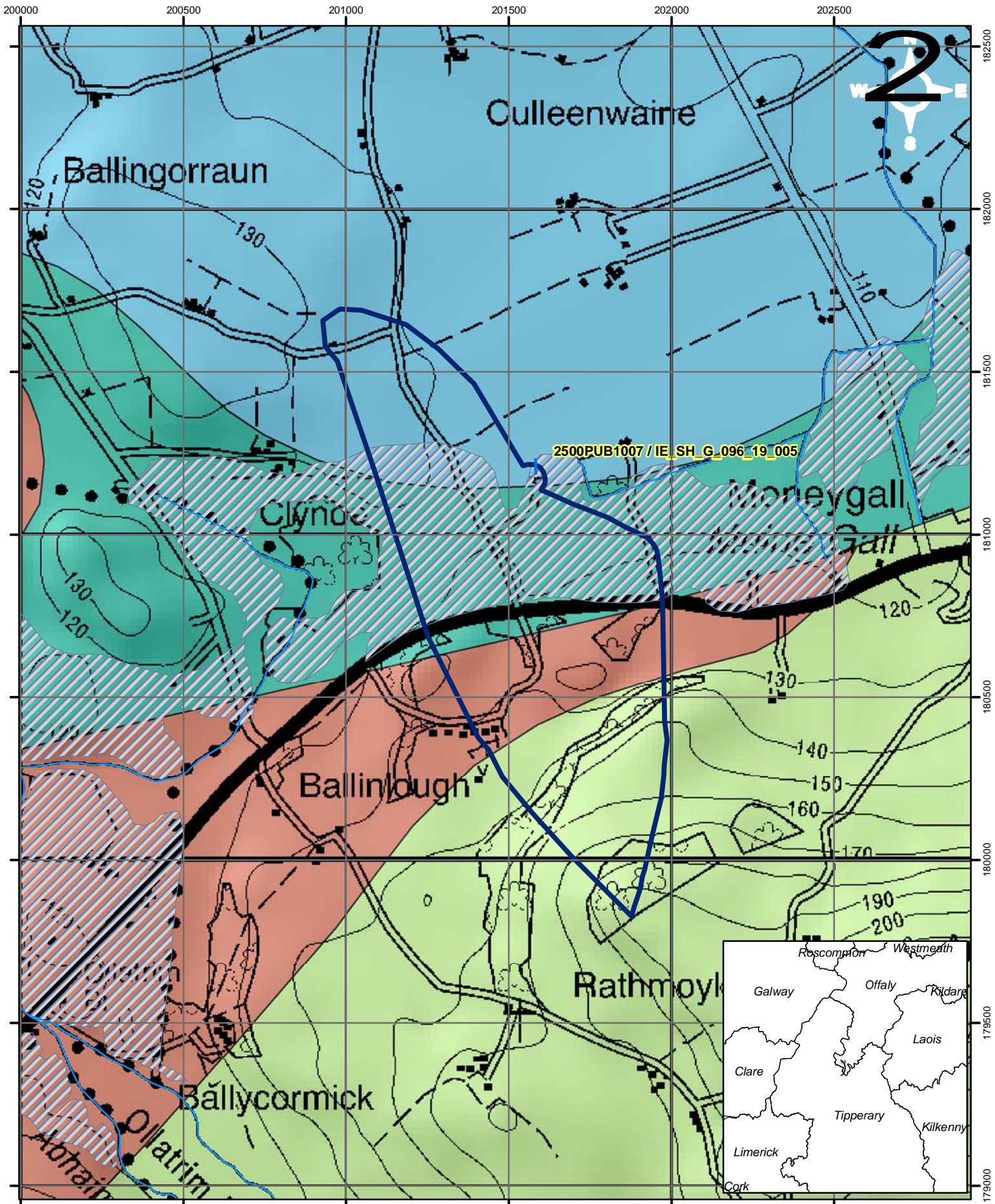
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Aquifer Category for Dunkerrin - Guilfoyles Well

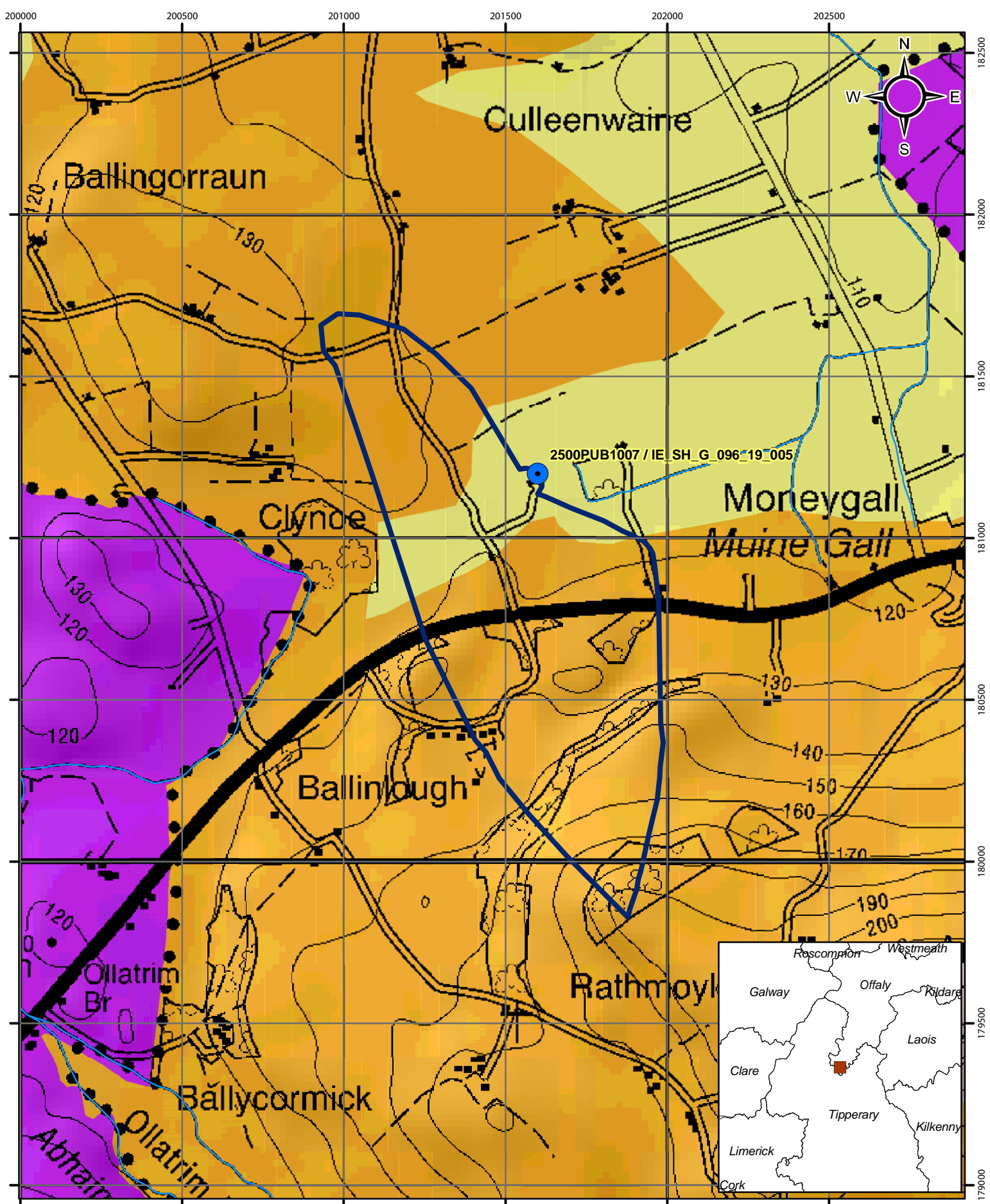
- ! Abstractions
- River
- Zone of Contribution
- ▨ Locally Important Sand and Gravel Aquifer (Lg)
- LI
- PI



Bedrock Map for Dunkerrin - Guilfoyles Well

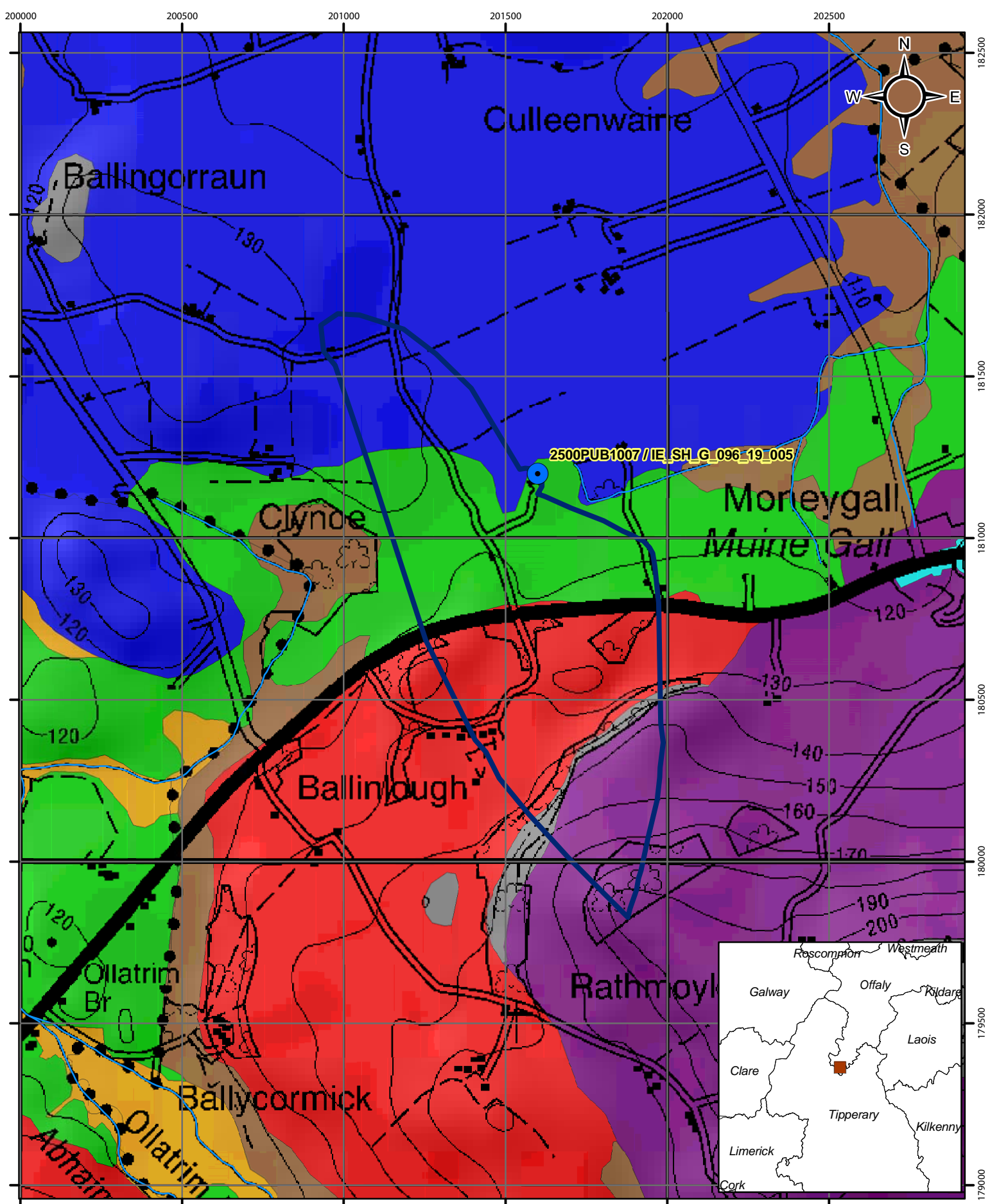
- | | | |
|----------------------|---|--------------------------------------|
| Abstractions | Basalts & other Volcanic rocks | Dinantian Lower Impure Limestones |
| River | Devonian Old Red Sandstones | Silurian Metasediments and Volcanics |
| Zone of Contribution | Dinantian (early) Sandstones, Shales and Limestones | |
| Sand & Gravel | | |

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Groundwater Vulnerability for Dunkerrin - Guilfoyles Well

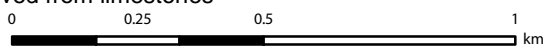
- Abstractions
- River
- Zone of Contribution
- E (Extreme)
- H (High)
- M (Moderate)
- E (Rock near surface or Karst)
- HL (unmapped - High to Low)

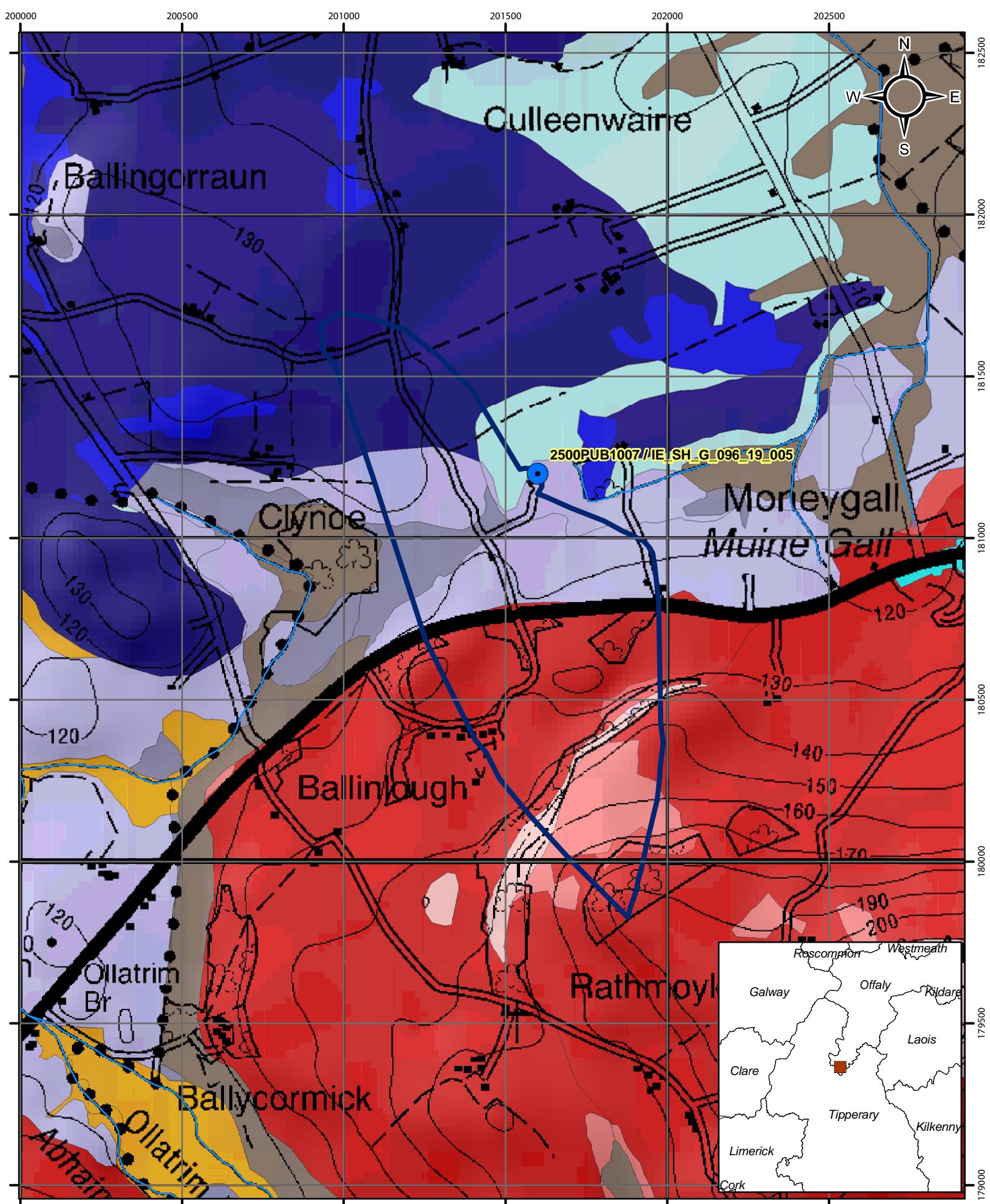


Subsoils Map for Dunkerrin - Guilfoyles Well

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

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Soils Map for Dunkerrin - Guilfoyles Well

- | | | | |
|----------------------|-----------------------------------|--------------------------------------|--|
| Abstractions | Acid Deep Well Drained Mineral | Basic Deep Well Drained Mineral | Basic Shallow Poorly Drained Peaty Mineral |
| River | Acid Deep Poorly Drained Mineral | Basic Deep Poorly Drained Mineral | Basic Shallow/Rocky/Peaty Mineral |
| Zone of Contribution | Acid Poorly Drained Peaty Mineral | Basic Poorly Drained Peaty Mineral | Cutover/Cutaway Peat |
| | Acid Shallow Well Drained Mineral | Basic Shallow Well Drained Mineral | Mineral Alluvium |
| | Acid Shallow/Rocky/Peaty Mineral | Basic Shallow Poorly Drained Mineral | Made |

