

Water Framework Directive Groundwater Monitoring Programme

Site Information

Herbertstown BH2



Herbertstown (BH2) has an abstraction of 300 m³/day and supplies the Herbertstown public water supply.

SITE INFORMATION					
Site Name:	Herbertstown BH2		County:	Limerick	
RBD:	Shannon IRBD		EU Reporting Code:	IE_SH_G_106_13_014	
Easting:	169021		GWB Name:	Herbertstown	
Northing:	142378		GWB Code:	IE_SH_G_106	
Site Use:	Drinking Water (PWS)		Drinking Water Code:	1900PUB1031	
Hydrometric Area:	24		Water Level Monitoring Network:	Level	Flow
Townland:	CLOGHAVILLER			N	N
Ownership:	Limerick County Council				
Water Quality Monitoring Network:	Surveillance		Operational (Point)		Operational (Diffuse)
	N		N		Y
Site Comments:	Herbertstown PWS (BH2) is in situated a Locally Important Aquifer which is generally moderately productive (Lm) / Dinantian Pure Bedded Limestone. The PWS is included in the diffuse GW quality monitoring network.				

SITE DIRECTIONS	
Location and Access Information:	The well is located at the southern end of the village, directly opposite the Co-op shop and stores.
Additional Comments:	---

WELL INFORMATION					
Monitoring Point Type:	BH	Abstraction Rate (m³/d):	300	Ground Elevation (m OD):	95
Borehole Log Available:	Y	Total Drilled Depth (m bgl):	107	Depth to Bedrock (m bgl):	4
Top of Casing (m agl):	---	Upper Casing Diameter (mm):	200	Lower Casing Diameter (mm):	---
Final Borehole Depth (m):	107	Upper Casing Bottom Depth (m bgl) :	35	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):	35 to 107
Potential Yield (m³/day):	---	Comments on Monitoring Site:	Borehole log available from D. Ball. Major inflow from Herbertstown limestone. Overlying volcanics cased off.		
Specific Capacity (m³/d/m):	---				
Static Water Level (m bgl):	15				
Scheme Name:	Herbertstown	Number of Abstraction Points in the Scheme:	1	Source Report Available	N
Source Report Info:	A source report (GSI) is available for the disused borehole in Herbertstown village.				
Scheme Summary:	Herbertstown PWS comprises 2 adjacent boreholes drilled in 1998 and 1995; one (1998) of which is pumping. This well field became known as "Herbertstown BH2". The old borehole in the village is disused, used to be called "Herbertstown BH1".				

HYDROGEOLOGY							
GEOLOGY	Soil:	Deep well drained mineral (BminDW)				Subsoil Permeability:	n/a
	Subsoil:	Tills (diamictons) (TLs)					
	Bedrock:	Dinantian Pure Bedded Limestones					
HYDROGEOLOGY	Aquifer Category:	Lm	Vulnerability at Monitoring site:	Extreme	Flow Regime:	Productive fissured bedrock	
ZONE OF CONTRIBUTION	Estimated ZOC Size (km ²):	0.68	ZOC Delineated By:	TOBIN (CK)/ Dball		Recharge Estimate (mm/yr):	229
	ZOC Delineation Comments:	The borehole penetrates the edge of the volcanics and abstracts from the underlying limestones. The hydrochemistry does not suggest confining conditions. It is considered that the volcanics (LI) and the limestones (Lm) are hydraulically connected, the cone of drawdown extends into the volcanics, there is frequent faulting and the boundary is interbedded. ZOC is based on topography and geology; widened westwards to accommodate mapped fault; extended north over the volcanics; extended approximately 200-250m south into the limestones; extended east to the small stream which is not perennial.					
Groundwater Vulnerability within ZOC (% area):	Extreme (X)	Extreme (E)	High	Moderate	Low	High to Low	Unclassified
	35.35	64.65	0	0	0	0	0
HYDROCHEMISTRY							
Hydrochemical Signature:	Ca-HCO ₃		Additional Water Chemistry Information:	During the monitoring period: The average nitrate concentration was 15 mg/l NO ₃ and the maximum nitrate concentration was 27 mg/l NO ₃ . The average ammonium concentration was 0.033 mg/l N and the maximum ammonium concentration was 0.344 mg/l N. The average molybdate reductive phosphorus (MRP) concentration was 0.035 mg/l P and the maximum MRP concentration was 0.082 mg/l P. The average chloride concentration was 19.8 mg/l Cl and the maximum chloride concentration was 22.2 mg/l Cl.			
Alkalinity (mg/l HCO ₃):	Average:	Range:					
	240	104-340					
Hardness (mg/l CaCO ₃):	Average:	Range:					
	257	131-399					
Conductivity (uS/cm):	Average:	Range:					
	515	384-716					
Monitoring Record Period:	From:	To:					
	1999	2010					
RISK ASSESSMENT							
Pressure (e.g., Nitrates, Phosphates, Abstractions):	---		Typical Contaminants:	---			
Risk Category:	At risk, high confidence		GWB Status:	Poor			
Impact Potential within ZOC (% area):	Extreme:	High:	Moderate:	Low:	Negligible:		
	0.00	100.00	0.00	0.00	0.00		
OTHER INFORMATION							



Sampling Tap



Borehole Housing



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).

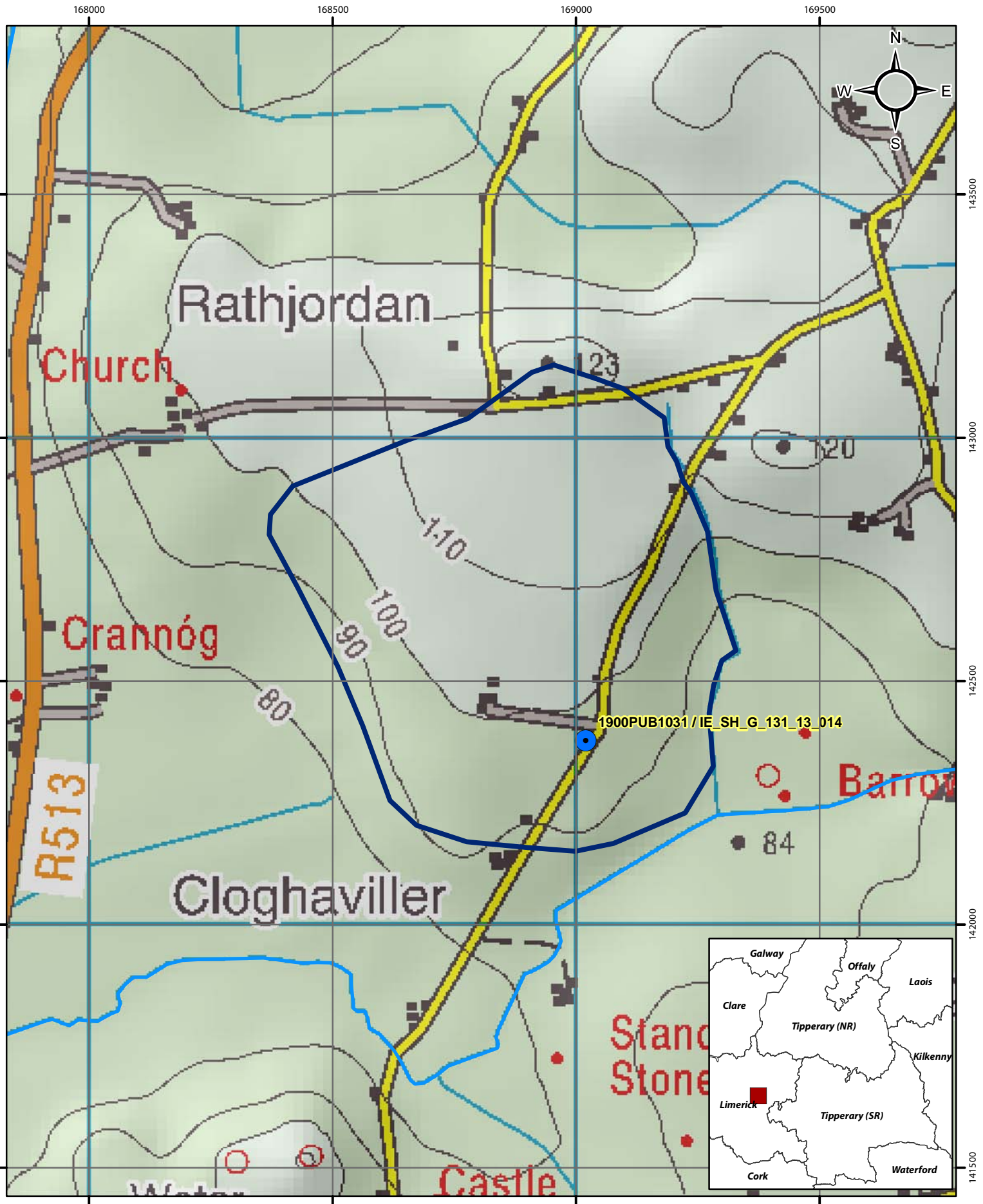
General Downgradient Distances

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.

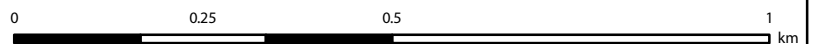
Version 0:	Prepared by		Date:	
Version 1:	Prepared by	Tobin (CK)	Date:	Apr 2011
Version 2:	Prepared by		Date:	
Version 3:	Prepared by		Date:	
Version 4:	Prepared by		Date:	

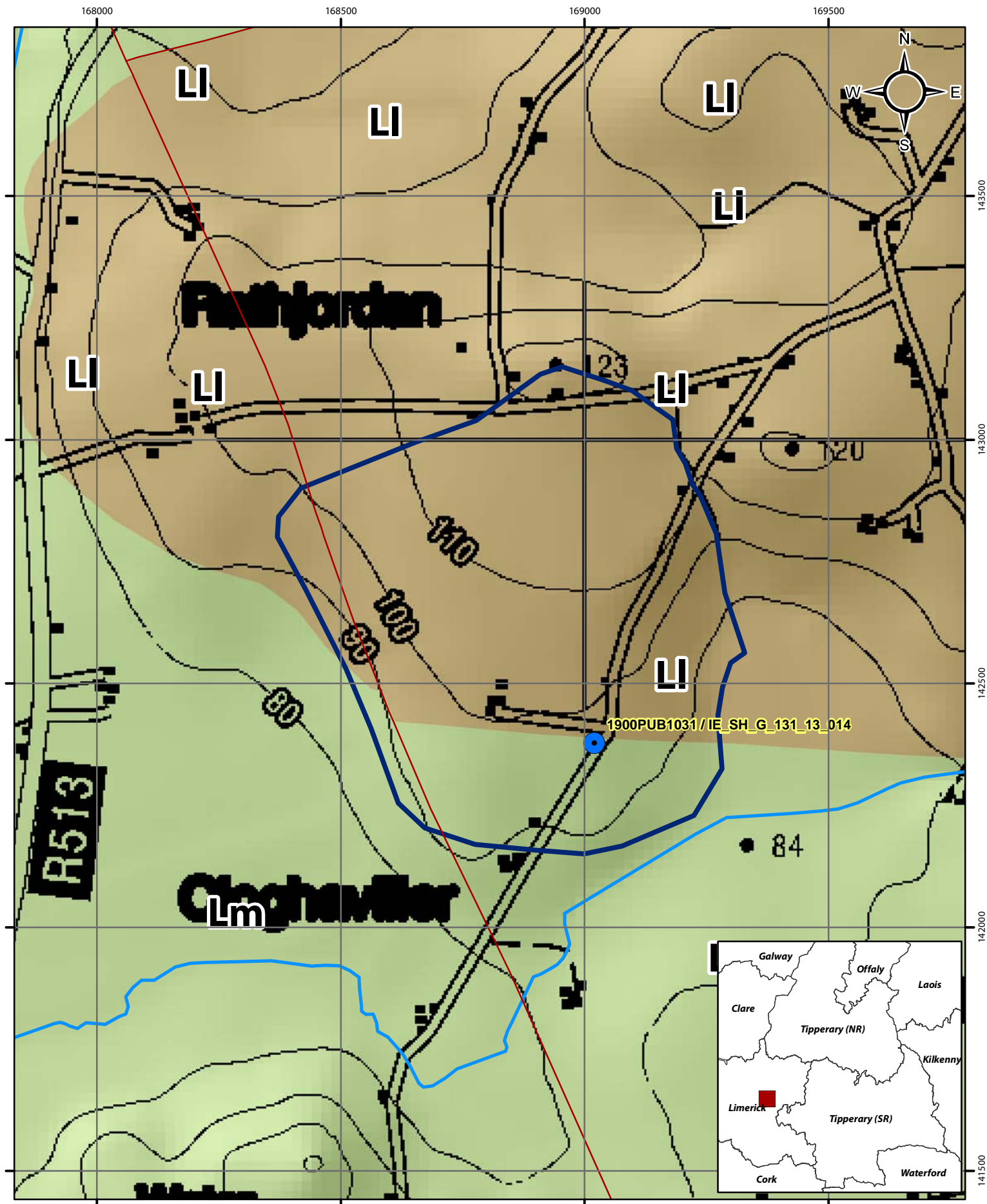


Location Map for Herbertstown BH2

-  Abstractions
-  Zone of Contribution
-  River

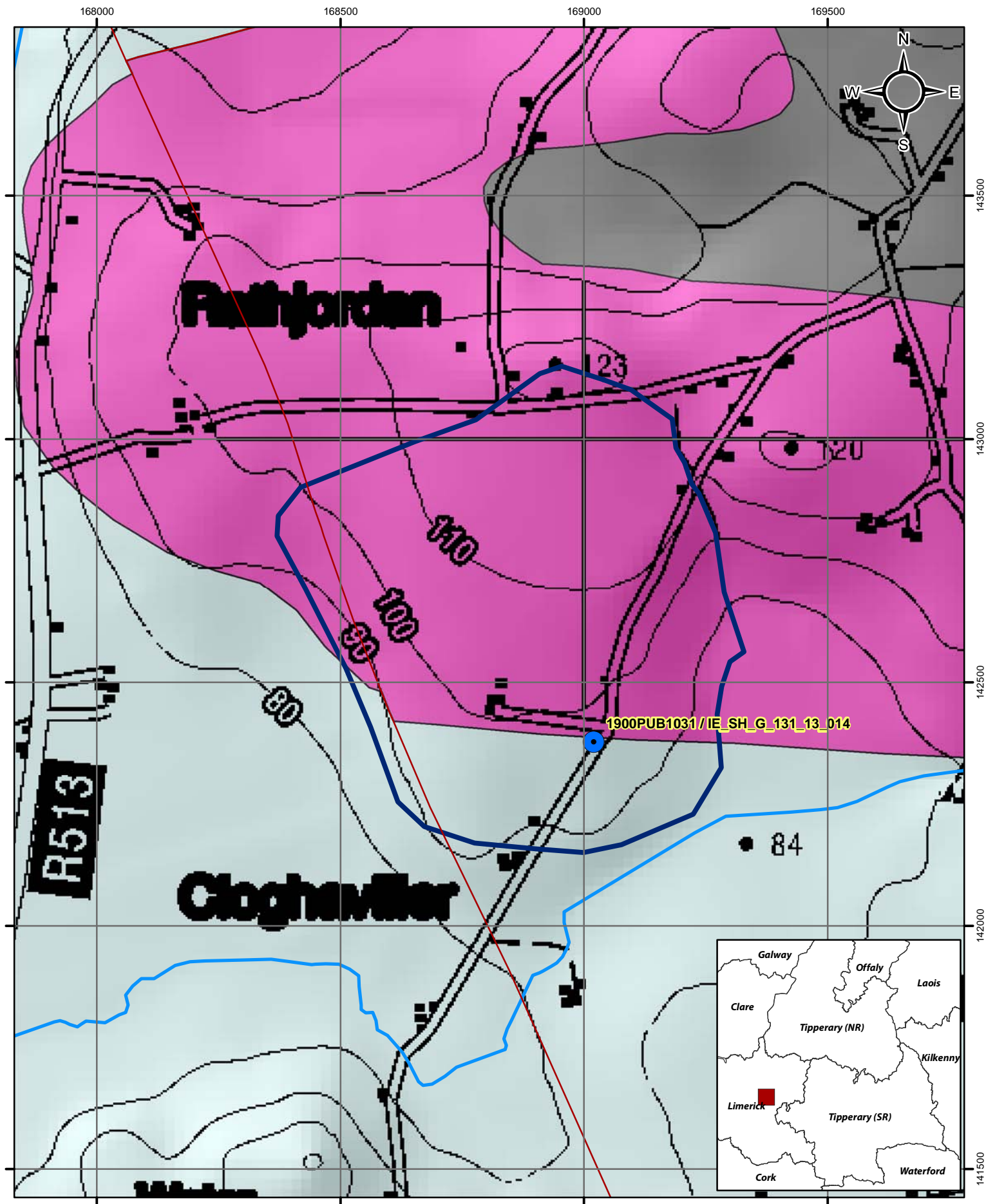
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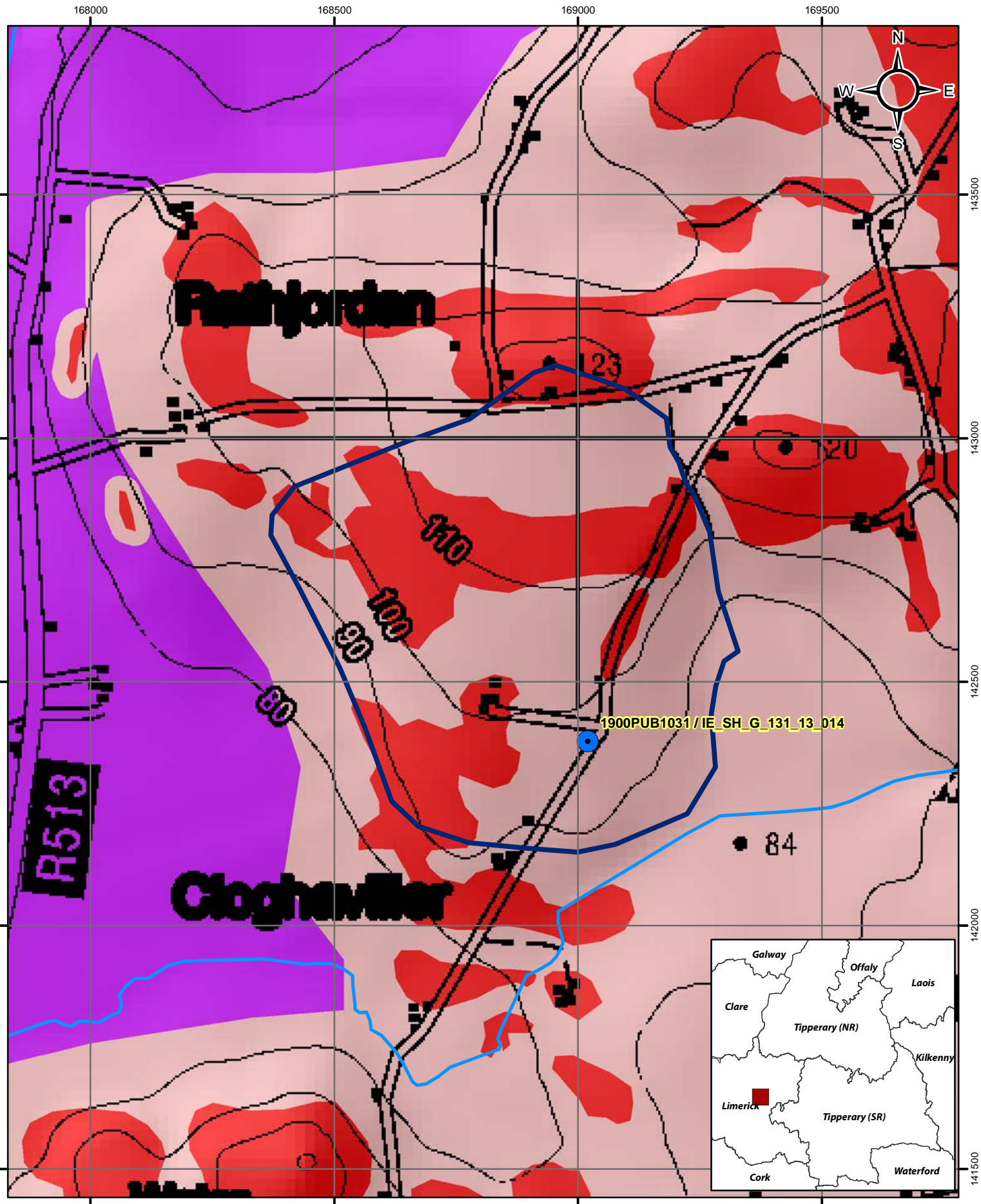
Aquifer Category Map for Herbertstown BH2

- Abstractions
- Zone of Contribution
- River
- LI
- Lm
- Fault

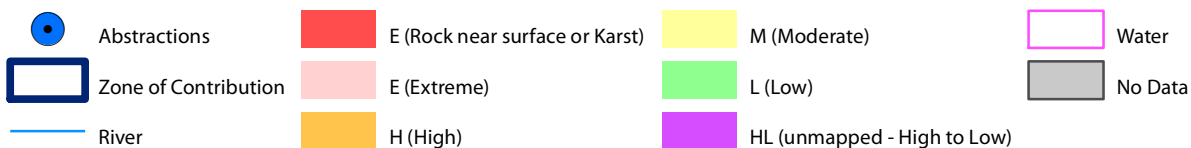


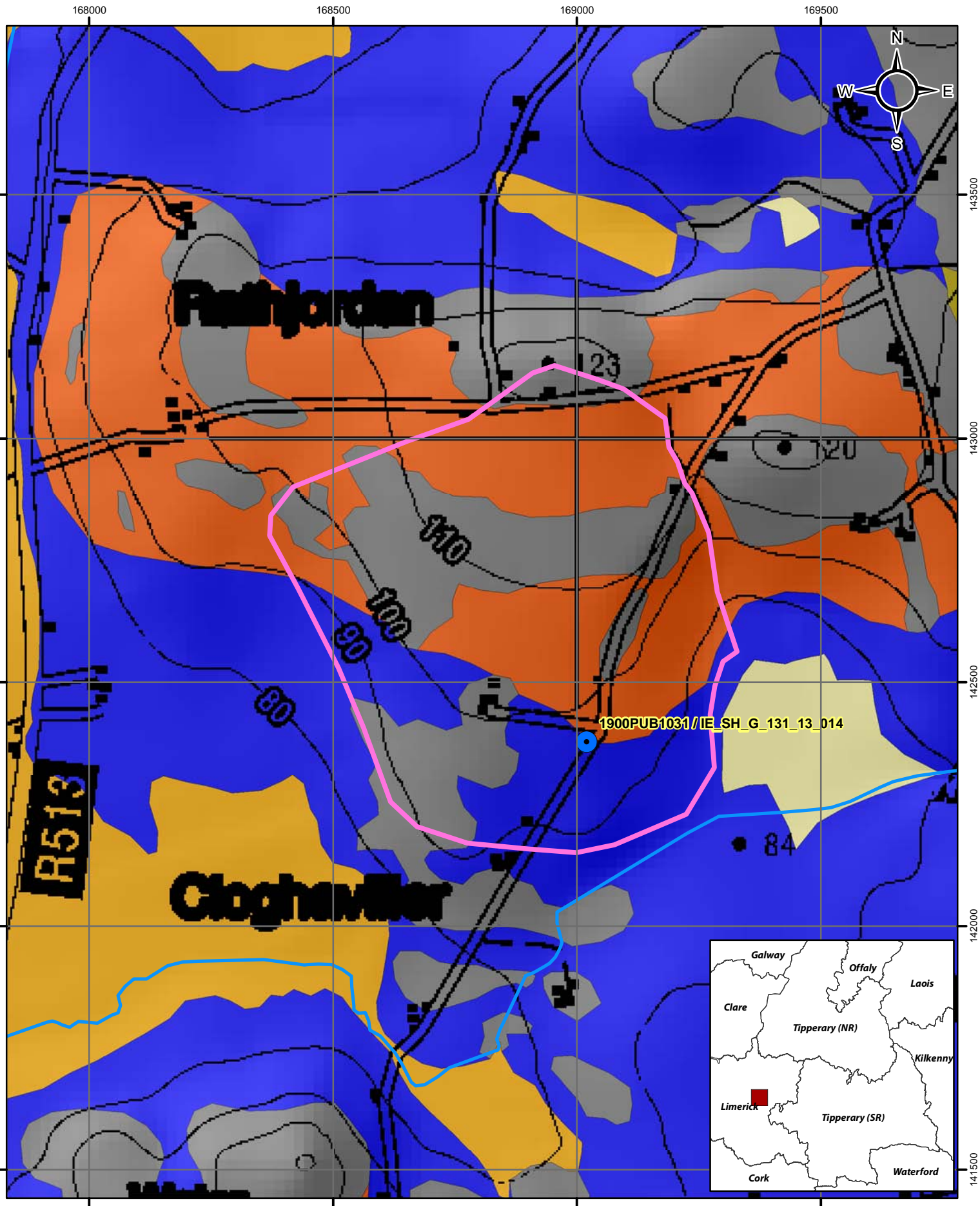
Bedrock Map for Herbertstown BH2

- Abstractions
- Basalts & other Volcanic rocks
- Dinantian Pure Bedded Limestones
- Namurian Shales
- Zone of Contribution
- River
- Fault












Groundwater Vulnerability Map for Herbertstown BH2



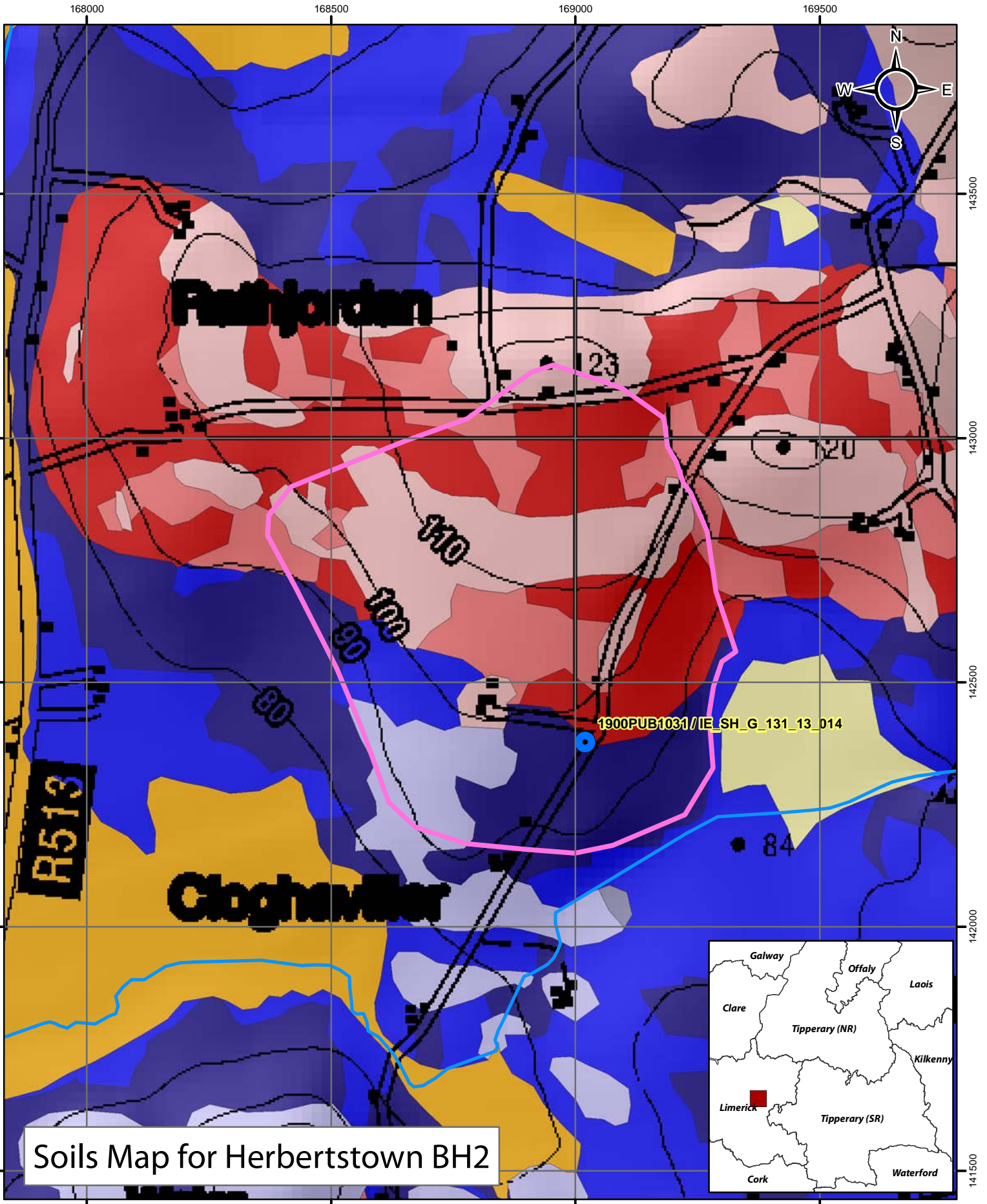


Subsoils Map for Herbertstown BH2

- | | | |
|---|--|--|
|  Abstractions |  Alluvium |  Till derived from basic igneous rocks |
|  Zone of Contribution |  Bedrock outcrop or subcrop |  Till derived from limestones |
|  River |  Lacustrine sediments |  Till derived from Namurian sandstones and shales |

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0 0.25 0.5 1 km



Soils Map for Herbertstown BH2

