

Water Framework Directive Groundwater Monitoring Programme

Site Information

Ballyduff/Kilmeaden WS



Ballyduff/Kilmeaden WS is a spring used as a public water supply. The abstraction rate is 253m³/day.

SITE INFORMATION					
Site Name:	Ballyduff/Kilmeaden WS		County:	Waterford	
RBD:	SERBD		EU Reporting Code:	IE_SE_G_149_24_001	
Easting:	248279		GWB Name:	Waterford	
Northing:	110243		GWB Code:	IE_SE_G_149	
Site Use:	Drinking Water (PWS)		Drinking Water Code:	3100PUB1009	
Hydrometric Area:	16		Water Level Monitoring Network:	Level	Flow
Townland:	KILMOYEMOGE EAST			N	N
Ownership:	Waterford County Council				
Water Quality Monitoring Network:	Surveillance		Operational (Point)		Operational (Diffuse)
	N		N		Y
Site Comments:	---				

SITE DIRECTIONS					
Location and Access Information:	Located 11 km west of Waterford and 4.4 km northwest of Kilmeaden. The spring is in the townland of Kilmoyemogue East just north of the N25 and is marked on the OS map as a Holy Well.				
Additional Comments:	---				

WELL INFORMATION					
Monitoring Point Type:	Spring	Abstraction Rate (m³/d):	253	Ground Elevation (m OD):	72
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:	Ballyduff/Killmeaden	Number of Abstraction Points in the Scheme:	1	Source Report Available	N
Source Report Info:	---				
Scheme Summary:	The scheme consists of one spring supplying the Ballyduff and Killmeaden areas. The water is pumped into the distribution main with the excess going to the reservoir. The discharge is not measured.				

HYDROGEOLOGY								
GEOLOGY	Soil:	Deep well drained mineral (AminDW)					Subsoil Permeability:	Low
	Subsoil:	Tills (diamictos) (TDSs)						
	Bedrock:	Ordovician Volcanics						
HYDROGEOLOGY	Aquifer Category:	Rf	Vulnerability at Monitoring site:	High to Low		Flow Regime:	Productive fissured bedrock	
ZONE OF CONTRIBUTION	Estimated ZOC Size (km ²):	1.04	ZOC Delineated By:	OCM (DC)		Recharge Estimate (mm/yr):	407	
	ZOC Delineation Comments:	The ZOC was delineated based on topography, abstraction rate and recharge and incorporates the entire hydrological catchment. The total discharge was unknown but an estimation of 400 m3/d was used for average abstraction plus overflow.						
Groundwater Vulnerability within ZOC (% area):	Extreme (X)	Extreme (E)	High	Moderate	Low	High to Low	Unclassified	
	18.29	30.41	0	0	0	51.3	0	
HYDROCHEMISTRY								
Hydrochemical Signature:	Ca-HCO3		Additional Water Chemistry Information:	During the monitoring period: The average nitrate concentration was 27 mg/l NO3 and the maximum nitrate concentration was 32 mg/l NO3. The average ammonium concentration was 0.06 mg/l N and the maximum ammonium concentration was 0.48 mg/l N. The average molybdate reductive phosphorus (MRP) concentration was 0.008 mg/l P and the maximum MRP concentration was 0.025 mg/l P. The average chloride concentration was 18.4 mg/l Cl and the maximum chloride concentration was 23 mg/l Cl.				
Alkalinity (mg/l HCO3):	Average:	Range:						
	60	45-110						
Hardness (mg/l CaCO3):	Average:	Range:						
	82	69-128						
Conductivity (uS/cm):	Average:	Range:						
	219	168-252						
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	36.92	60.19	2.86	0.04			
OTHER INFORMATION								



Spring



Pump House



Spring Overflow

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).

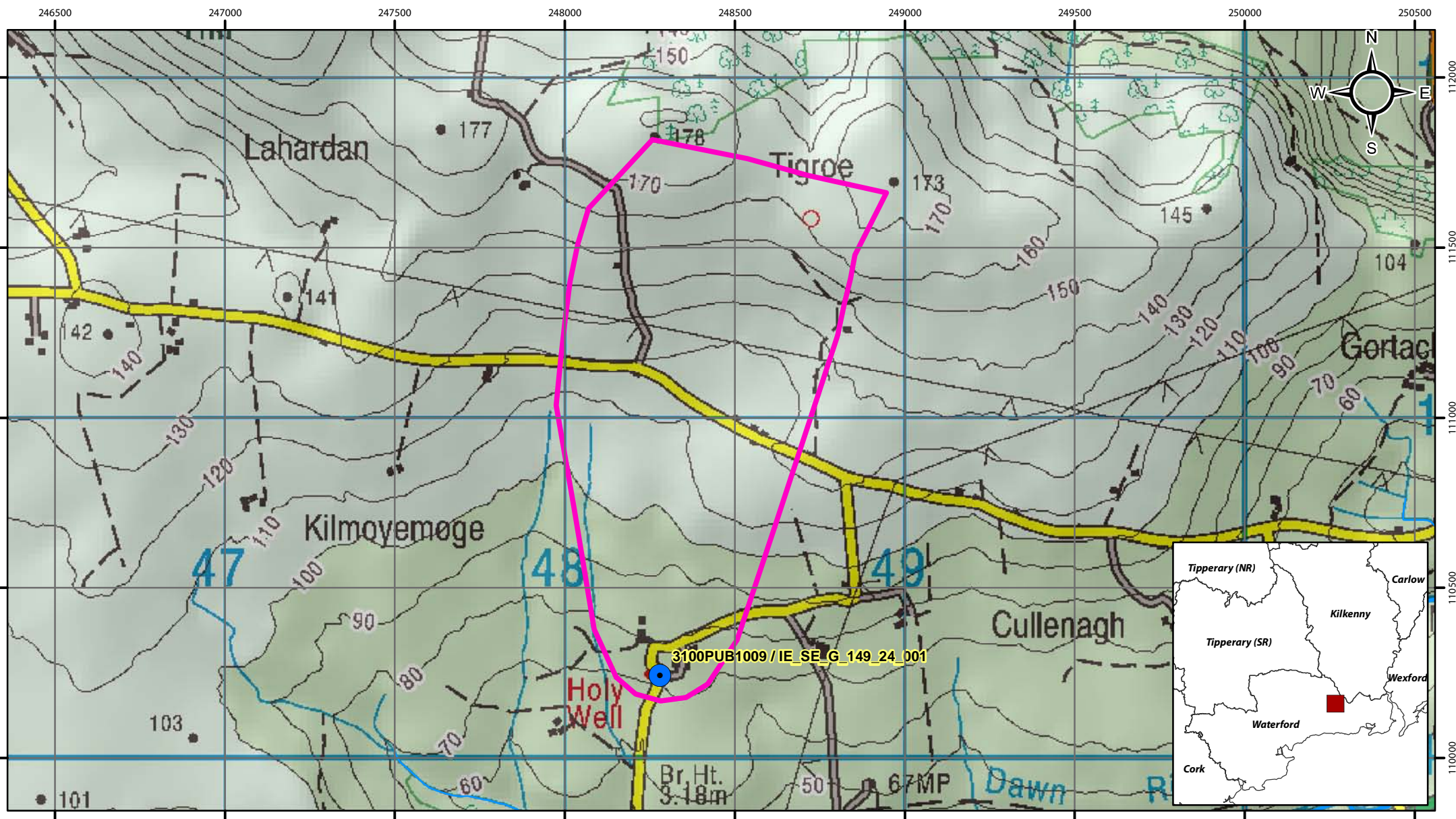
General Downgradient Distances

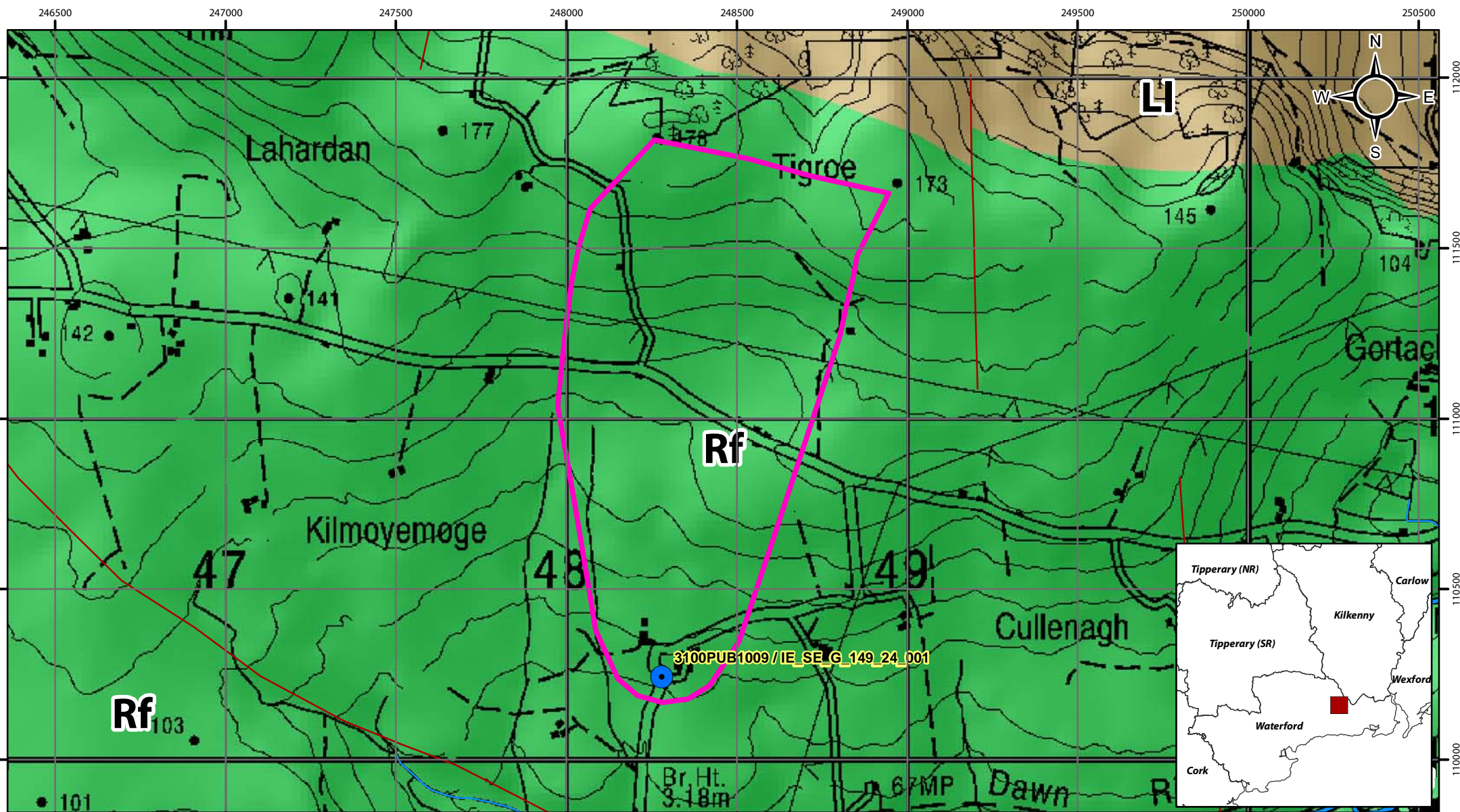
General Downgradient Distances (XL) applied to boreholes sourced in bedrock aquifers are constrained to estimate approximate limits based on data at the GSI. In some cases they may be higher or lower depending on local conditions.

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.

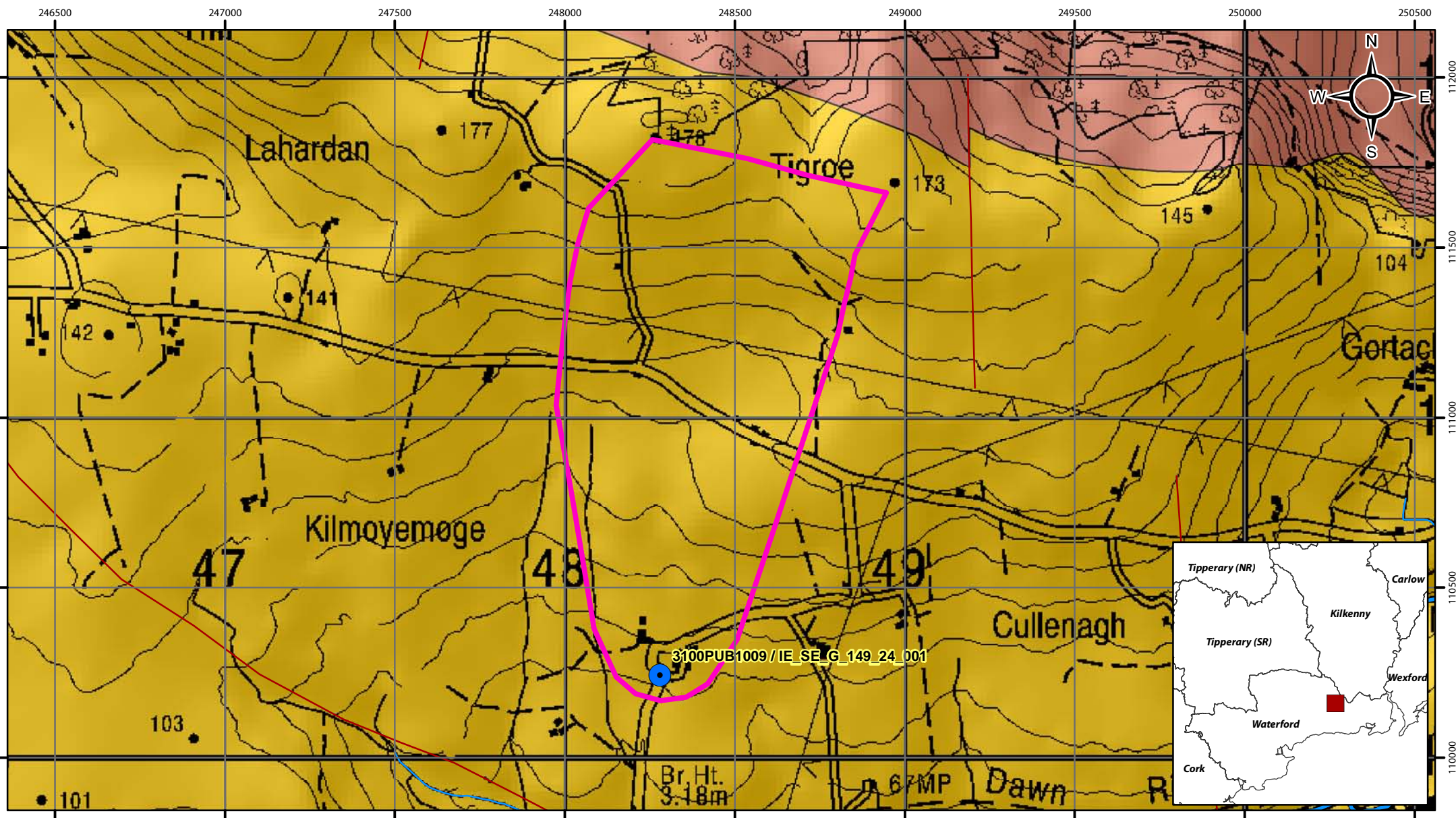
Version 0:	Prepared by		Date:	
Version 1:	Prepared by	OCM (DC)	Date:	Feb 2011
Version 2:	Prepared by		Date:	
Version 3:	Prepared by		Date:	
Version 4:	Prepared by		Date:	











Aquifer Category Map for Ballyduff/Kilmeaden WS

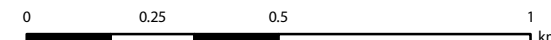
- Abstractions
- River
- Zone of Contribution
- LI
- Rf
- Fault

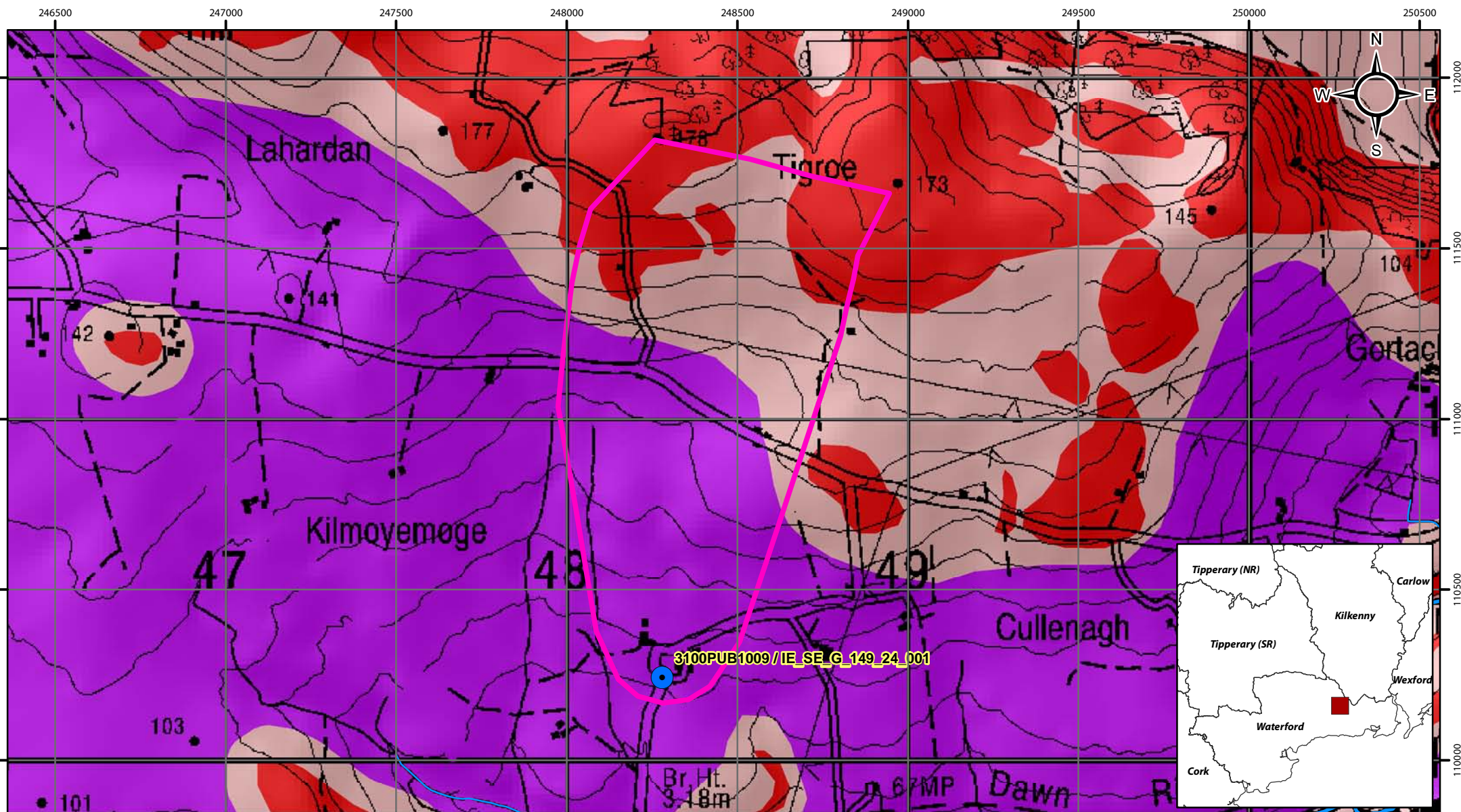


Bedrock Map for Ballyduff/Kilmeaden WS

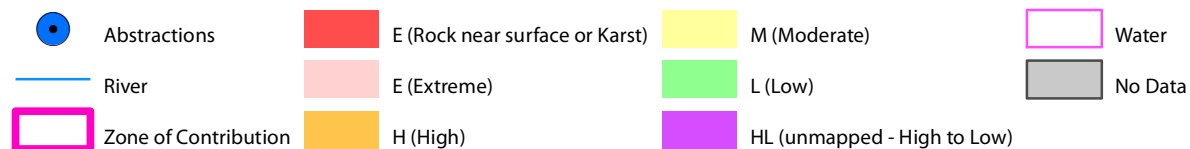
- | | | | |
|--|----------------------|---|-----------------------------|
|  | Abstractions |  | Devonian Old Red Sandstones |
|  | River |  | Ordovician Volcanics |
|  | Zone of Contribution |  | Fault |

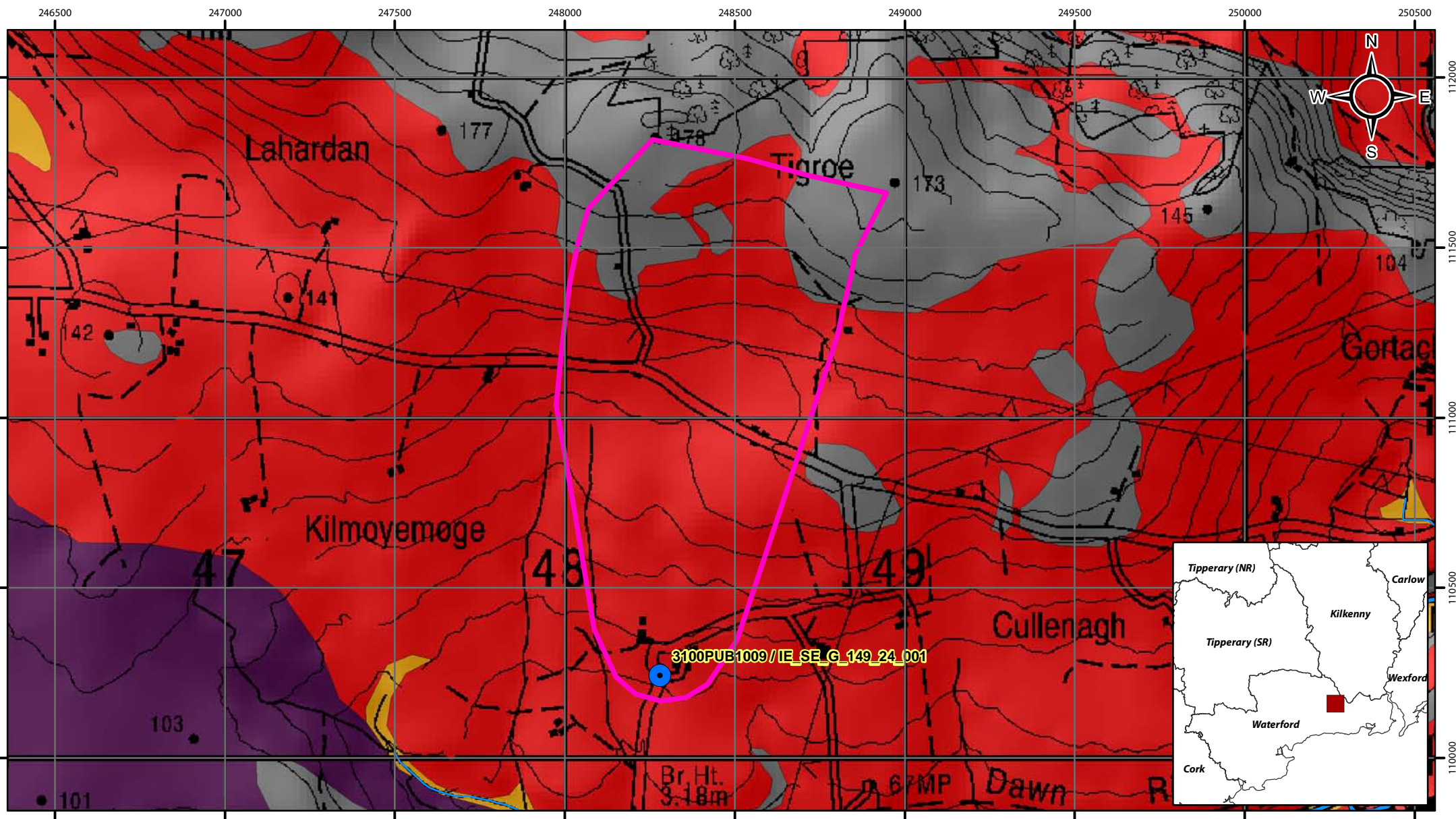
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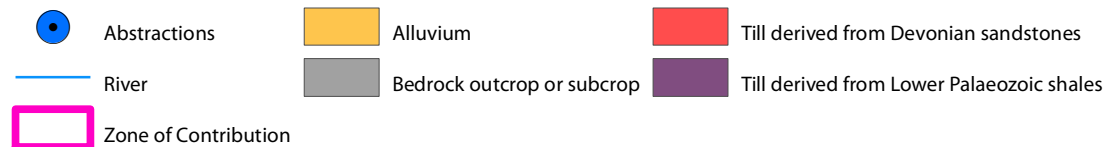


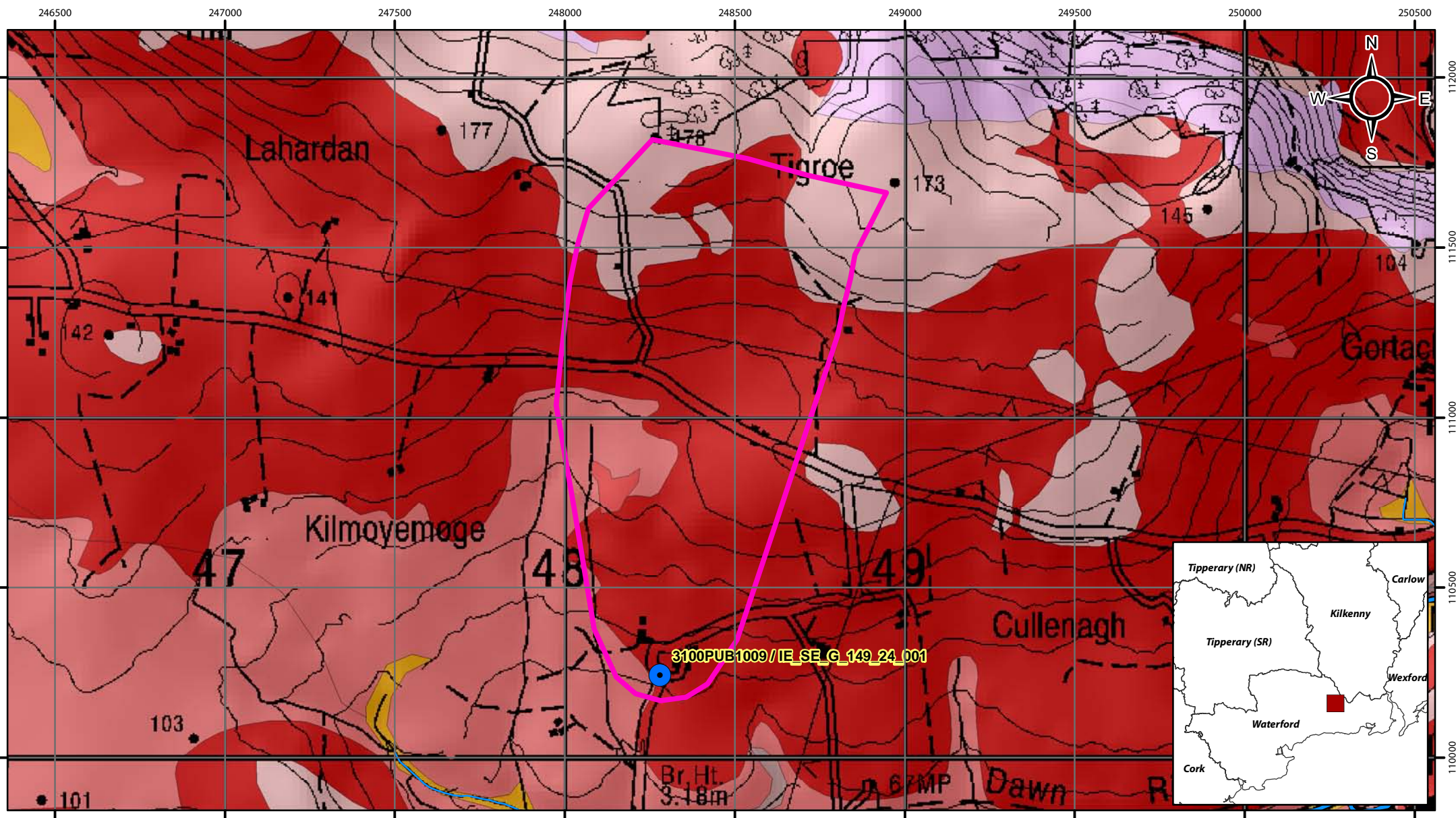
Groundwater Vulnerability Map for Ballyduff/Kilmeaden WS





Subsoils Map for Ballyduff/Kilmeaden WS





Soils Map for Ballyduff/Kilmeaden WS

