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## Water Framework Directive Groundwater Monitoring Programme

### Site Information **Ballyduff/Ballylemon**



Ballyduff/Ballylemon consists of four springs used as a public supply. The combined abstraction rate is 100 m<sup>3</sup>/d.

SITE INFORMATION					
Site Name:	Ballyduff/Ballylemon		County:	Waterford	
RBD:	SERBD		EU Reporting Code:	---	
Easting:	220063		GWB Name:	Ballyknock	
Northing:	96839		GWB Code:	IE_SE_G_014	
Site Use:	Drinking Water (PWS)		Drinking Water Code:	3100PUB1008	
Hydrometric Area:	18		Water Level Monitoring Network:	Level	Flow
Townland:	COLLIGAN MORE			N	N
Ownership:	Waterford County Council				
Water Quality Monitoring Network:	Surveillance		Operational (Point)		Operational (Diffuse)
	N		N		N
Site Comments:	---				

SITE DIRECTIONS					
Location and Access Information:	This series of springs are located 6.3 km northwest of Dungarvan. Heading west along N72, take the right after 2 km after the junction with the R672. The springs are between 1 and 1.5 km along this third class minor road.				
Additional Comments:	---				

WELL INFORMATION					
Monitoring Point Type:	Spring	Abstraction Rate (m³/d):	100	Ground Elevation (m OD):	90
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/Ballylemon	Number of Abstraction Points in the Scheme:	5	Source Report Available	N
Source Report Info:	---				
Scheme Summary:	The scheme consists of four springs and one surface water intake. Three of the springs located east of the stream and the stream intake are in use all the time. The fourth spring west of the stream is only used to augment the supply. The water is chlorinated before being pumped to the reservoir.				

HYDROGEOLOGY								
GEOLOGY	Soil:	shallow, lithosolic or podzolic type soils potentially with peaty topsoil (AminSRPT					Subsoil Permeability:	n/a
	Subsoil:	Bedrock at or close to surface (Rck)						
	Bedrock:	Devonian Old Red Sandstones						
HYDROGEOLOGY	Aquifer Category:	LI	Vulnerability at Monitoring site:	X-Extreme		Flow Regime:	Poorly productive	
ZONE OF CONTRIBUTION	Estimated ZOC Size (km <sup>2</sup> ):	0.22	ZOC Delineated By:	OCM (DC)		Recharge Estimate (mm/yr):	225	
	ZOC Delineation Comments:	Two ZOCs were delineated. Firstly, one for the three springs on the eastern side of the stream and secondly, one for the spring located on the western side of the stream. The ZOCs were delineated based on recharge, abstraction rate and mainly on topography. The entire hydrogeological catchment was used.						
Groundwater Vulnerability within ZOC (% area):	Extreme (X)	Extreme (E)	High	Moderate	Low	High to Low	Unclassified	
	93.13	6.88	0	0	0	0	0	
HYDROCHEMISTRY								
Hydrochemical Signature:	Ca-HCO <sub>3</sub>		Additional Water Chemistry Information:	Few data available.				
Alkalinity (mg/l HCO <sub>3</sub> ):	Average:	Range:						
	---	---						
Hardness (mg/l CaCO <sub>3</sub> ):	Average:	Range:						
	---	---						
Conductivity (uS/cm):	Average:	Range:						
	222.6	188-436						
Monitoring Record Period:	From:	To:						
	2002	2006						
RISK ASSESSMENT								
Pressure (e.g., Nitrates, Phosphates, Abstractions):	---		Typical Contaminants:	---				
Risk Category:	Not at risk, low confidence		GWB Status:	Good				
Impact Potential within ZOC (% area):	Extreme:	High:	Moderate:	Low:	Negligible:			
	30.20	0.00	0.00	0.00	69.90			
OTHER INFORMATION								
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Spring



Spring



Pump House

## 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

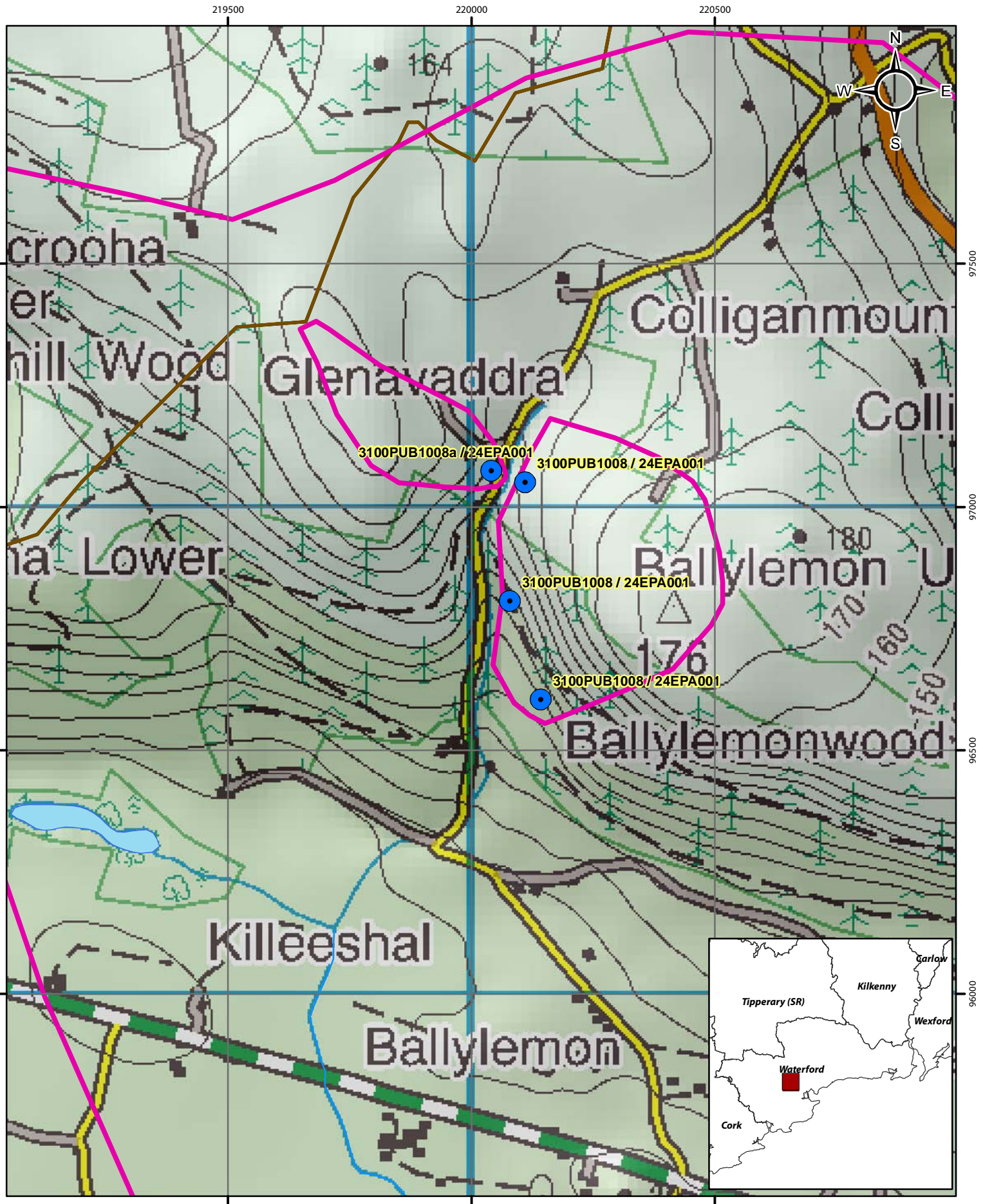
General Downgradient Distances (XL) applied to boreholes sourced in bedrock aquifers are constrained to estimate approximate limits based on data at the GSI. In some cases they may be higher or lower depending on local conditions.

Rk, Rkd, Lk	225 m
Lm	150 m
Ll, Pl	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:	

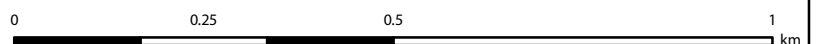




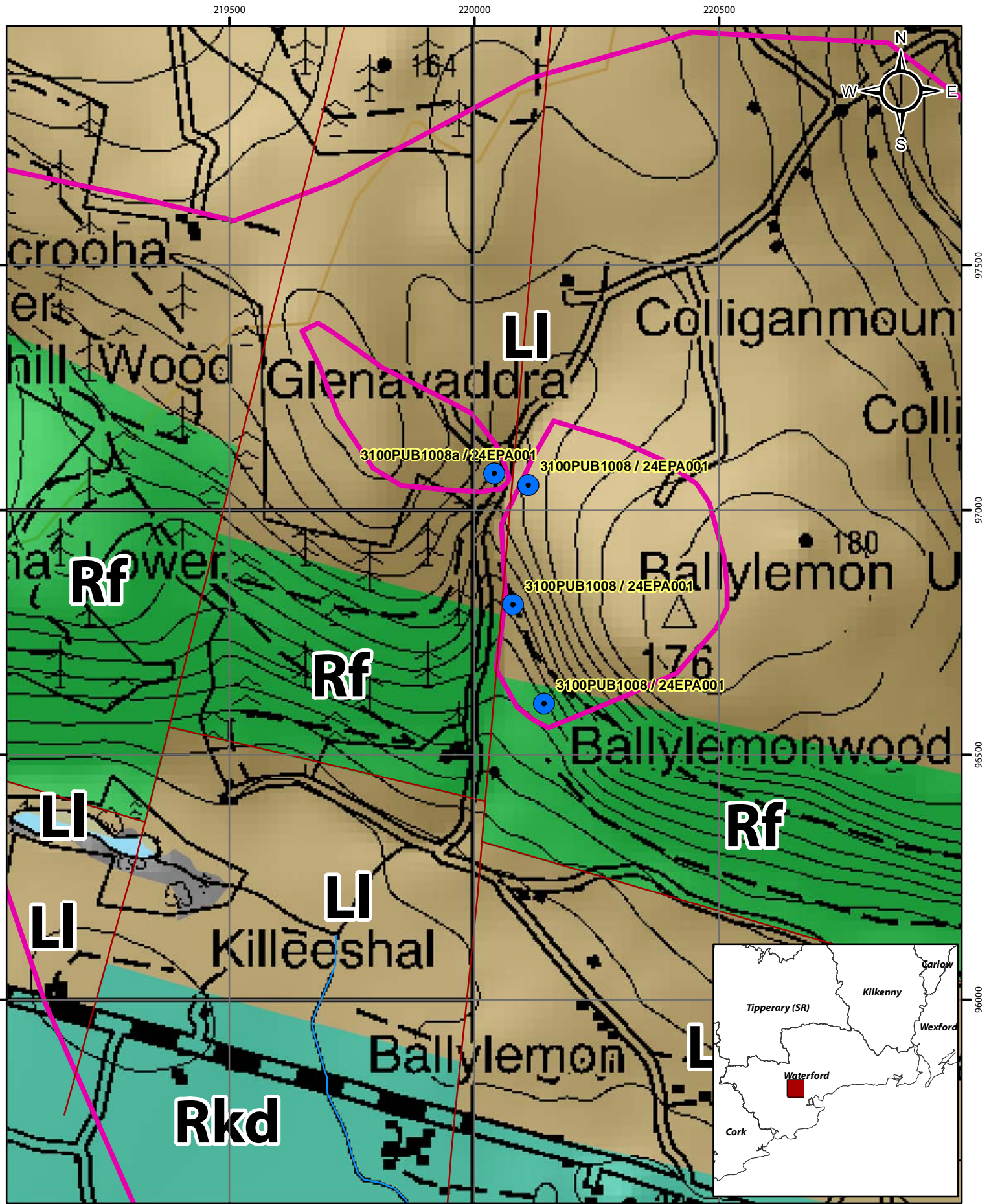
## Location Map for Ballyduff\Ballylemon

-  Abstractions
-  River
-  Zone of Contribution

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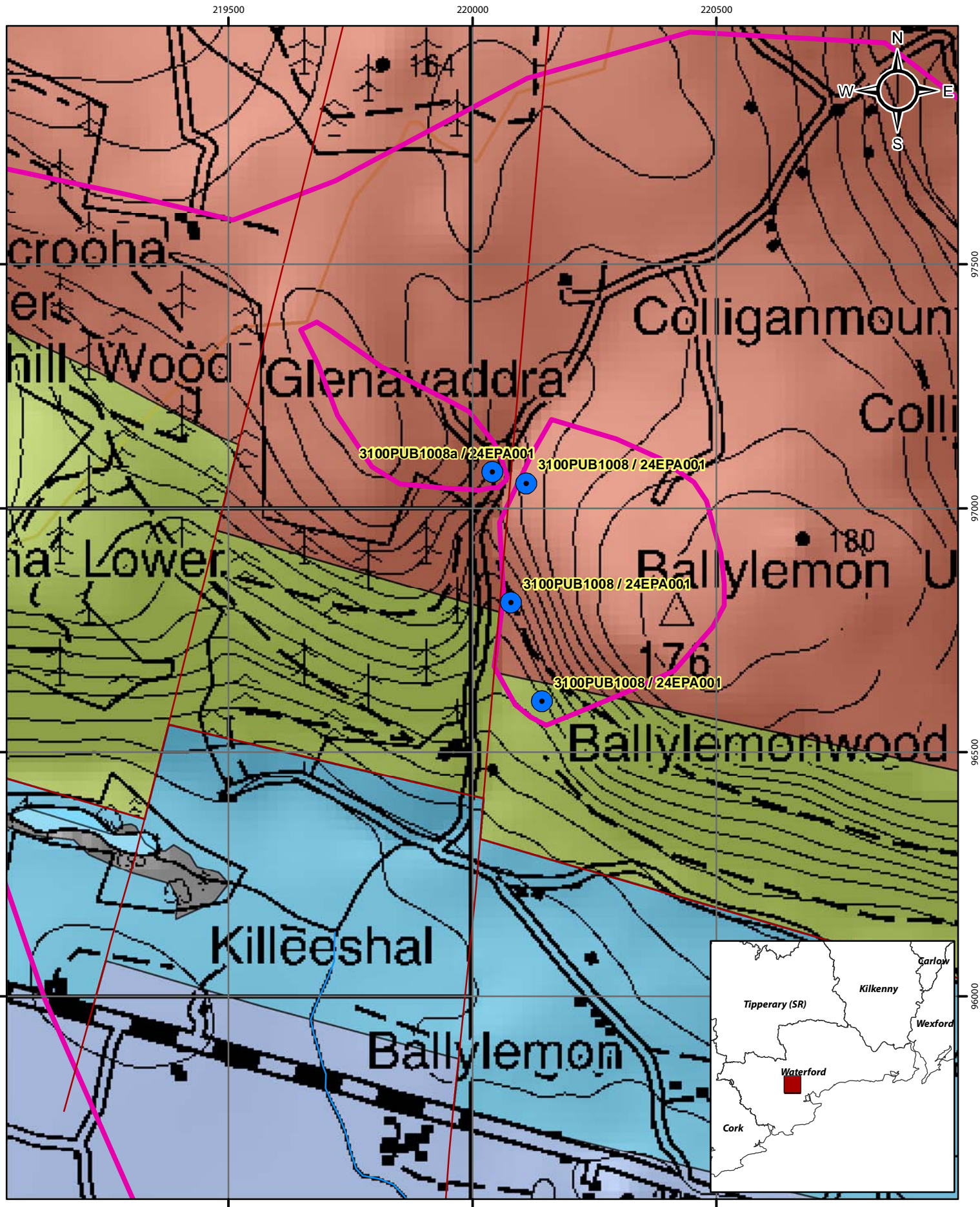
## Aquifer Category Map for Ballyduff/Ballylemon

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

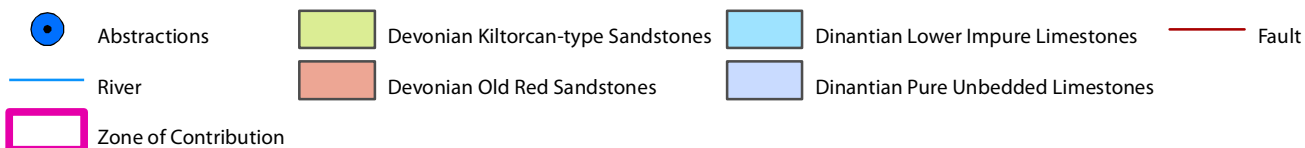
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0 0.25 0.5 1 km

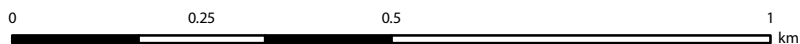




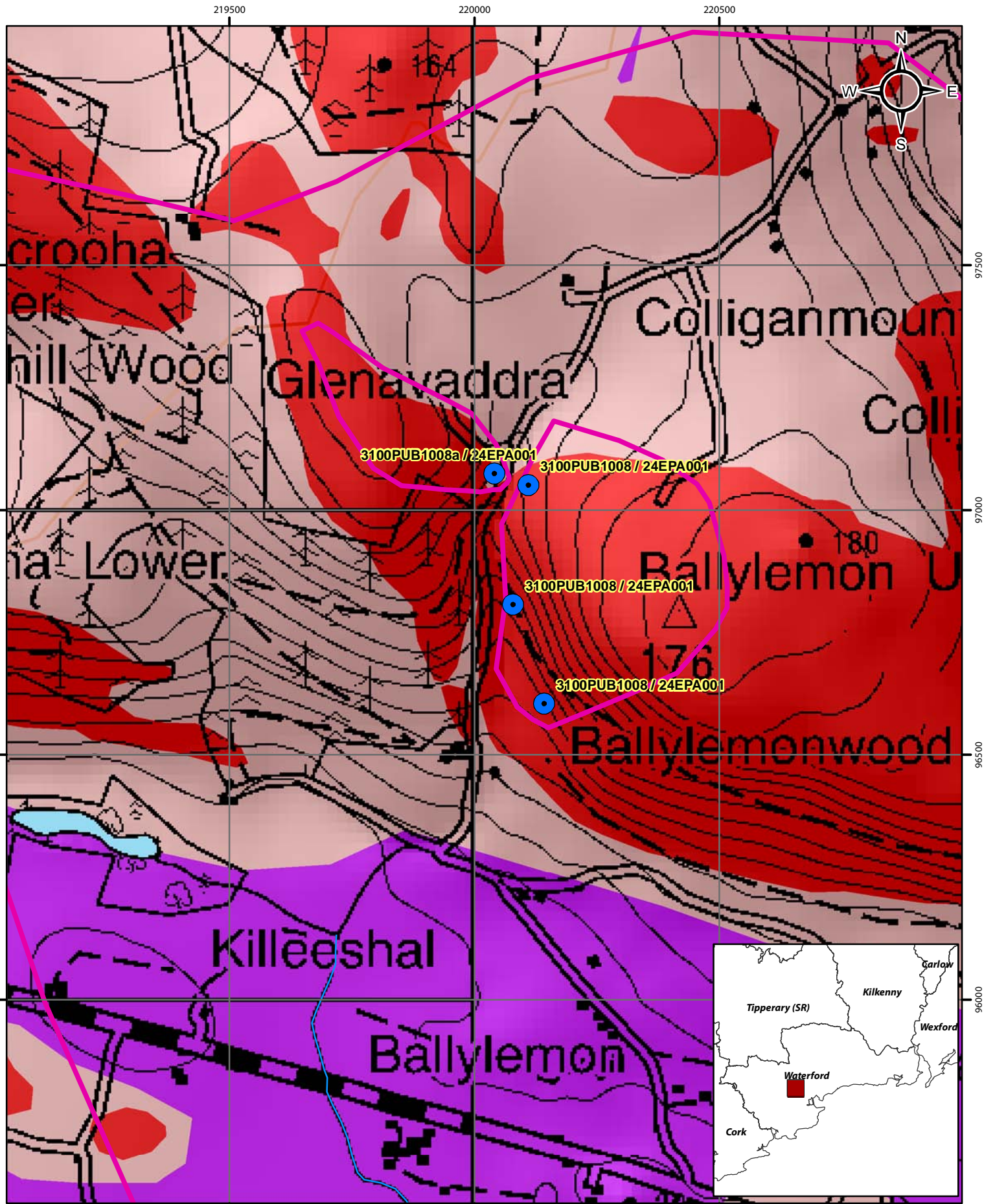
## Bedrock Map for Ballyduff\Ballylemon










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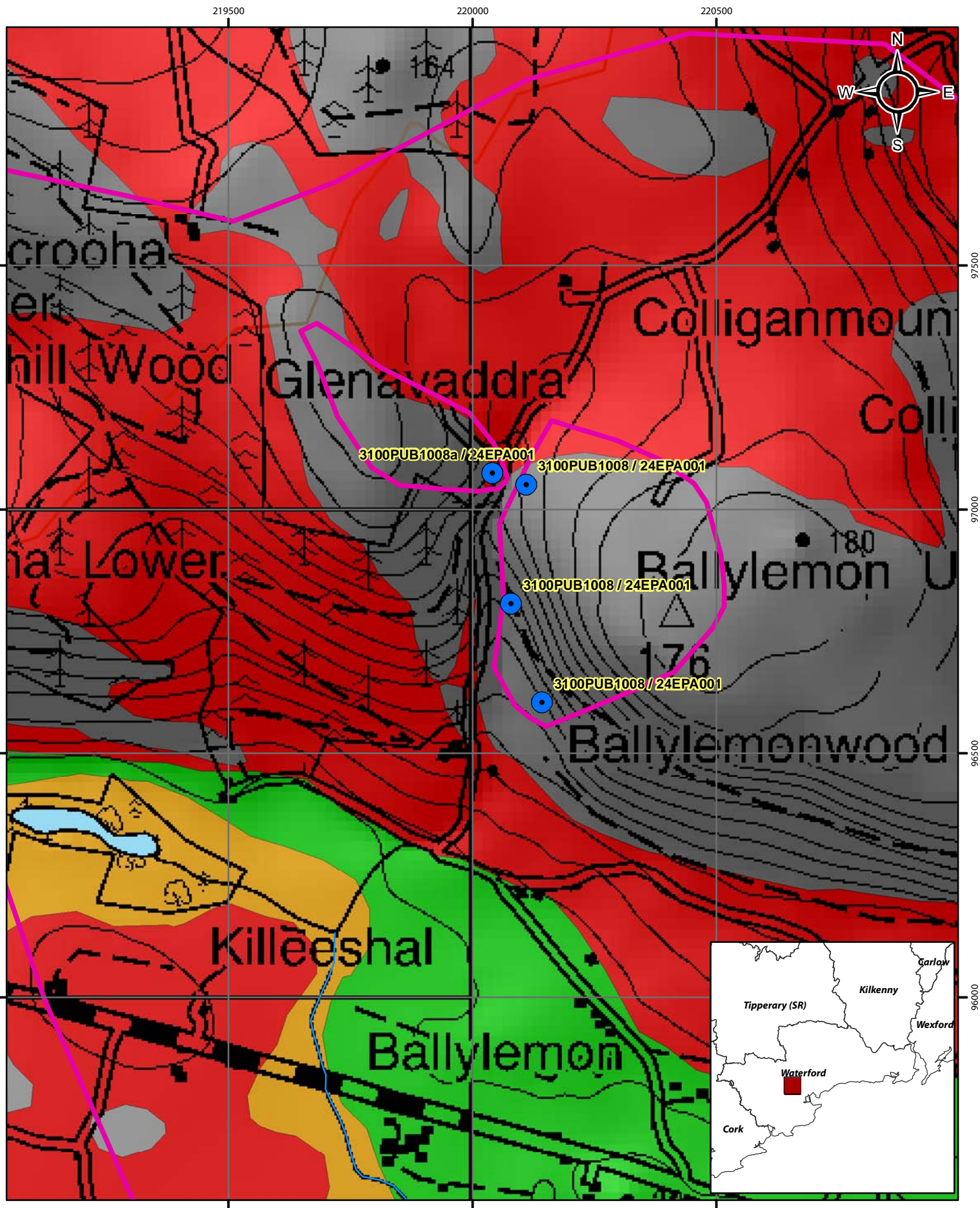
## Groundwater Vulnerability Map for Ballyduff/Ballylemon

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










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0 0.25 0.5 1 km





## Subsoils Map for Ballyduff\Ballylemon

- |   |  |   |
|---|--|---|
|  Abstractions         |  Alluvium                                 |  Karstified bedrock outcrop or subcrop |
|  River                |  Gravels derived from Devonian sandstones |  Till derived from Devonian sandstones |
|  Zone of Contribution |  Bedrock outcrop or subcrop               |  Water                                 |

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0 0.25 0.5 1 km



