

## Water Framework Directive Groundwater Monitoring Programme

### Site Information

### Blessington



This monitoring point is part of the Blessington public water supply, for which the GSI have completed a groundwater source protection report. There are two abstraction wells, of which one operates at any given time. The average abstraction rate is 400m<sup>3</sup>/day.



Wicklow

**August 2011**

SITE INFORMATION					
Site Name:	Blessington		County:	Wicklow	
RBD:	ERBD		EU Reporting Code:	IE_EA_G_047_27_002	
Easting:	297399		GWB Name:	Blessington S&G	
Northing:	214200		GWB Code:	IE_EA_G_047	
Site Use:	Drinking Water (PWS)		Drinking Water Code:	3400PUB1018	
Hydrometric Area:	9		Water Level Monitoring Network:	Level	Flow
Townland:	Newtown Little			N	N
Ownership:	Wicklow Co Co				
Water Quality Monitoring Network:	Surveillance		Operational (Point)		Operational (Diffuse)
	N		N		Y
Site Comments:	The Blessington well site is located in a fenced off area near the fire station in Blessington village. Nearby quarry.				

SITE DIRECTIONS	
Location and Access Information:	From N81 in Blessington take the R410 towards Naas. After about 600 meters (having passed 3 roads to the left) turn left into the Wicklow County Council storage yard. Keep to the left and drive till the end of the yard. The well is between the sheds and the trees on the left.
Additional Comments:	---

WELL INFORMATION					
Monitoring Point Type:	Borehole	Abstraction Rate (m³/d):	400	Ground Elevation (m OD):	200
Borehole Log Available:	N	Total Drilled Depth (m bgl):	18.6	Depth to Bedrock (m bgl):	>18.6
Top of Casing (m agl):	1	Upper Casing Diameter (mm):	200	Lower Casing Diameter (mm):	---
Final Borehole Depth (m):	18.6	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:	The Blessington gravel aquifer varies in thickness but is generally 10 to 35m thick. The main borehole was drilled to 18.6m and did not reach bedrock. The well information is for PW1.		
Specific Capacity (m³/d/m):	85.4				
Static Water Level (m bgl):	2.72				
Scheme Name:	Blessington	Number of Abstraction Points in the Scheme:	2	Source Report Available	Y
Source Report Info:	GSI published a Groundwater Source Protection Report in 2003. The report concentrates on the main gravel deposit in the Blessington area (north of the village and between Pollaphuca Reservoir and Co. Kildare)				
Scheme Summary:	There are two production wells, one of which is operational at any one time. Both are located in the Council Depot.				

HYDROGEOLOGY								
GEOLOGY	Soil:	Deep well drained mineral (AminDW)					Subsoil Permeability:	Moderate
	Subsoil:	Tills (diamictons) (TLPSSs)						
	Bedrock:	Silurian Metasediments and Volcanics						
HYDROGEOLOGY	Aquifer Category:	Lg	Vulnerability at Monitoring site:	Moderate	Flow Regime:	Intergranular		
ZONE OF CONTRIBUTION	Estimated ZOC Size (km <sup>2</sup> ):	1.74	ZOC Delineated By:	GSI	Recharge Estimate (mm/yr):	407		
	ZOC Delineation Comments:	ZOC delineated by the GSI. Both Inner and Outer Source Protection Areas were defined. See GSI, 2003 - Blessington Groundwater Source Protection Zones, 2003. Available from the groundwater section at GSI.						
Groundwater Vulnerability within ZOC (% area):	Extreme (X)	Extreme (E)	High	Moderate	Low	High to Low	Unclassified	
	0.55	5.02	84.8	9.45	0	0.18	0	
HYDROCHEMISTRY								
Hydrochemical Signature:	Ca-HCO <sub>3</sub>		Additional Water Chemistry Information:	The average concentration of chloride (59.86 mg/L Cl) between the period 1995-2008 exceeds the WFD threshold value of 24 mg/L Cl.				
Alkalinity (mg/l HCO <sub>3</sub> ):	Average:	Range:						
	272	209-358						
Hardness (mg/l CaCO <sub>3</sub> ):	Average:	Range:						
	347	292-458						
Conductivity (uS/cm):	Average:	Range:						
	753	545-1015						
Monitoring Record Period:	From:	To:						
	1995	2008						
RISK ASSESSMENT								
Pressure (e.g., Nitrates, Phosphates, Abstractions):	Landfill		Typical Contaminants:	Landfill leachate				
Risk Category:	At risk, low confidence		GWB Status:	Good				
Impact Potential within ZOC (% area):	Extreme:	High:	Moderate:	Low:	Negligible:			
	0.00	4.79	49.82	8.98	36.41			
OTHER INFORMATION								
The Blessington gravel deposits constitute a locally important sand and gravel aquifer which is highly vulnerable to pollution.								



Site Location



Site Overview



Well Head



## 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 NO<sub>3</sub>)

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

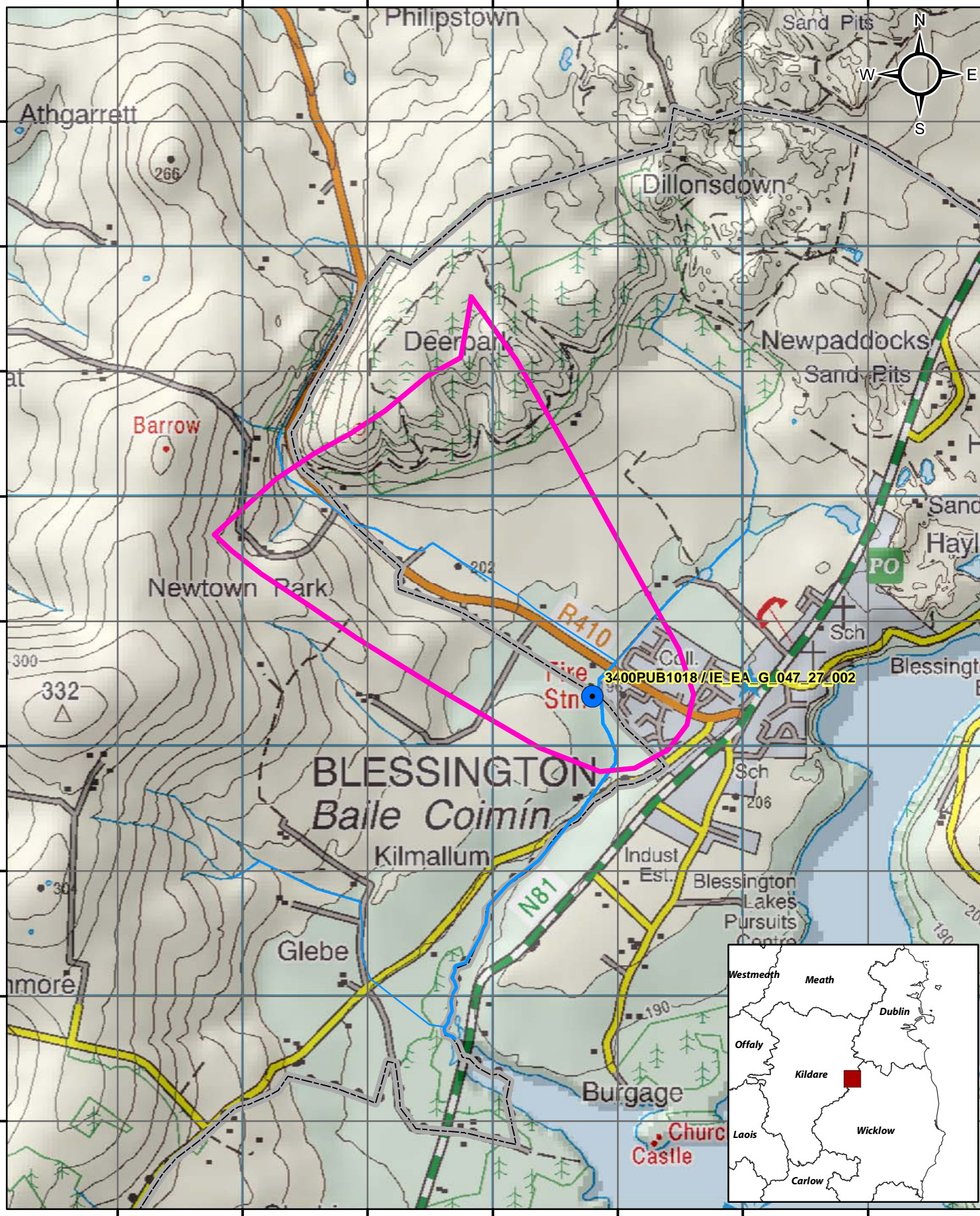
General Downgradient Distances (XL) applied to boreholes sourced in bedrock aquifers are constrained to estimate approximate limits based on data at the GSI. In some cases they may be higher or lower depending on local conditions.

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	GSI	Date:	01/12/2003
Version 1:	Prepared by	CDM (HM)	Date:	Feb 2011
Version 2:	Prepared by		Date:	
Version 3:	Prepared by		Date:	
Version 4:	Prepared by		Date:	

295500 296000 296500 297000 297500 298000 298500



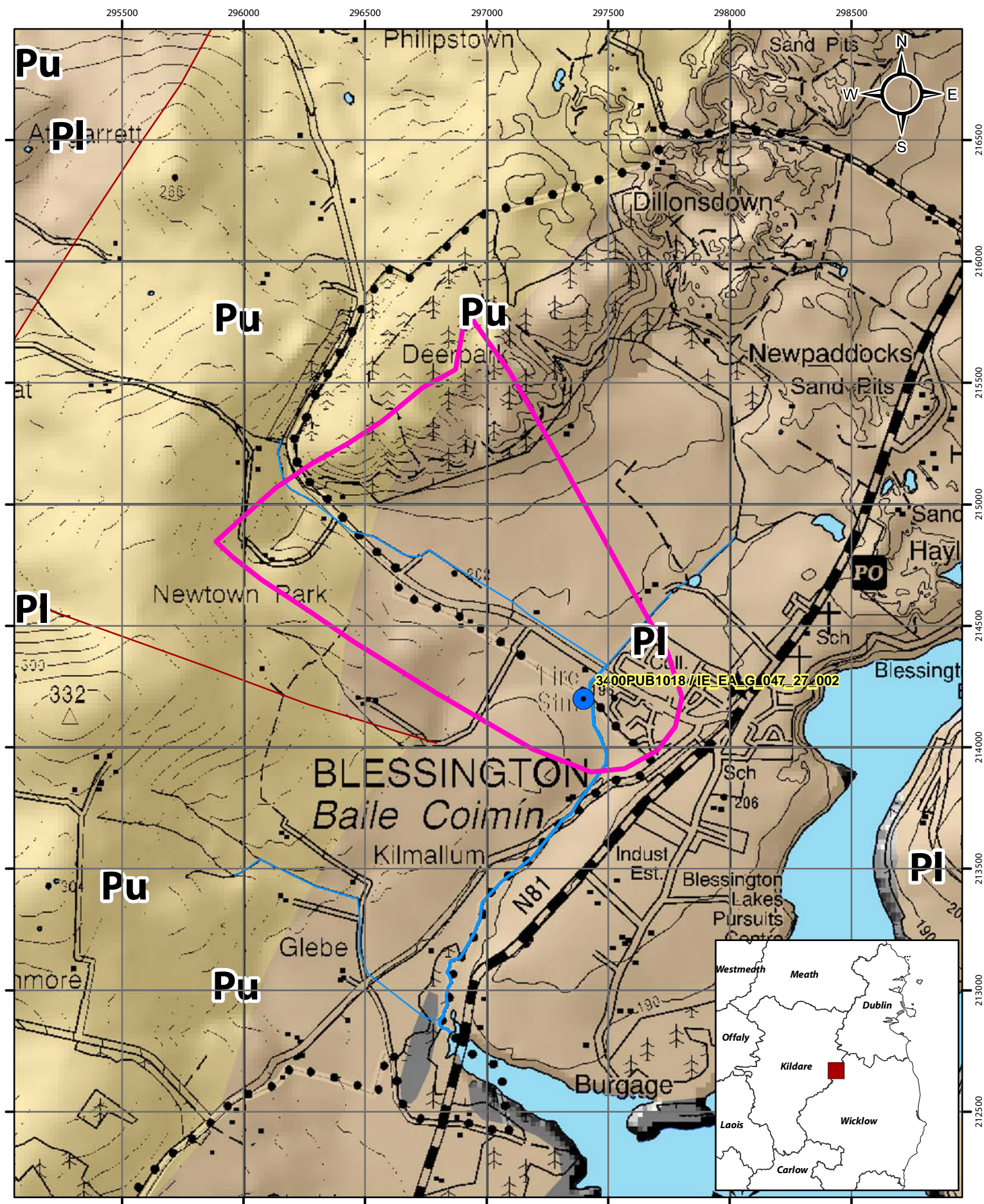
## Location Map for Blessington

-  Abstractions
-  Zone of Contribution
-  River








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0 0.25 0.5 1 km





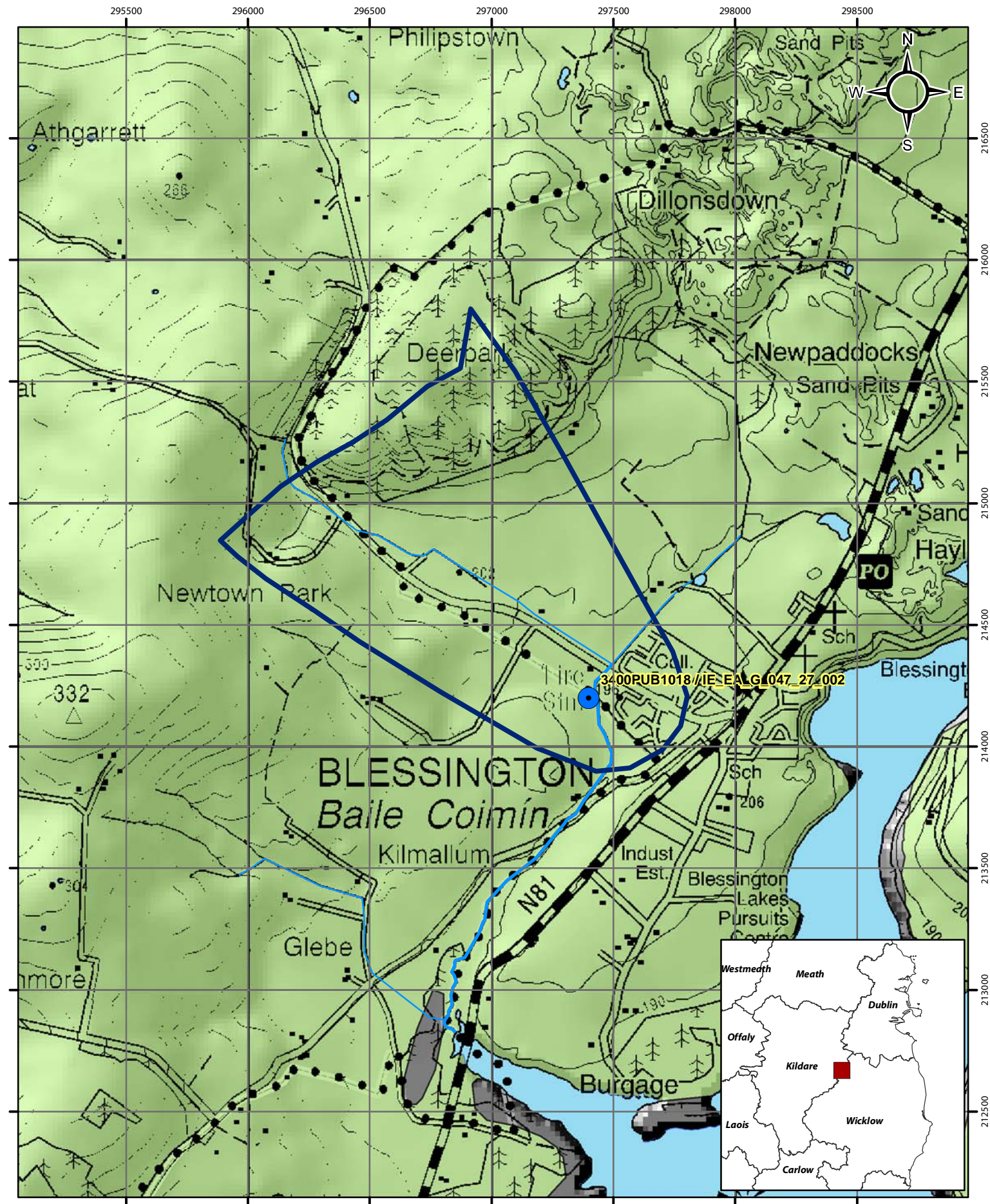
## Aquifer Category Map for Blessington

-  Abstractions
-  Zone of Contribution
-  River
-  Lake
-  PI
-  Pu
-  Fault

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0 0.25 0.5 1 km





## Bedrock Map for Blessington

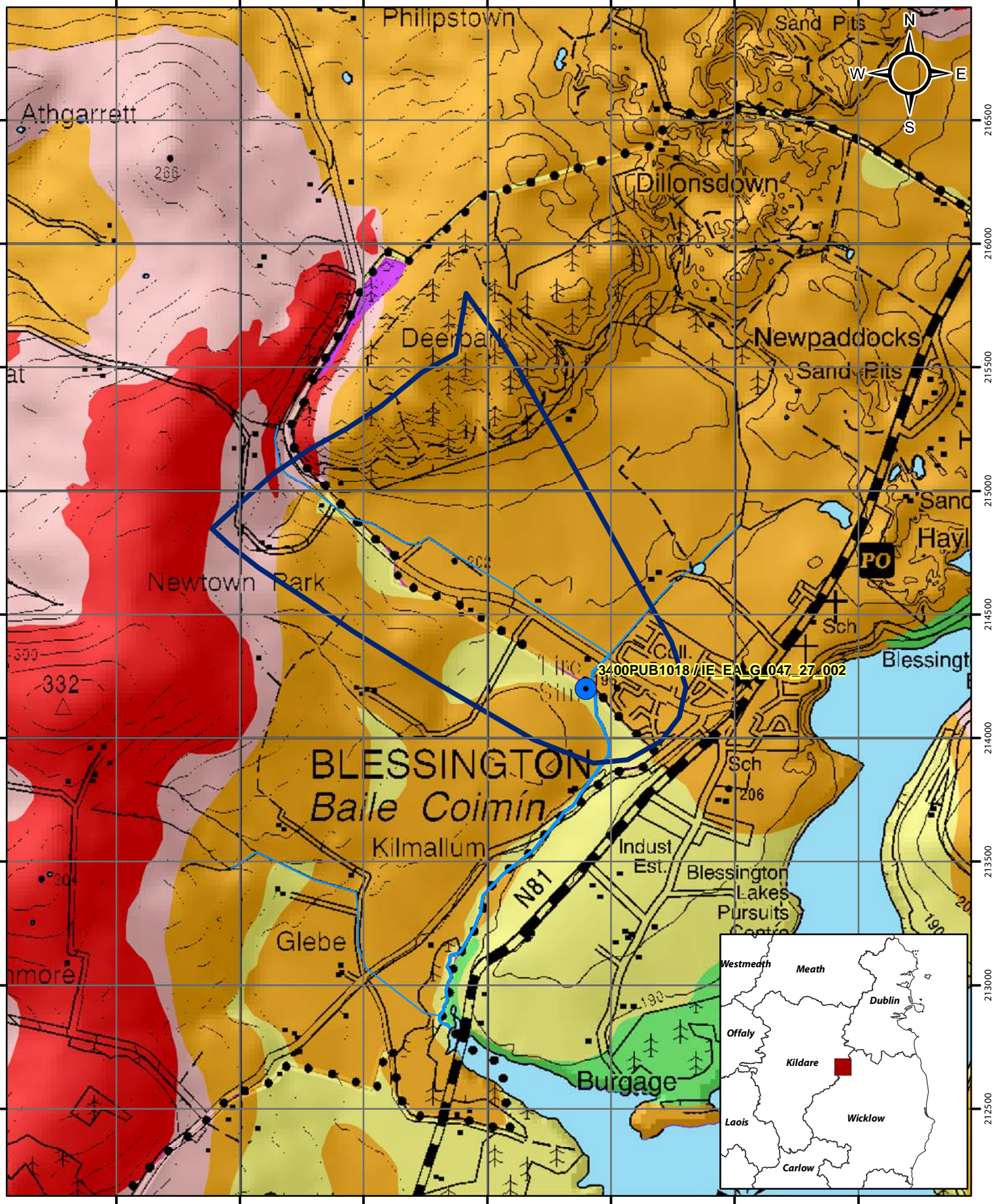
- Abstractions
- Lake
- Silurian Metasediments and Volcanics
- Zone of Contribution
- River

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0 0.25 0.5 1 km



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## Groundwater Vulnerability Map for Blessington

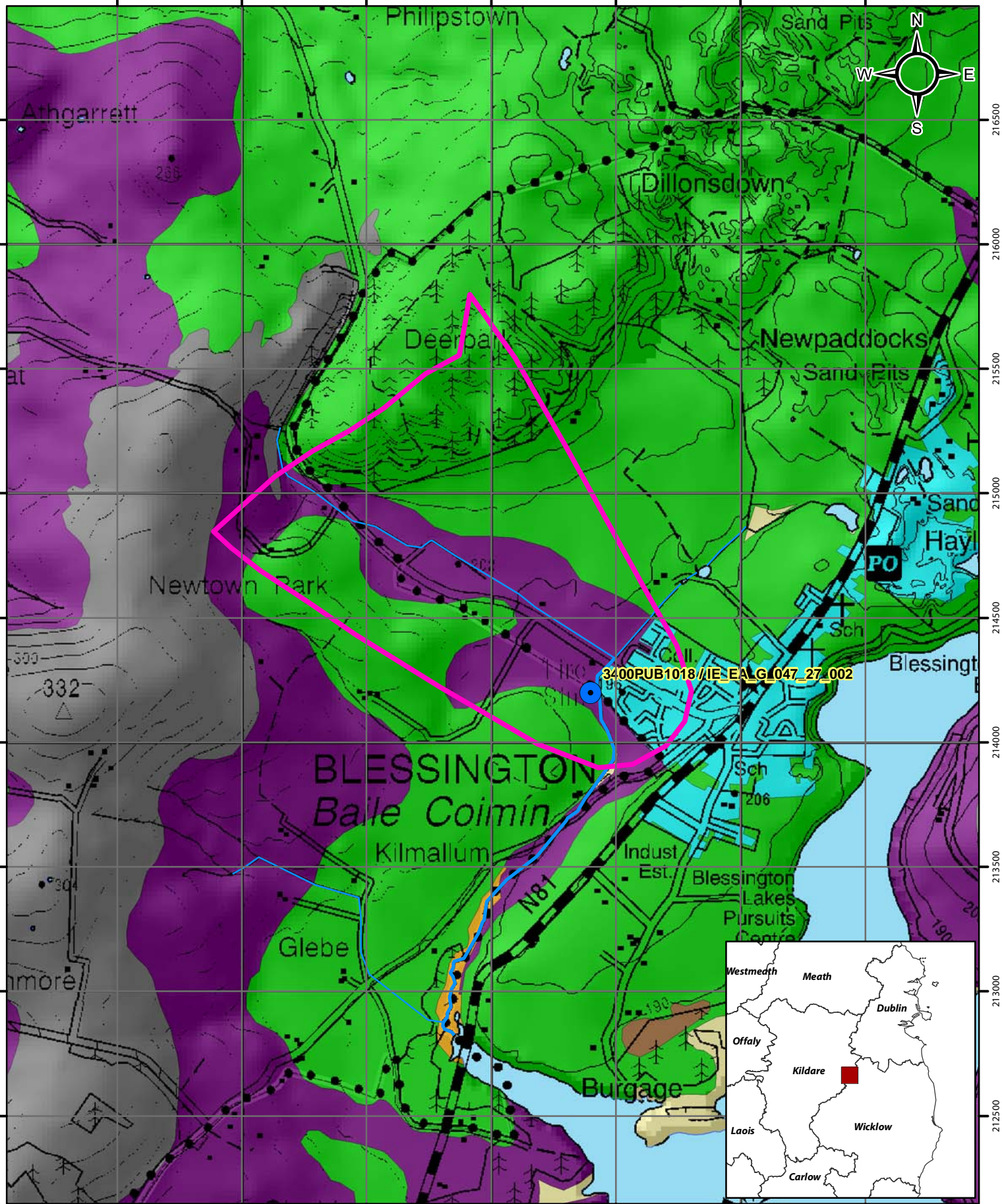
- Abstractions
- Zone of Contribution
- River
- Lake
- E (Rock near surface or Karst)
- E (Extreme)
- H (High)
- M (Moderate)
- L (Low)
- HL (unmapped - High to Low)
- Water
- No Data

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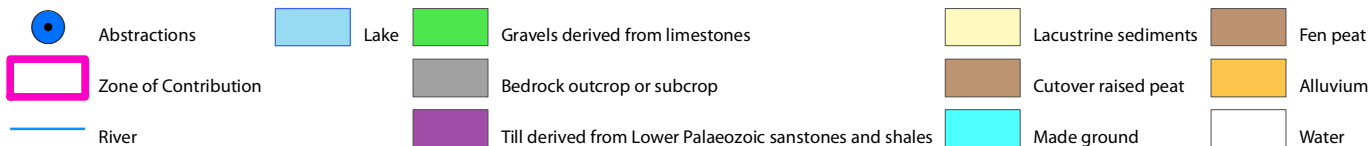
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## Subsoils Map for Blessington

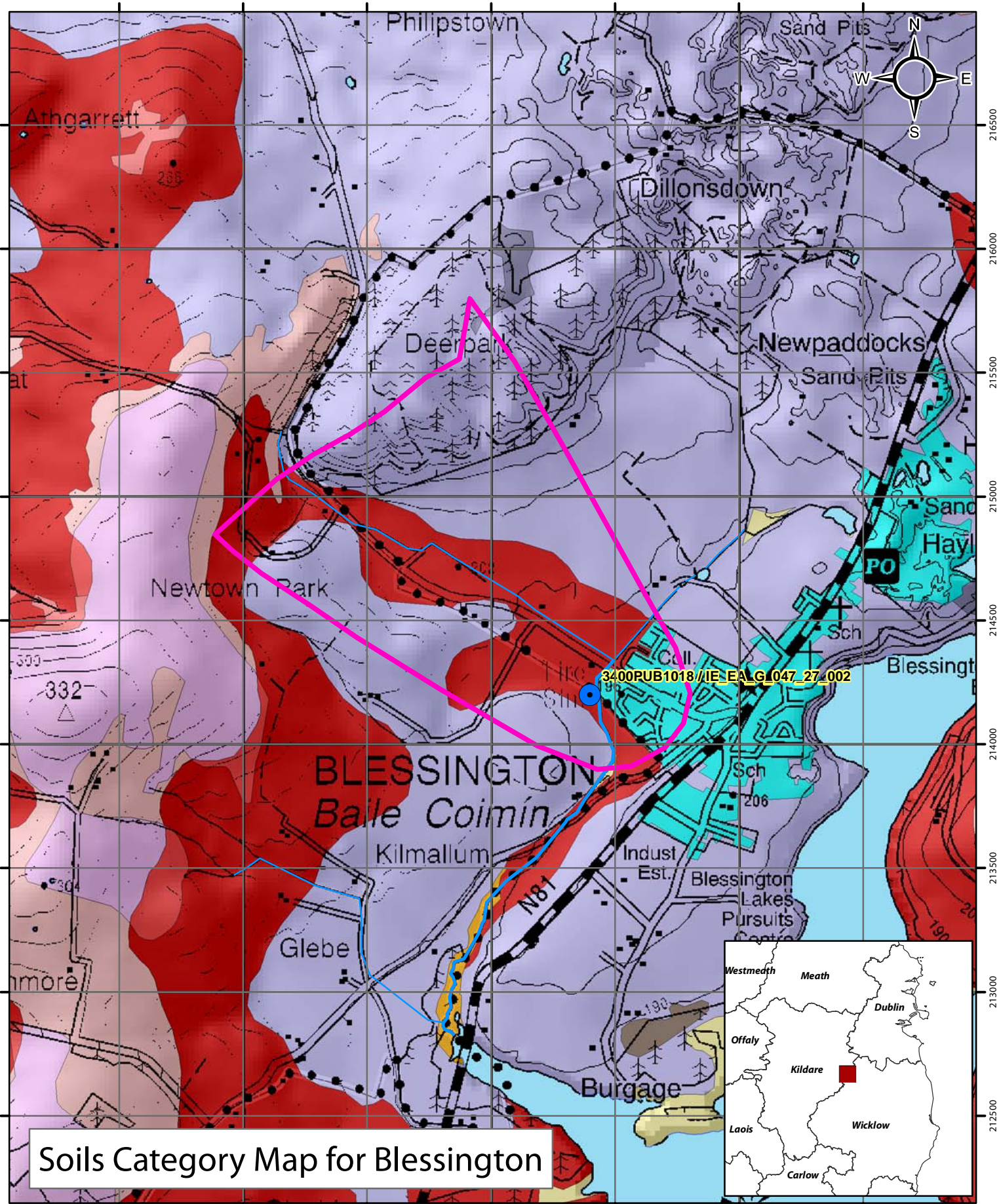


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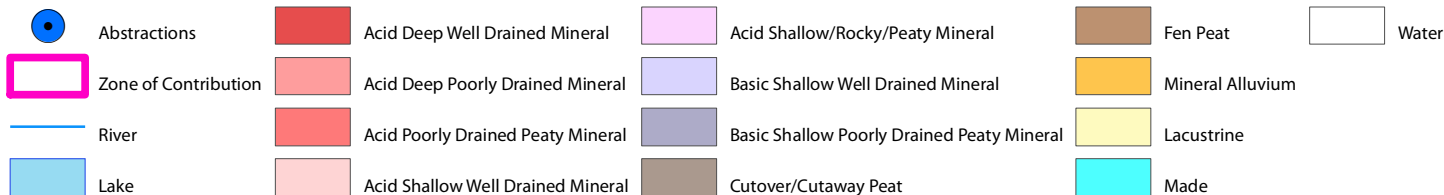
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## Soils Category Map for Blessington



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0 0.25 0.5 1 km