

Water Framework Directive Groundwater Monitoring Programme

Site Information **Cloyne PWS (Commons East)**



Cloyne Commons East is a borehole used as part of the Cloyne public water supply. Its abstraction rate is 350 m³/day. A GSI source report has been completed for the site.



Cork

August 2011

SITE INFORMATION					
Site Name:	Cloyne PWS (Commons East)		County:	Cork	
RBD:	SWRBD		EU Reporting Code:	IE_SW_G_029_04_009	
Easting:	191881		GWB Name:	Cloyne_A	
Northing:	67176		GWB Code:	IE_SW_G_029	
Site Use:	Drinking Water (PWS)		Drinking Water Code:	0500PUB2403	
Hydrometric Area:	19		Water Level Monitoring Network:	Level	Flow
Townland:	COMMONS EAST			N	N
Ownership:	Cork County Council				
Water Quality Monitoring Network:	Surveillance		Operational (Point)		Operational (Diffuse)
	N		N		Y
Site Comments:	The borehole is included in the operational chemical network.				

SITE DIRECTIONS	
Location and Access Information:	The Commons East borehole is approximately 650 south of Cloyne east of the main road.
Additional Comments:	---

WELL INFORMATION					
Monitoring Point Type:	BH	Abstraction Rate (m³/d):	350	Ground Elevation (m OD):	20
Borehole Log Available:	---	Total Drilled Depth (m bgl):	45.7	Depth to Bedrock (m bgl):	---
Top of Casing (m agl):	---	Upper Casing Diameter (mm):	150	Lower Casing Diameter (mm):	---
Final Borehole Depth (m):	19.8	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:	Cloyne-Aghada	Number of Abstraction Points in the Scheme:	5	Source Report Available	Y
Source Report Info:	Source report prepared by GSI in 2002.				
Scheme Summary:	The Cloyne-Aghada Water Supply comprises five production boreholes, of which four are currently in use. The boreholes are spread across the townlands of Town Parks (just southeast of the town of Cloyne), Castlemartyr and Lissanly (southeast of the town), Commons East (south of the town) and Farrannamanagh (southeast of the town).T he scheme currently supplies the surrounding population in addition to the Aghada power station. The scheme pumps up to 2000m³/d and two to four boreholes can be in use depending on the reservoir level. The water is chlorinated and fluoridated.				

HYDROGEOLOGY								
GEOLOGY	Soil:	Shallow well drained mineral (AminSW)					Subsoil Permeability:	High
	Subsoil:	Glaciofluvial sands and gravels (GDSs)						
	Bedrock:	Dinantian Pure Unbedded Limestones						
HYDROGEOLOGY	Aquifer Category:	Rkd	Vulnerability at Monitoring site:	High		Flow Regime:	Karstified	
ZONE OF CONTRIBUTION	Estimated ZOC Size (km²):	13.56	ZOC Delineated By:	GSI		Recharge Estimate (mm/yr):	600	
	ZOC Delineation Comments:	Cloyne Aghada WSS consists of four boreholes for which the GSI delineated a Source Protection Zone. The ZOC was delineated based on topography, recharge and abstraction. See the source report for details.						
Groundwater Vulnerability within ZOC (% area):	Extreme (X)	Extreme (E)	High	Moderate	Low	High to Low	Unclassified	
	5.17	61.4	19.36	13.75	0.33	0	0	
HYDROCHEMISTRY								
Hydrochemical Signature:	Ca-HCO3		Additional Water Chemistry Information:	During the monitoring period: The average nitrate concentration was 24 mg/l NO3 and the maximum nitrate concentration was 40 mg/l NO3. The average ammonium concentration was 0.033 mg/l N and the maximum ammonium concentration was 0.58 mg/l N. The average molybdate reductive phosphorus (MRP) concentration was 0.009 mg/l P and the maximum MRP concentration was 0.04 mg/l P. The average chloride concentration was 35.7 mg/l Cl and the maximum chloride concentration was 43.6 mg/l Cl.				
Alkalinity (mg/l HCO3):	Average:	Range:						
	261	146-416						
Hardness (mg/l CaCO3):	Average:	Range:						
	298	234-362						
Conductivity (uS/cm):	Average:	Range:						
	652	511-737						
Monitoring Record Period:	From:	To:						
	1995	2010						
RISK ASSESSMENT								
Pressure (e.g., Nitrates, Phosphates, Abstractions):	Diffuse & Point		Typical Contaminants:		Nitrate & Phosphate / Landfill			
Risk Category:	At risk, high confidence		GWB Status:		Good			
Impact Potential within ZOC (% area):	Extreme:	High:	Moderate:		Low:	Negligible:		
	2.25	81.53	12.18		0.34	3.70		
OTHER INFORMATION								



Borehole Housing



Sampling Point



Site Protection

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).

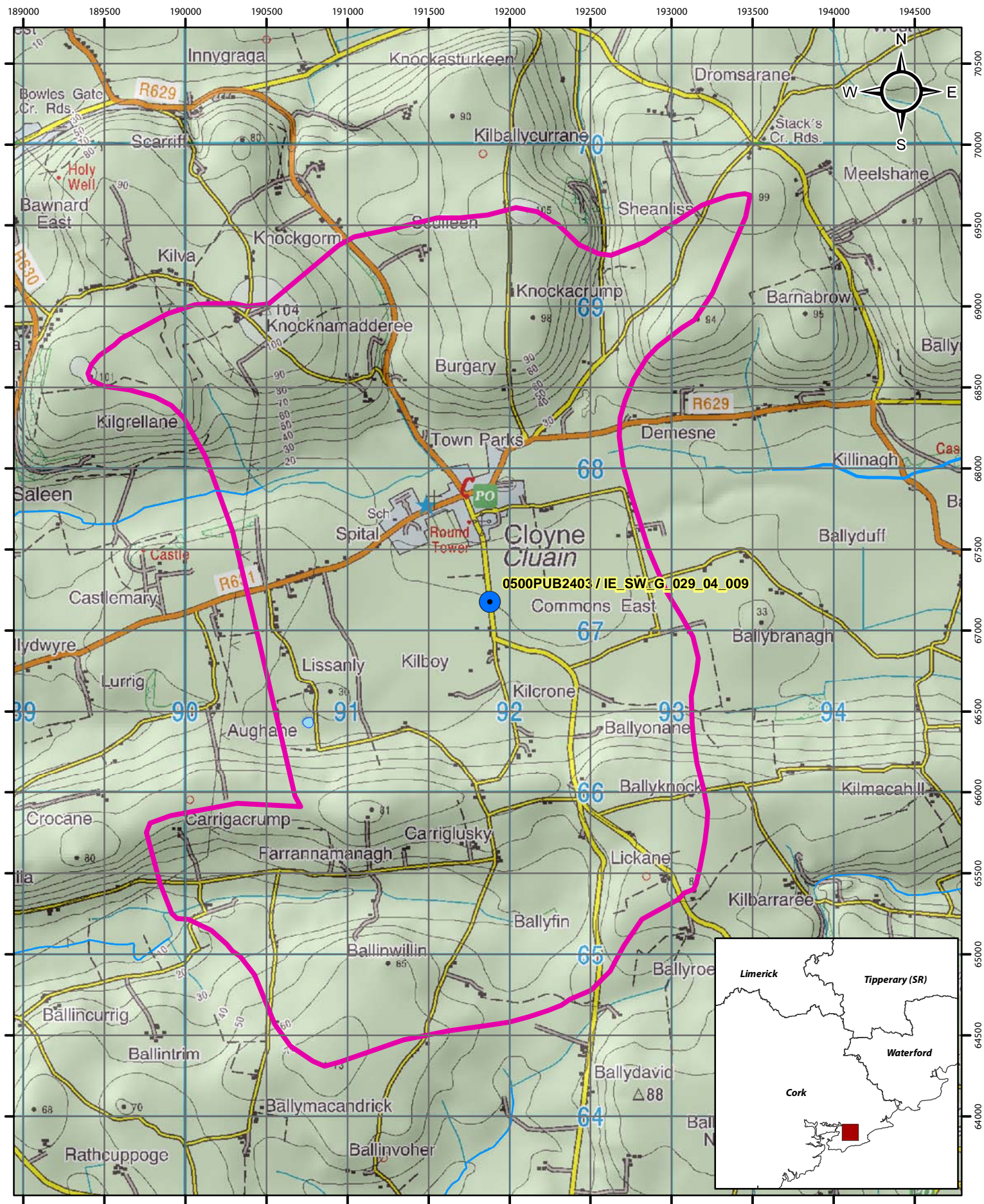
General Downgradient Distances

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

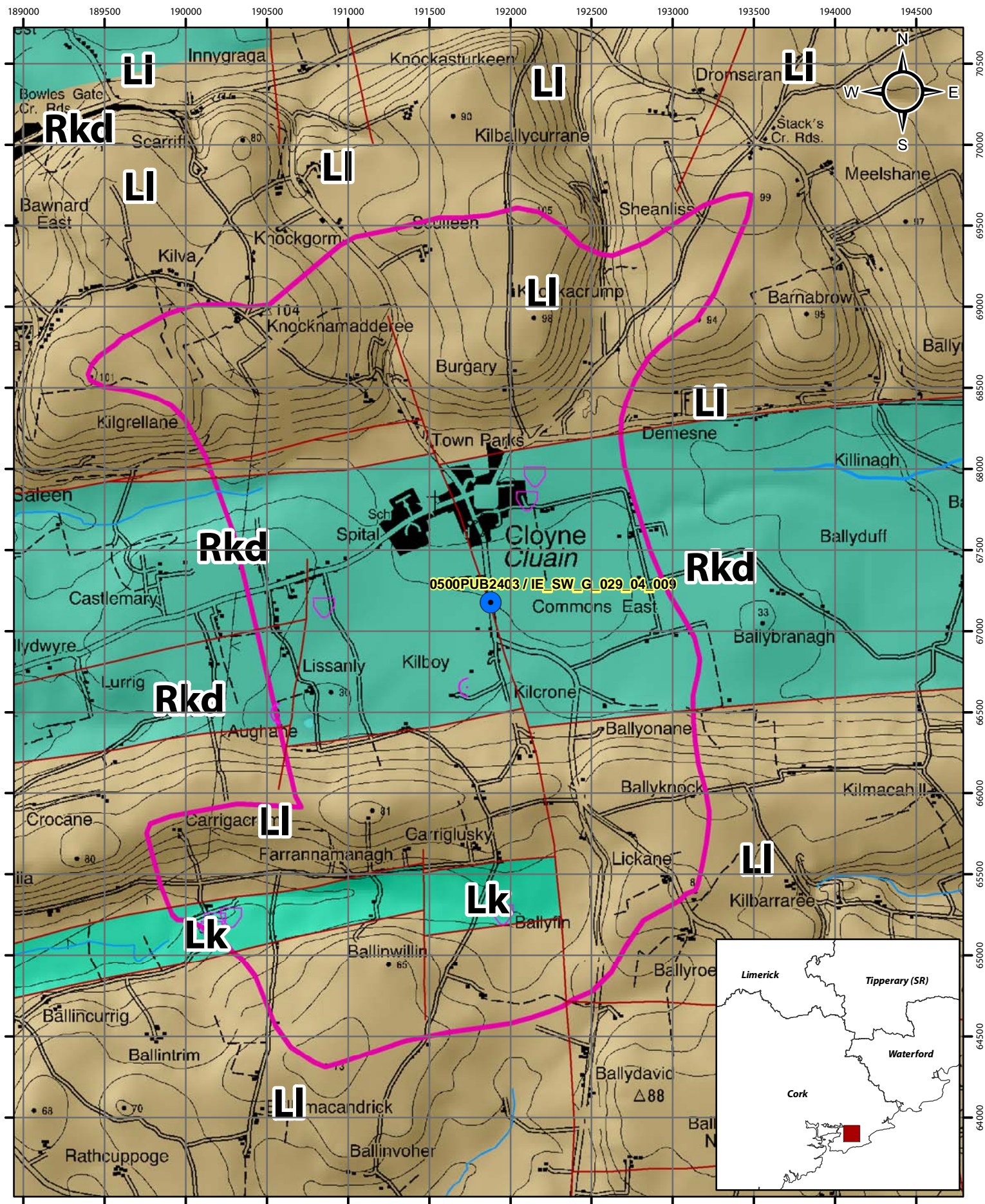


Location Map for Cloyne PWS

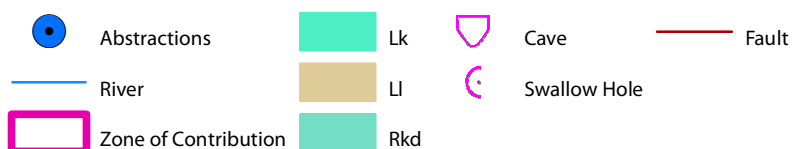
-  Abstractions
-  River
-  Zone of Contribution

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0 0.25 0.5 1 km

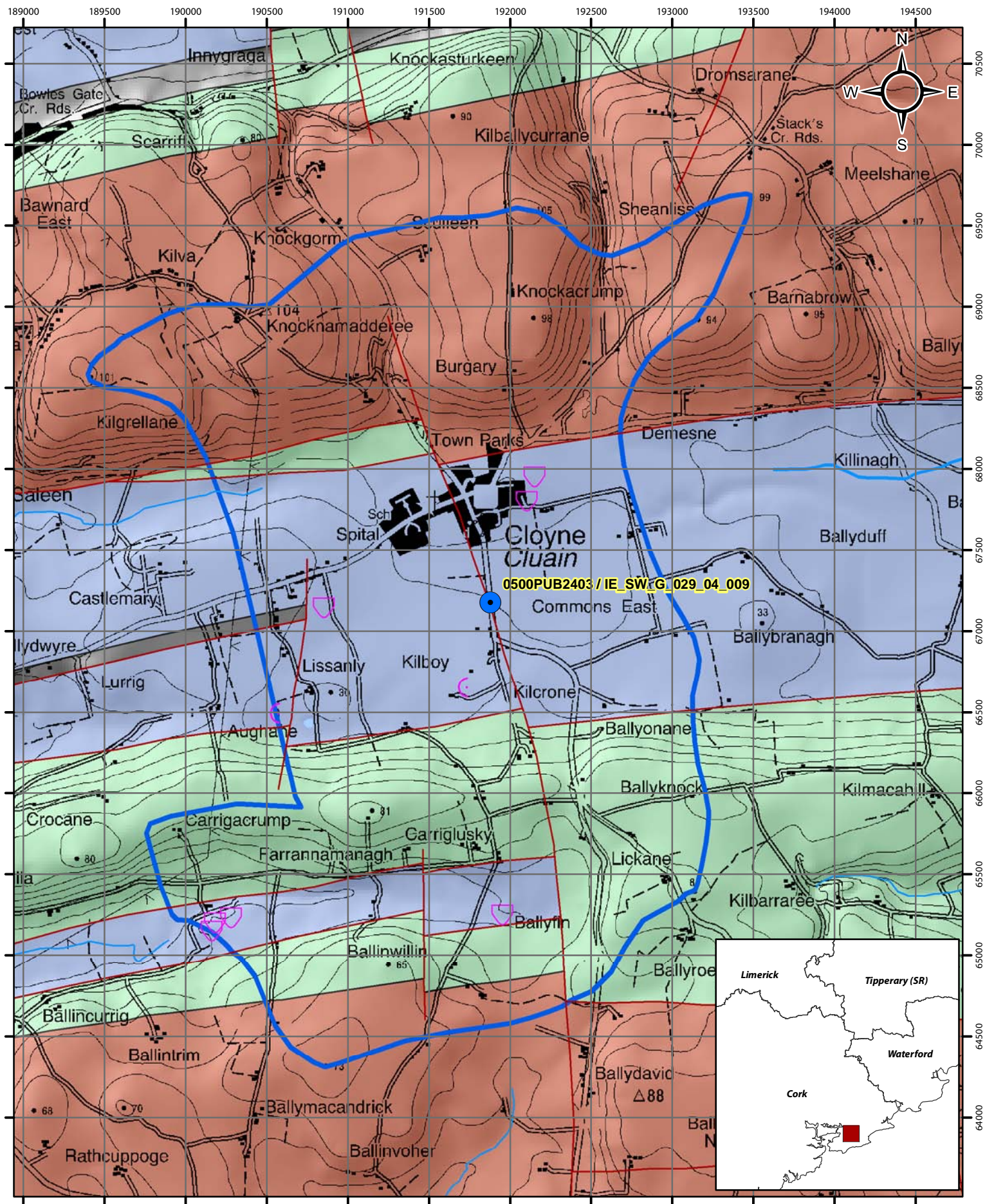


Aquifer Category Map for Cloyne PWS

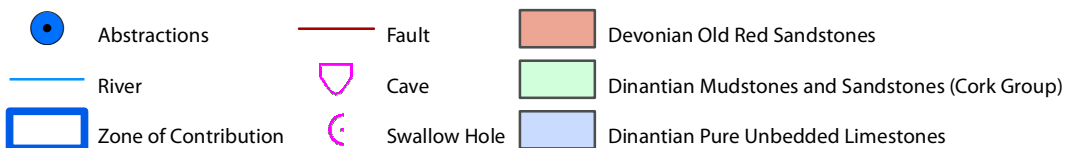


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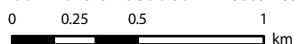
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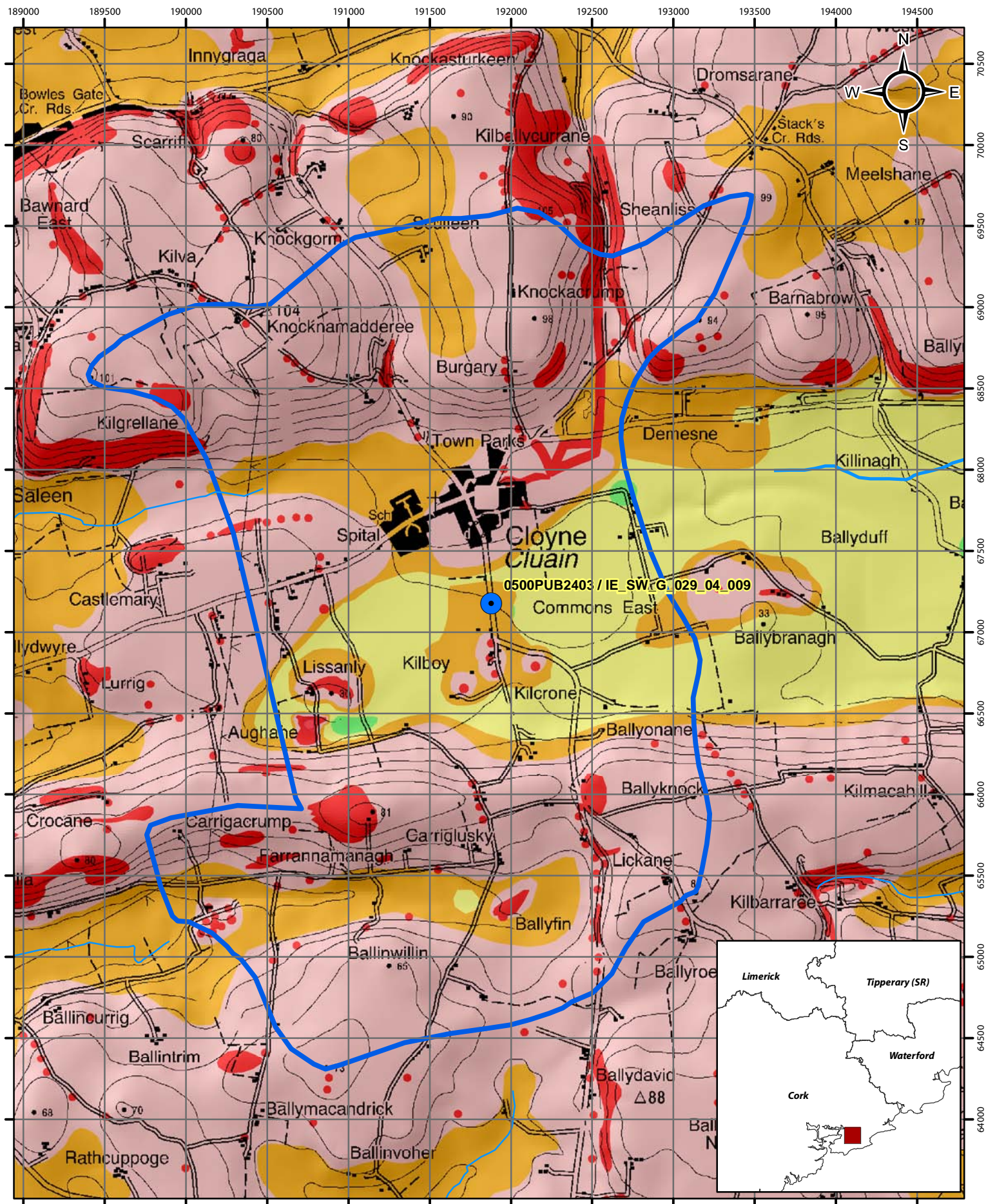


Bedrock Map for Cloyne PWS

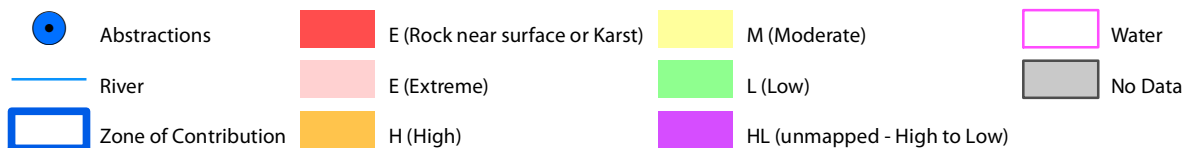


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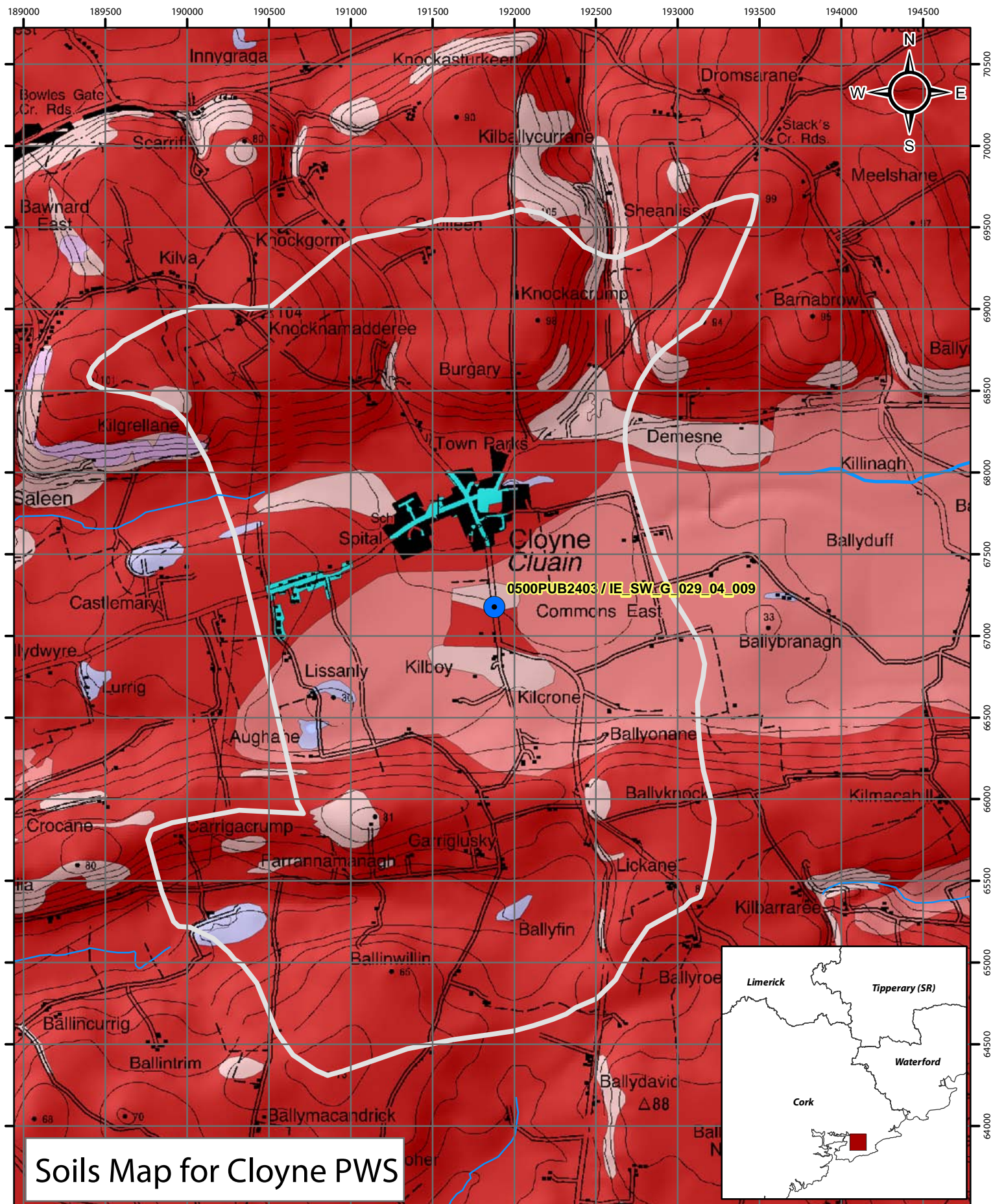


Groundwater Vulnerability Map for Cloyne PWS



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0 0.25 0.5 1 km



Abstractions



River



Zone of Contribution



Acid Deep Well Drained Mineral



Acid Deep Poorly Drained Mineral



Acid Poorly Drained Peaty Mineral



Acid Shallow Well Drained Mineral



Acid Shallow/Rocky/Peaty Mineral



Basic Shallow Well Drained Mineral



Made

