

Water Framework Directive Groundwater Monitoring Programme

Site Information

Castlerea WS & Regional



Castlerea Springs comprise the Longford and Silver Island Springs. Longford Spring supplies the Rural Network and Silver Island supplies the Urban network. The monitoring and sampling are from Longford Spring. The GSI completed a source protection report for Castlerea in 2003.



Roscommon

August 2011

SITE INFORMATION					
Site Name:	Castlerea WS & Regional		County:	Roscommon	
RBD:	Shannon IRBD		EU Reporting Code:	IE_SH_G_225_20_007	
Easting:	169137		GWB Name:	Suck South	
Northing:	278322		GWB Code:	IE_SH_G_225	
Site Use:	Drinking Water (PWS)		Drinking Water Code:	2600PUB1015	
Hydrometric Area:	26		Water Level Monitoring Network:	Level	Flow
Townland:	LONGFORD			N	Y
Ownership:	Roscommon County Council				
Water Quality Monitoring Network:	Surveillance		Operational (Point)		Operational (Diffuse)
	N		N		Y
Site Comments:	Longford Spring is located within a fenced compound that is surrounded by agricultural land (pasture).				
SITE DIRECTIONS					
Location and Access Information:	From the main church in Castlerea village, drive on southeast out of the village along the main road that runs through the village, and parallel to Francis River. After 1.3 kms, at Rampark, turn right (south). After 350 m turn left (SE). After 120 m, turn south onto dirt road which leads directly to the spring site.				
Additional Comments:	---				
WELL INFORMATION					
Monitoring Point Type:	Spring	Abstraction Rate (m³/d):	2600	Ground Elevation (m OD):	---
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:	The monitoring and sampling are from Longford Spring.		
Specific Capacity (m³/d/m):	---				
Static Water Level (m bgl):	---				
Scheme Name:	Castlerea Rural WSS	Number of Abstraction Points in the Scheme:	1	Source Report Available	Y
Source Report Info:	The GSI completed a source protection report for Castlerea in 2003.				
Scheme Summary:	Castlerea Rural WSS consists of Longford Spring. The urban network is supplied by Silver Island Spring				

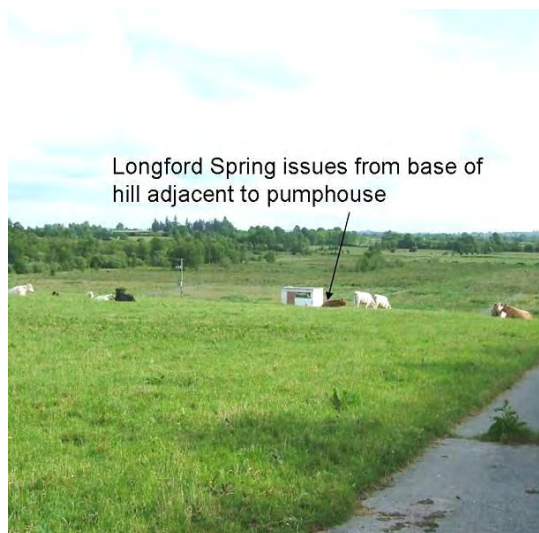
HYDROGEOLOGY								
GEOLOGY	Soil:	Cutaway/cutover peat (Cut)					Subsoil Permeability:	Low
	Subsoil:	Peat (Cut)						
	Bedrock:	Dinantian Pure Bedded Limestones						
HYDROGEOLOGY	Aquifer Category:	Rkc	Vulnerability at Monitoring site:	High	Flow Regime:	Karstified		
ZONE OF CONTRIBUTION	Estimated ZOC Size (km ²):	11.82	ZOC Delineated By:	GSI	Recharge Estimate (mm/yr):	333		
	ZOC Delineation Comments:	ZOC delineated by the GSI, is for both Longford and Silver Island Spring and is based on water tracing and hydrogeological mapping. See GSI Castlerea 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	
	4.24	55.87	31.64	8.25	0	0	0	
HYDROCHEMISTRY								
Hydrochemical Signature:	Ca-HCO ₃		Additional Water Chemistry Information:	During the monitoring period: The average nitrate concentration was 6 mg/l NO ₃ and the maximum nitrate concentration was 13 mg/l NO ₃ . The average ammonium concentration was 0.019 mg/l N and the maximum ammonium concentration was 0.075 mg/l N. The average molybdate reductive phosphorus (MRP) concentration was 0.033 mg/l P and the maximum MRP concentration was 0.094 mg/l P. The average chloride concentration was 15.7 mg/l Cl and the maximum chloride concentration was 34 mg/l Cl.				
Alkalinity (mg/l HCO ₃):	Average:	Range:						
	344	203-456						
Hardness (mg/l CaCO ₃):	Average:	Range:						
	352	241-468						
Conductivity (uS/cm):	Average:	Range:						
	663	443-760						
Monitoring Record Period:	From:	To:						
	1995	2010						
RISK ASSESSMENT								
Pressure (e.g., Nitrates, Phosphates, Abstractions):	Diffuse		Typical Contaminants:	Phosphates				
Risk Category:	At risk, high confidence		GWB Status:	Poor				
Impact Potential within ZOC (% area):	Extreme:	High:	Moderate:	Low:	Negligible:			
	0.00	52.36	31.00	8.19	8.44			
OTHER INFORMATION								



Site



Spring Chamber



Longford Springs Overview

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 μ S/cm) / Drinking Water Test (1,875 μ S/cm)

Further information on groundwater threshold values is contained in the Groundwater Regulations (S.I. No.9 of 2010).

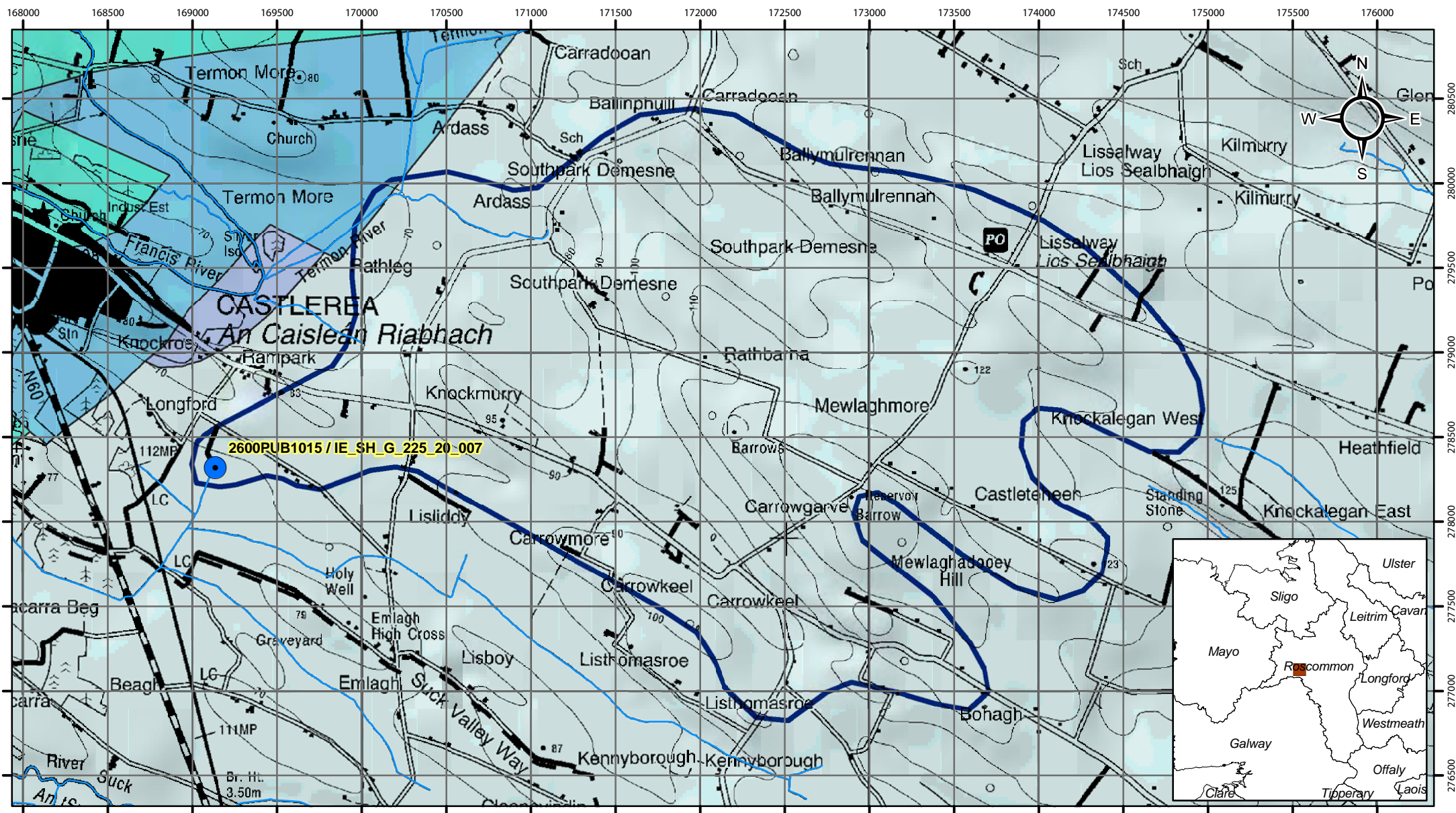
General Downgradient Distances

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

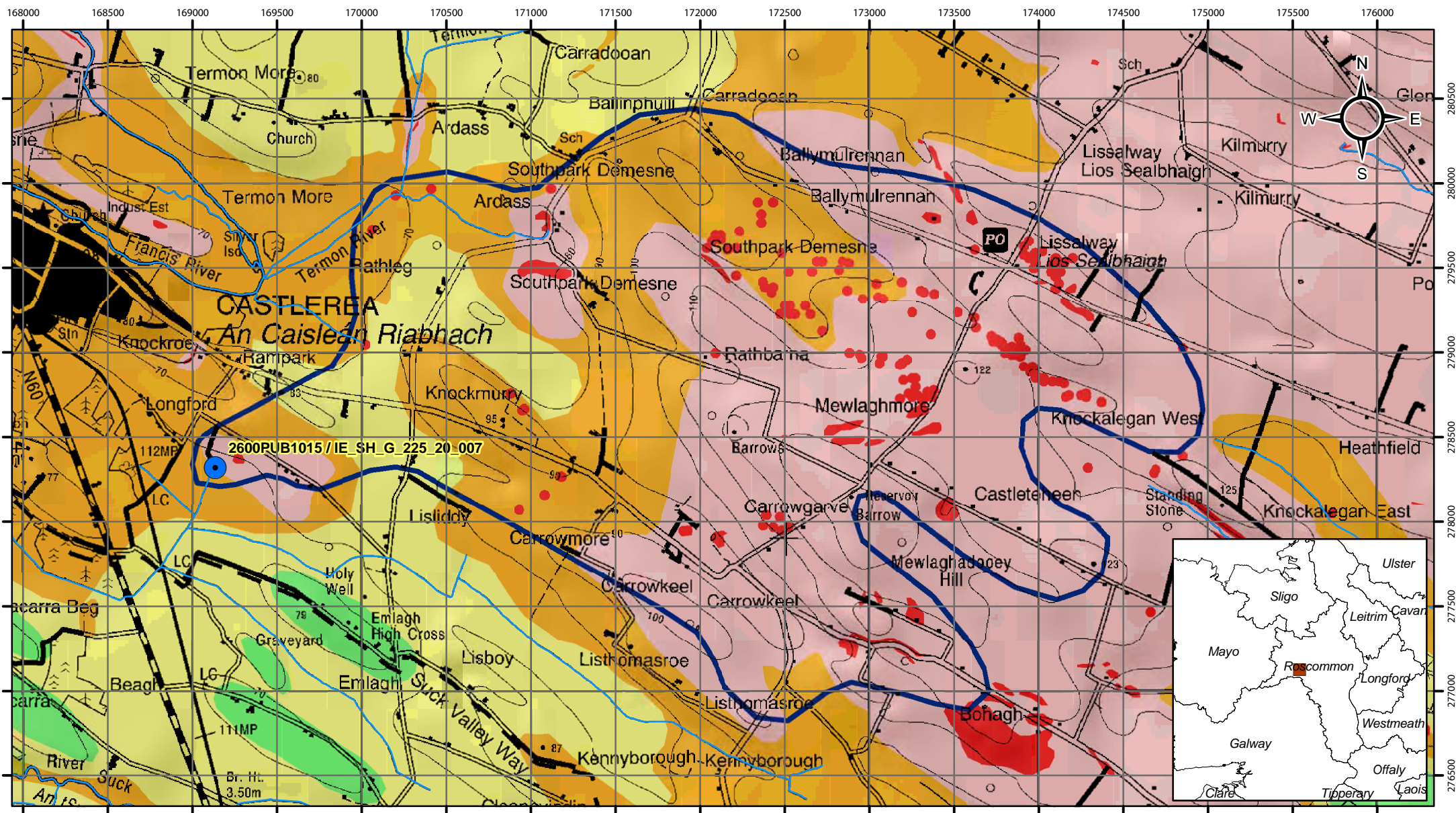
It is assumed that groundwater downgradient of a spring cannot flow back up to the spring, however a precautionary 30m buffer is generally applied which allows for instances where pumping under dry weather periods may induce a drawdown or where the ground may be sloping toward the spring from the downgradient side.

Version 0:	Prepared by	GSI	Date:	15/04/2003
Version 1:	Prepared by	TOBIN (CK)	Date:	Feb 2011
Version 2:	Prepared by		Date:	
Version 3:	Prepared by		Date:	
Version 4:	Prepared by		Date:	



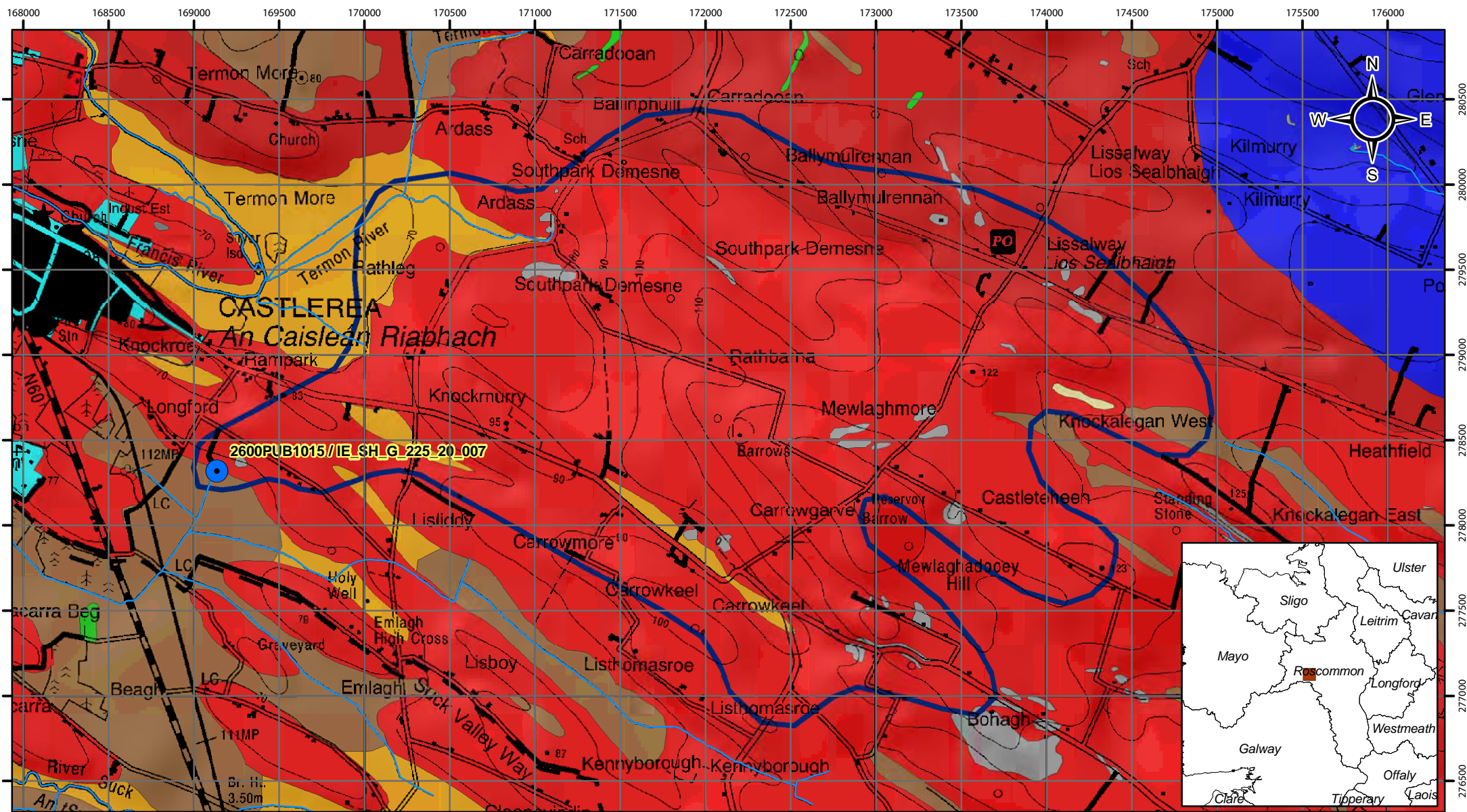
Bedrock Map for Castlerea WS & Regional

- Abstractions
- Zone of Contribution
- River
- Dinantian Lower Impure Limestones
- Dinantian Pure Bedded Limestones
- Dinantian Pure Unbedded Limestones
- Dinantian Mixed Sandstones, Shales and Limestones

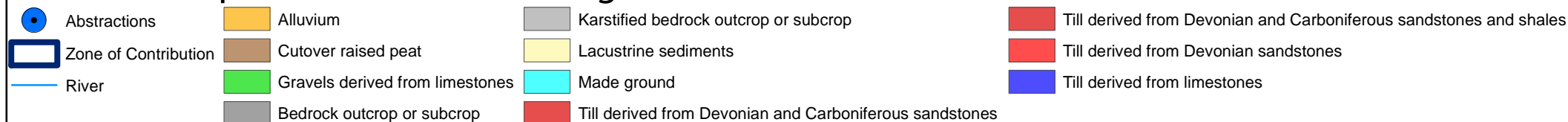


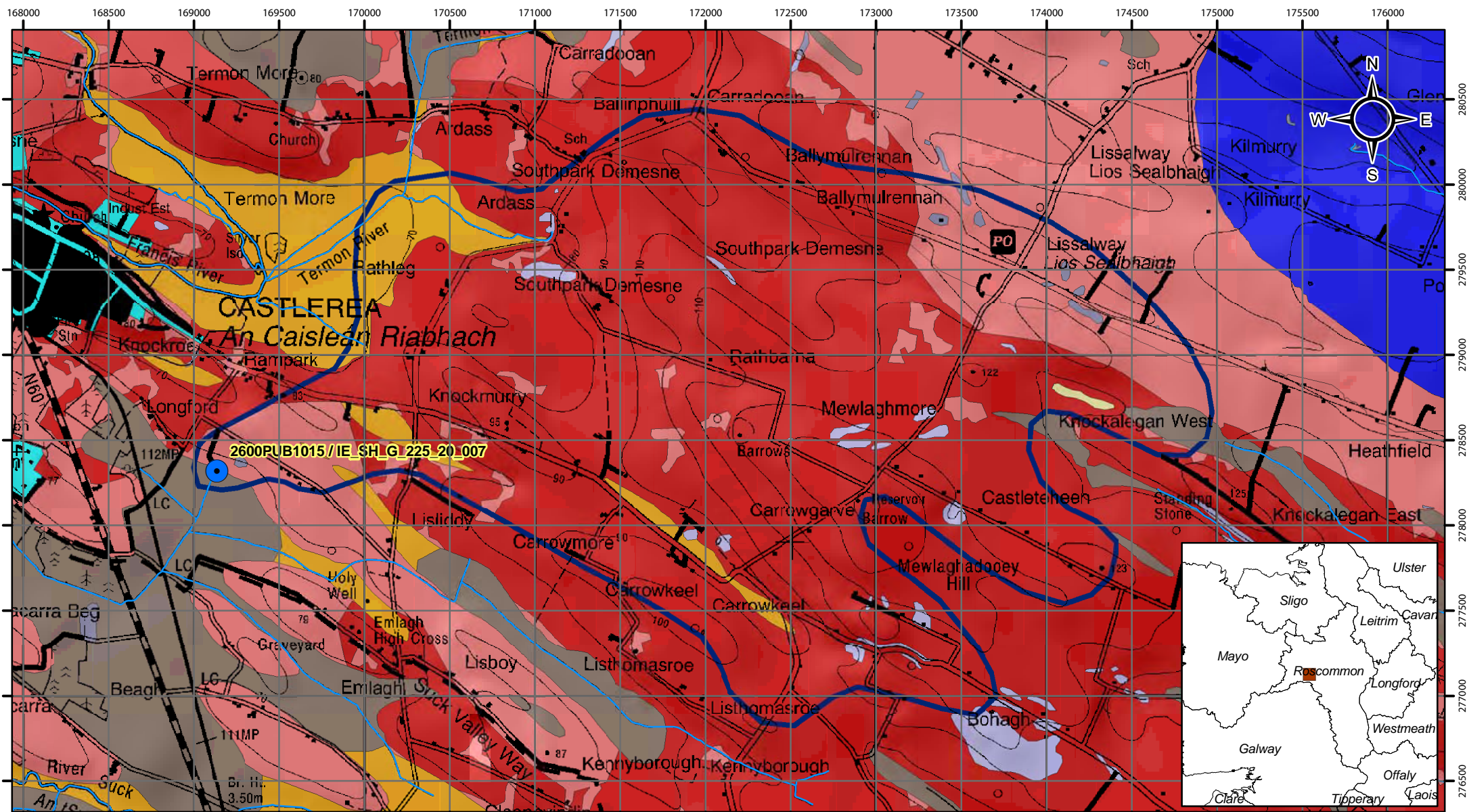
Groundwater Vulnerability for Castlereagh WS & Regional

- Abstractions
- Zone of Contribution
- River
- E (Extreme)
- M (Moderate)
- H (High)
- E (Rock near surface or Karst)
- L (Low)

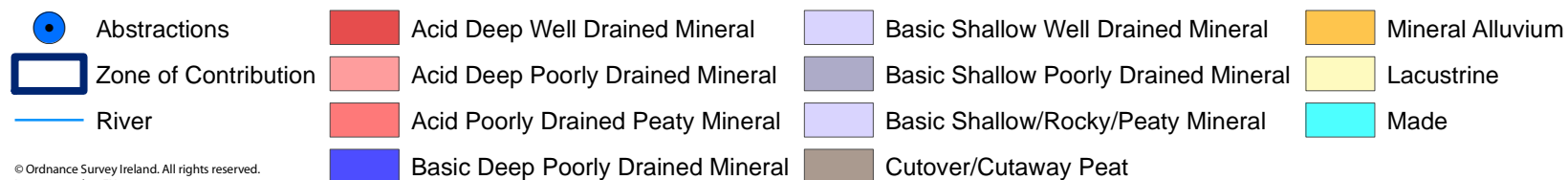


Subsoils Map for Castlerea WS & Regional





Soils Map for Castlerea WS & Regional



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0 0.25 0.5 1 km