

Water Framework Directive Groundwater Monitoring Programme

Site Information

Bunatubber



Bunatubber is a spring that is used for a fish hatchery. This site is located in a karstified aquifer, and is not used for drinking water supply.



Galway

August 2011

SITE INFORMATION					
Site Name:	Bunatubber		County:	Galway	
RBD:	WRBD		EU Reporting Code:	IE_WE_G_0020_07_004	
Easting:	132728		GWB Name:	Clare-corrib	
Northing:	242159		GWB Code:	IE_WE_G_0020	
Site Use:	Industrial		Drinking Water Code:	---	
Hydrometric Area:	30		Water Level Monitoring Network:	Level	Flow
Townland:	BUNATOBER			Y	Y
Ownership:	Stofniskur Ireland Ltd (hatchery)				
Water Quality Monitoring Network:	Surveillance		Operational (Point)		Operational (Diffuse)
	Y		N		Y
Site Comments:	Bunatubber is a spring that is used for a fish hatchery.				

SITE DIRECTIONS	
Location and Access Information:	Located 3km northwest of Corrandulla, on a minor road off the N84. The spring is located off a lane inside the entrance to a fish hatchery. Contact Peter McGovern prior to any site visit.
Additional Comments:	---

WELL INFORMATION					
Monitoring Point Type:	Spring	Abstraction Rate (m³/d):	0	Ground Elevation (m OD):	10
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:	Reported spring flows measured up to 1,000 l/s. Significant regional discharge.		
Specific Capacity (m³/d/m):	---				
Static Water Level (m bgl):	---				
Scheme Name:	---	Number of Abstraction Points in the Scheme:	---	Source Report Available	N
Source Report Info:	---				
Scheme Summary:	---				

HYDROGEOLOGY							
GEOLOGY	Soil:	Deep well drained mineral (BminDW)				Subsoil Permeability:	n/a
	Subsoil:	Tills (diamictons) (TLs)					
	Bedrock:	Dinantian Pure Bedded Limestones					
HYDROGEOLOGY	Aquifer Category:	Rkc	Vulnerability at Monitoring site:	Extreme	Flow Regime:	Karstified	
ZONE OF CONTRIBUTION	Estimated ZOC Size (km ²):	766.19	ZOC Delineated By:	Tobin (CK)	Recharge Estimate (mm/yr):	240	
	ZOC Delineation Comments:	The entire topographic catchment of the spring could contribute water. Bunatubber is regional discharge point.					
Groundwater Vulnerability within ZOC (% area):	Extreme (X)	Extreme (E)	High	Moderate	Low	High to Low	Unclassified
	3.06	11.67	20.1	17.74	32.78	14.18	0.47
HYDROCHEMISTRY							
Hydrochemical Signature:	Ca-HCO ₃		Additional Water Chemistry Information:	During the monitoring period: The average nitrate concentration was 10 mg/l NO ₃ and the maximum nitrate concentration was 14 mg/l NO ₃ . The average ammonium concentration was 0.034 mg/l N and the maximum ammonium concentration was 0.105 mg/l N. The average molybdate reductive phosphorus (MRP) concentration was 0.014 mg/l P and the maximum MRP concentration was 0.069 mg/l P. The average chloride concentration was 18.1 mg/l Cl and the maximum chloride concentration was 23 mg/l Cl.			
Alkalinity (mg/l HCO ₃):	Average:	Range:					
	344	290-467					
Hardness (mg/l CaCO ₃):	Average:	Range:					
	360	320-396					
Conductivity (uS/cm):	Average:	Range:					
	678	475-1001					
Monitoring Record Period:	From:	To:					
	2007	2010					
RISK ASSESSMENT							
Pressure (e.g., Nitrates, Phosphates, Abstractions):	Diffuse		Typical Contaminants:	Phosphate			
Risk Category:	At risk, high confidence		GWB Status:	Poor			
Impact Potential within ZOC (% area):	Extreme:	High:	Moderate:	Low:	Negligible:		
	0.00	13.15	28.60	30.94	27.32		
OTHER INFORMATION							



Spring

Sample Location



Spring

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).

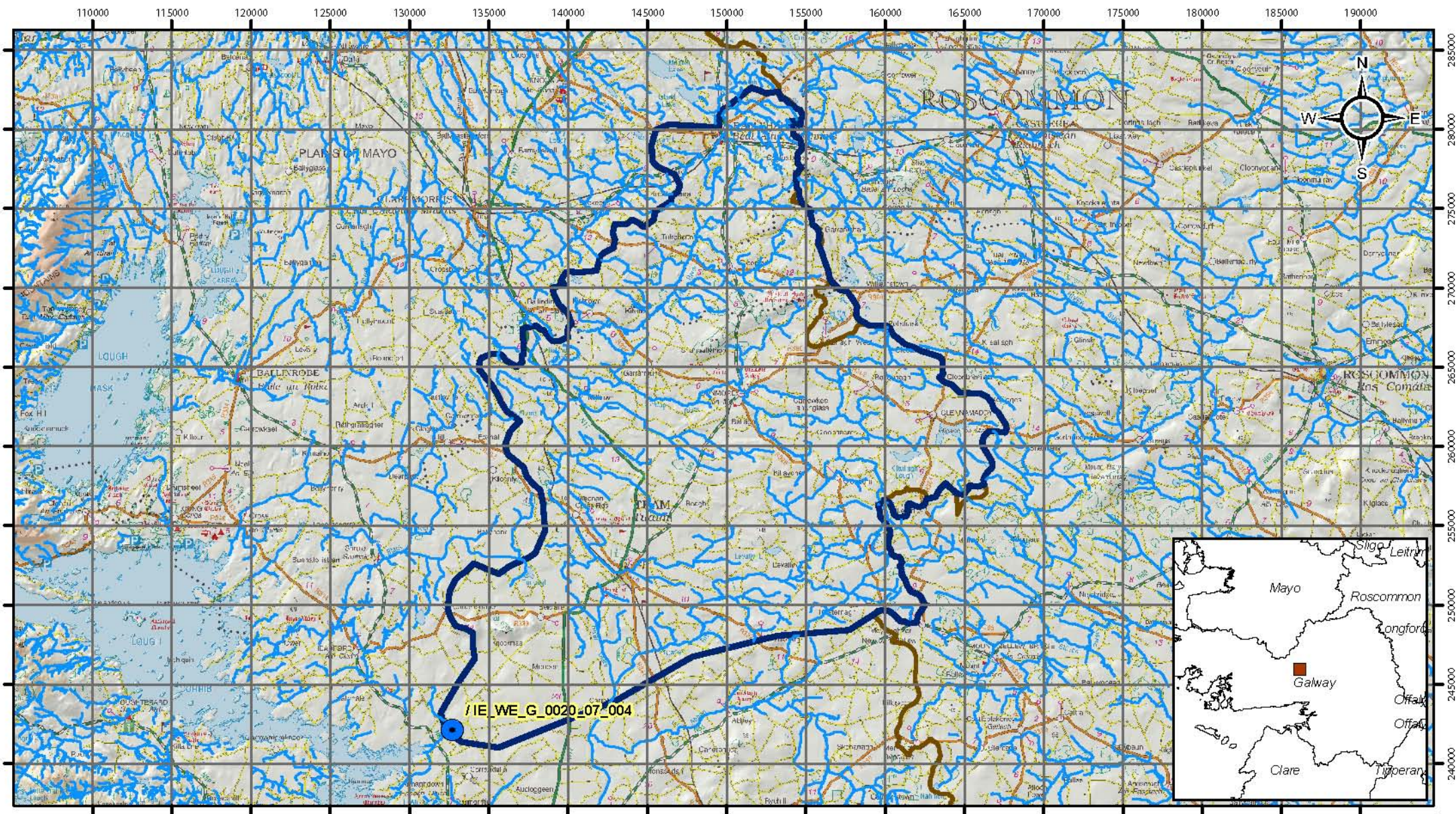
General Downgradient Distances

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		Date:	
Version 1:	Prepared by	CDM (HM)	Date:	Feb 2011
Version 2:	Prepared by		Date:	
Version 3:	Prepared by		Date:	
Version 4:	Prepared by		Date:	

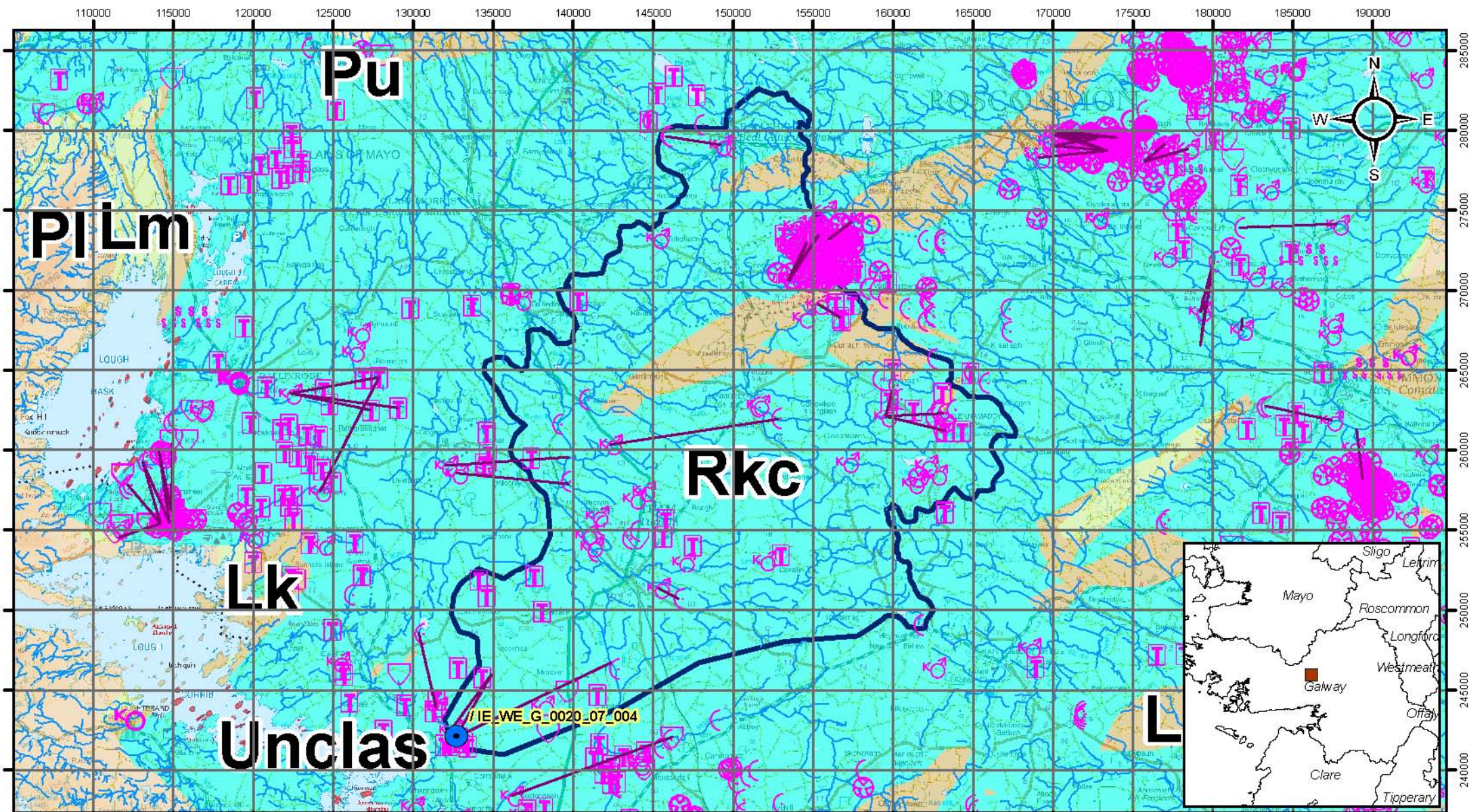


Location Map for Bunatubber

- Abstractions
- RiverBasinDistrict
- River
- Zone of Contribution

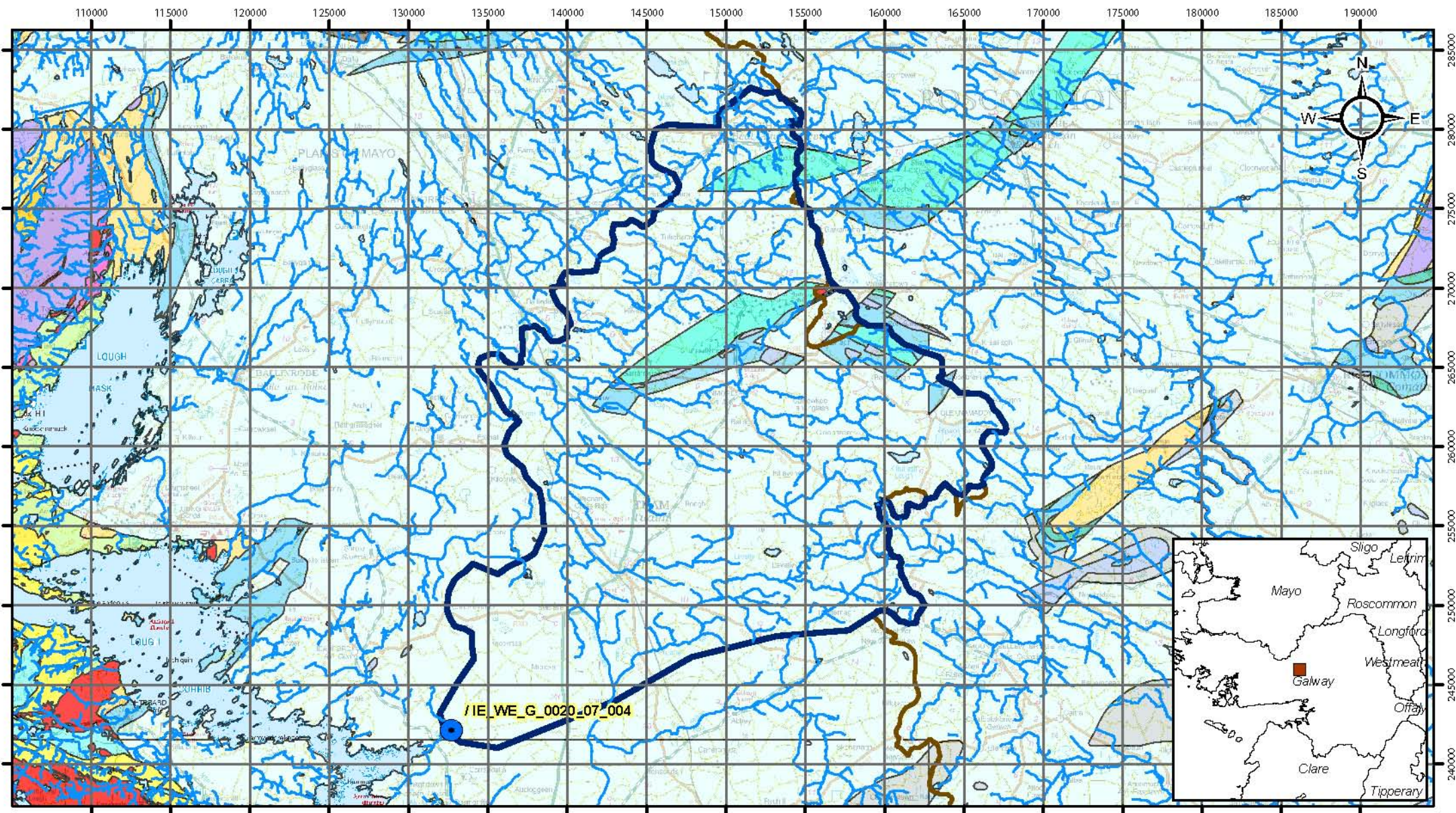
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00.51 2 3 4 5 6 7 8 9 10
km



Aquifer Category for Bunatubber



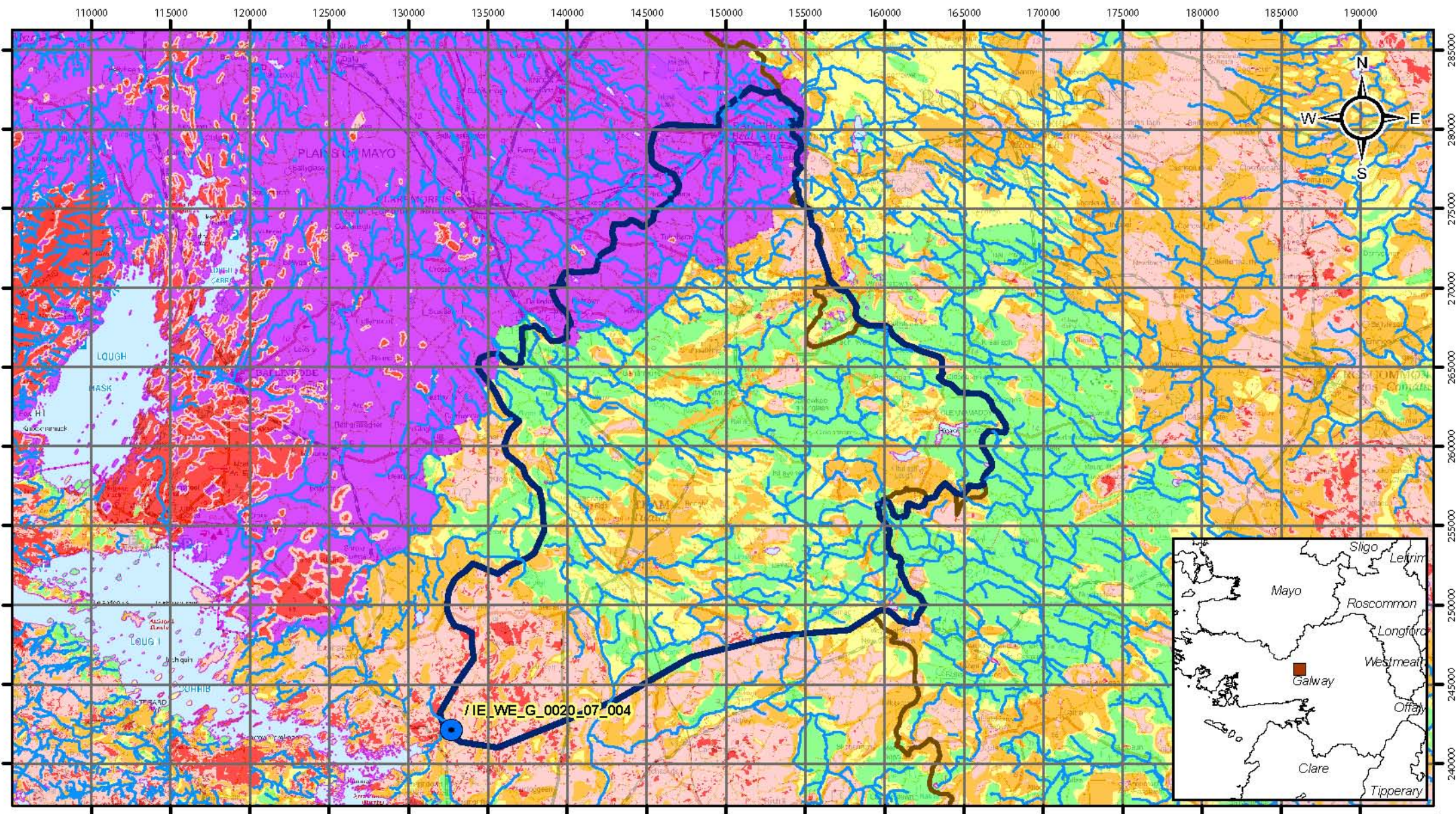


Bedrock Map for Bunatubber



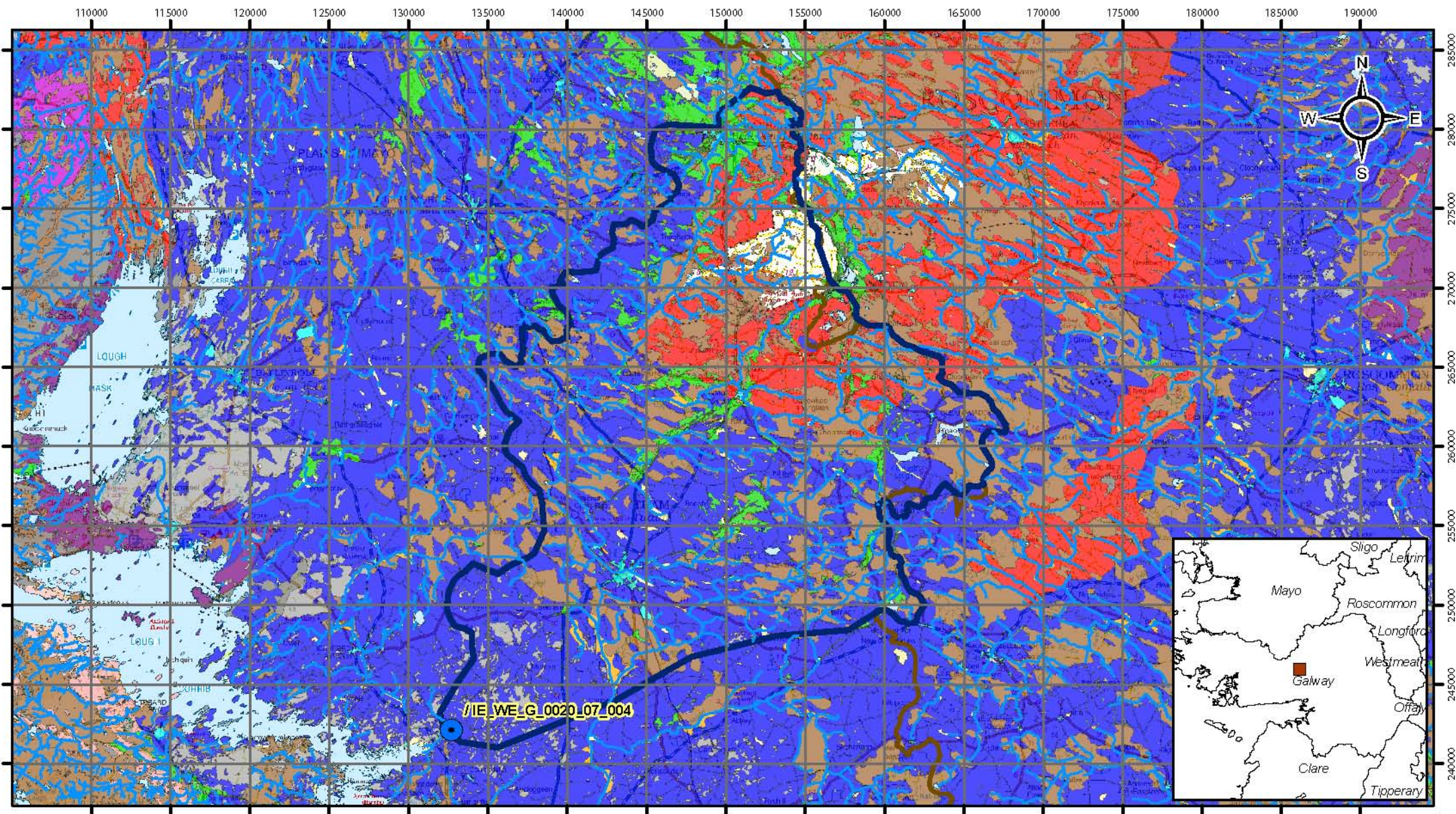
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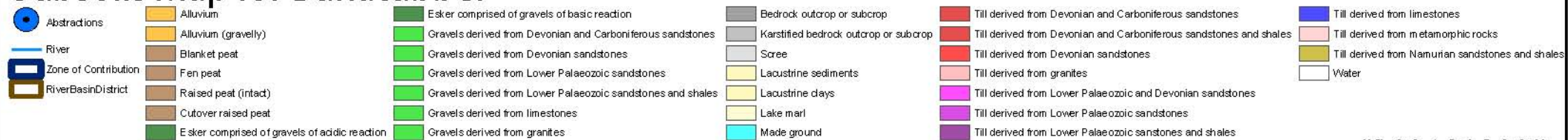


Groundwater Vulnerability for Bunatubber

- | | | | |
|----------------------|--------------------|-----------------------------|--------------------------------|
| Abstractions | RiverBasinDistrict | HL (unmapped - High to Low) | Water |
| River | E (Extreme) | L (Low) | E (Rock near surface or Karst) |
| Zone of Contribution | H (High) | M (Moderate) | |

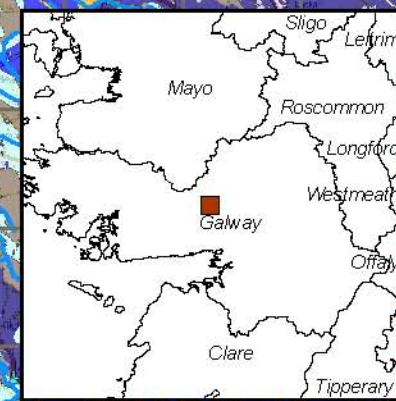
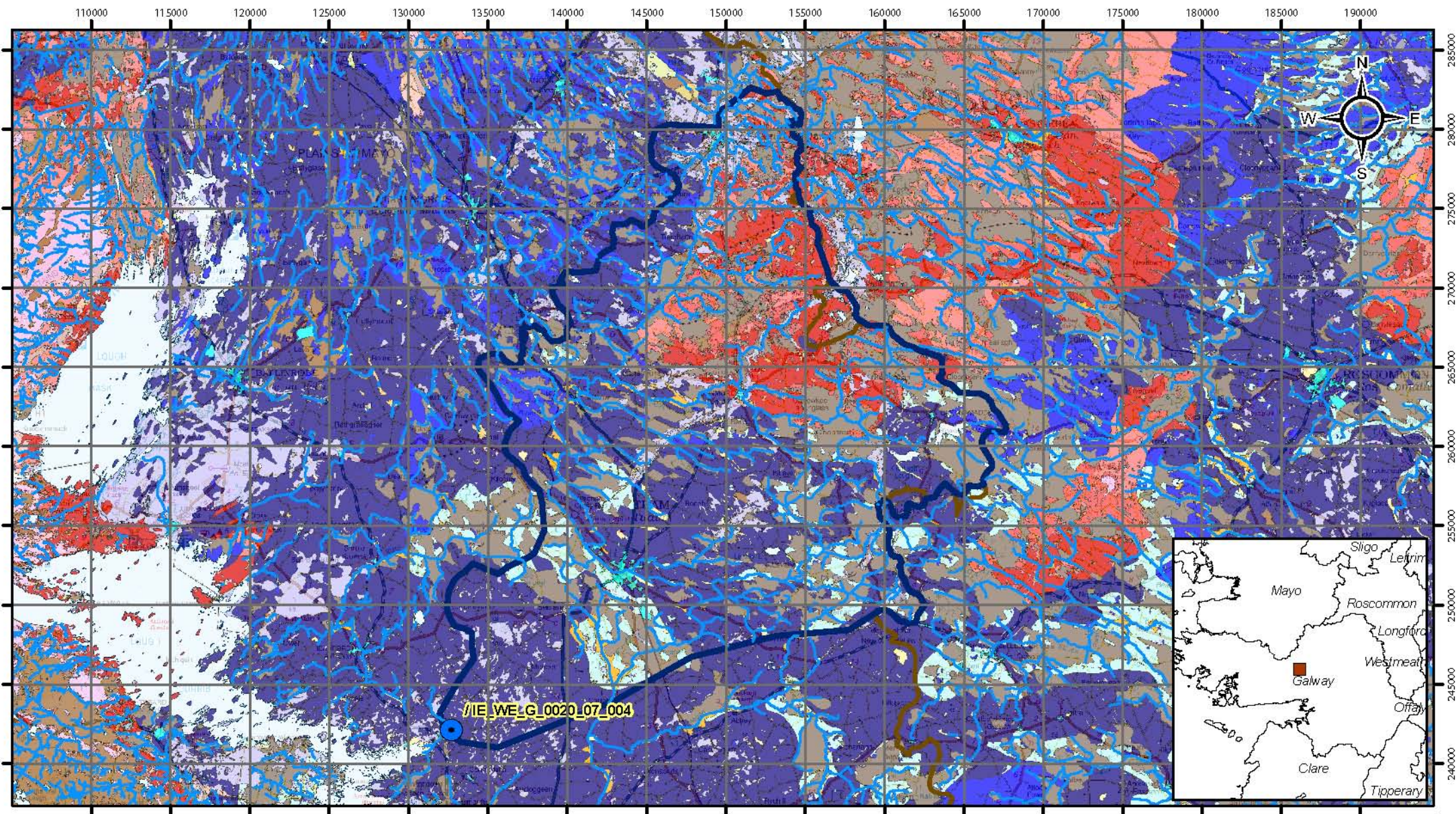


Subsoils Map for Bunatubber



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km



Soils Map for Bunatubber

