

Inistioge GWB: Summary of Initial Characterisation.

Hydrometric Area Local Authority		Associated surface water bodies	Associated terrestrial ecosystems	Area (km ²)
15 – Nore Kilkenny Co Co		Nore, Arrigle,	Inistioge, Murphy's of the River, Kylecorragh Wood, Barrow River Estuary	264
Topography	This groundwater body lies at the southern end of the Nore Valley where the Nore meets the Barrow. The topography of these areas is an upland hilly surface and contains the catchment divides between the Nore, Suir and Barrow. From the southern tip to Glenmore all drainage is east towards to the Barrow Valley. North of this there is a drainage divide within the groundwater body between the River Nore flowing south and the Arrigle River flowing north. North of the Nore-Barrow confluence there is another drainage divide, which sees the width of the groundwater body increase again to include Brandon Hill. Around Instioge there is surface drainage to the Nore from the hilly areas to the north and to the Arrigle from the south.			
Geology and Aquifers	Aquifer type(s)	LI – Locally Important Aquifer, moderately productive only in local zones		
	Main aquifer lithologies	CI - Carrigmaclea Formation - Red brown conglomerate & sandstone MNbf – Maulin Formation, Brownsford Member - Dark grey schist OA - Oaklands Formation - Green, red-purple, buff slate & siltstone BY - Ballylane Formation - Green and grey slate with thin siltstone		
	Key structures.	The structural geology of the above formations is related. The rocks have been folded into a SW-NE trending syncline. The axis of the syncline and fracturing is likely to be associated with some springs in the area e.g. Glenmore WS.		
	Key properties	The estimated bulk permeability of the aquifer feeding groundwater to the Glenmore source is 0.9 m/day. Bulk porosity is assumed to be in the order of 0.01.		
	Thickness	Effective thickness is thought to be relatively shallow concentrating in the top 10 m to 30 m of the rock profile with deeper flow in areas of higher structural deformation and faulting.		
Overlying Strata	Lithologies	There is little subsoil with significant thickness to consider a classification of lithology.		
	Thickness	Mostly less than 1m. Some areas of thicker subsoil along the river flood plains.		
	% area aquifer near surface	90%		
	Vulnerability	EXTREME with small areas of HIGH along river flood plains.		
Recharge	Main recharge mechanisms	Given the poor nature of the aquifer, most effective rainfall will divert to surface water and it is assumed that only 20% of the effective rainfall (i.e. 120 mm/year) which falls on the eastern half of the sub-catchment will enter groundwater and flow to the spring.		
	Est. recharge rates	<i>[Information will be added at a later date]</i>		
Discharge	Springs and large known abstractions	Glenmore (SR - 230), Milebush GWS (12), Jamestown G.W.S. (5), Glenmore Creamery (Spring - 45), Albatross Fertilisers Ltd (New Ross - 131), Ross Co.Ltd.		
	Main discharge mechanisms	In the absence of borehole data, and given the aquifer conditions the water table in the area is assumed to reflect topography.		
	Hydrochemical Signature	The bedrock strata of this groundwater body are Siliceous . Analyses indicate a 'moderately soft' to 'moderately hard' water (91 to 144 mg/l as CaCO ₃). This is considered typical of the non-limestone rocks in the Southern Uplands of Kilkenny particularly in areas where the subsoil cover is thin.		
Groundwater Flow Paths		Fracture flow is expected to be dominant in these aquifers. Flows are expected to be concentrated in fractured and weathered zones. Given common weathering patterns, most flow is thought to be relatively shallow concentrating in the top 10 m to 30 m of the rock profile.		
Groundwater & surface water interactions		Groundwater will discharge locally to streams and rivers crossing the aquifer and also to small springs and seeps. Owing to the poor productivity of the aquifers in this body it is unlikely that any major groundwater - surface water interactions occur. Baseflow to rivers and streams is likely to be relatively low.		
Conceptual model	This groundwater body lies at the southern tip of Hydrometric area 15, the Nore Basin. The area comprises a number of rock types, which are considered to be poor or locally important aquifer. The generally poor nature of the aquifers in the sub-catchment suggests that that water tables will be generally close to ground levels across most of the area. This is supported by visual evidence of field drainage. Due to the low bulk permeabilities, groundwater gradients in the aquifer are probably similar to topographic gradients, and are estimated to be up to 0.05 (1 in 20).			

Attachments	
Instrumentation	Stream gauge: 15031, 15006, 15014, 14021, 14064, 14065, 14062, 16021, 14063, Borehole Hydrograph: none EPA Representative Monitoring boreholes: None
Information Sources	Buckley, R. & Fitzsimons, V. (2002) Glenmore Public Supply, Groundwater Source Protection Zones.
Disclaimer	Note that all calculation and interpretations presented in this report represent estimations based on the information sources described above and established hydrogeological formulae