

Baltinglass GWB: Summary of Initial Characterisation.

Hydrometric Area Local Authority		Associated surface water bodies	Associated terrestrial ecosystems	Area (km ²)
14 – Barrow Kildare Co Co Wicklow Co Co		Graney (Lerr)	None	10
Topography		This sand & gravel deposit extends from Baltinglass, Co. Wicklow southwestwards into Co. Kildare, then westwards through Castledermot and on as far as the River Barrow. The Baltinglass supply sources are located in southwest County Wicklow. The topography is very undulating, ranging from 115 m OD (380 ft) to over 365 m OD (1200 ft). The River Slaney flows through the area in a south-southwesterly direction, with some smaller streams joining it.		
Geology and Aquifers	Aquifer type(s)	Lg : Locally Important Gravel Aquifer.		
	Main aquifer lithologies	<p>The Quaternary geology in the vicinity of the Baltinglass is very complex, with several types of deposit represented.</p> <p>The area to the east of the River Slaney, around Lathaleere, is underlain by a gravelly Lower Palaeozoic or chert-derived till. Both rounded and angular clasts occur within the tills in about equal quantities, generally with a silty sandy matrix. The sand fraction dominates the particle size distribution. Palaeo-meltwater channels occur in the Baltinglass region and produced extensive gravel deposits on the west side of the Slaney. Around Lathaleere the tills may be reworked glaciofluvial sand and gravel deposits. Locally, gravels occur above and within the tills, in particular close to the Lathaleere Well. The till has a gravelly texture but clay dominates the matrix in all cases investigated.</p> <p>The tills are interpreted as a slightly overconsolidated lodgement or melt-out till which was deposited during the last glacial period.</p> <p>Along the River Slaney are extensive gravels, flanked by alluvial deposits. To the west and northwest of Tinoran is an area of limestone dominated till, generally clayey in texture, also interpreted as a lodgement till. Much of the higher ground has outcropping bedrock, particularly to the northwest and northeast. (Woods 2003)</p>		
	Key structures.			
	Key properties	No site-specific data are available but permeability tends to be high in sand & gravels are often in the order of 20-70 m/d. Conservative estimates of the porosity of sand & gravel aquifers tend to be about 0.07-0.08, based on porosity values other parts of the country. The actual values in this deposit may be lower as the lithological description suggests.		
	Thickness	A portion of this, from Baltinglass almost as far as Castledermot, is considered to be thick enough to constitute a sand & gravel aquifer, but rock outcrops are common and the gravel thickness is believed to be quite variable.		
Overlying Strata	Lithologies	None		
	Thickness	None		
	% area aquifer near surface	High		
	Vulnerability	High		
Recharge	Main recharge mechanisms	This GWB is recharged from rainwater percolating through the topsoil and unsaturated sand and gravel deposits and becomes recharge when it encounters the water table. Surface runoff from such gravel aquifers is considered to be quite low and can be taken as 20% of effective rainfall. The presence of less permeable layers in the deposit, even if thin, can create perched water tables and prevent recharge of the true water table. Where the water table lies below the local river network it is likely that some stream water may pass into the aquifer. This will be most likely in the higher elevations where a river flows onto the aquifer from where it has previously been flowing over impermeable subsoil or bedrock.		
	Est. recharge rates	[Information to be added at a later date]		
Discharge	Springs & large known abstractions (m ³ /d)	None		
	Main discharge mechanisms	Discharge from this aquifer will be to the River Slaney and its tributaries as baseflow. Elsewhere groundwater will discharge as seeps and springs from the extremities of this deposit as the permeable units become restricted.		
	Hydrochemical Signature	The hydrochemical analyses again indicate a calcium bicarbonate water type which is hard (286-324 mg/l CaCO ₃) with a moderate alkalinity (238 - 280 mg/l CaCO ₃). Conductivity is high (524-605) which is due to the dissolution of calcium carbonate from the limestone dominated subsoils.		
Groundwater Flow Paths		Regional groundwater flow is generally towards the River Slaney and southward, but locally it is dependent on topography		

Groundwater & surface water interactions	The interaction between surface water and groundwater through out this aquifer is complex and will depend on the position of the water table. The nature of this interaction will not be uniform over the area of the body. This is further complicated by the variation seen in the lithologies present.
Conceptual model	This sand & gravel deposit extends from Baltinglass, Co. Wicklow southwestwards into Co. Kildare, then westwards through Castledermot and on as far as the River Barrow. The topography is very undulating, ranging from 115 m OD (380 ft) to over 365 m OD (1200 ft). The boundaries of the deposit are defined by the extent of permeable sands and gravels in the area. The quifer is recharge by effective rainfall percolating through the topsoil and unsaturated aquifer until it reaches the water table. A low proportion of effective rainfall will become surface runoff to the overlying streams. Groundwater flow is general towards the south but will be drawn towards local streams which are the primary discharge areas of the aquifer.
Attachments	
Instrumentation	Stream gauge: None Borehole Hydrograph: None EPA Representative Monitoring boreholes: None
Information Sources	McConnell B, Philcox M, Sleeman AG, Stanley G, Flegg AM, Daly E P, Warren WP (1994) <i>A Geological description to accompany the Bedrock Geology 1:100,000 Scale Map Series, Sheet 16, Kildare-Wicklow</i> . Geological Survey of Ireland, 70 pp. Wright GR, Woods L (2001) <i>County Wicklow Groundwater Protection Scheme</i> (Draft). Unpublished GSI report produced for Wicklow County Council. Geological Survey of Ireland Woods L, Wright GR (2003) <i>Baltinglass Water Supply. Groundwater Source Protection Report. Wicklow Groundwater Protection Scheme, GSI Report to Wicklow Co. Co.</i>
Disclaimer	Note that all calculation and interpretations presented in this report represent estimations based on the information sources described above and established hydrogeological formulae