

Enniskerry GWB: Summary of Initial Characterisation.

Hydrometric Area Local Authority		Associated surface water bodies	Associated terrestrial ecosystems	Area (km ²)
Dun Laoghaire-Rathdown Co.Co. Wicklow Co. Co. Hydrometric Area 10		Glencullen, Glenree, Dargle	Knocksink Wood (SAC 725), Powerscourt Wood (1768), Ballyman Glen (713), Glenree Valley (1755),	11.17
Topography		This aquifer is located in North Wickow around Enniskerry. The GWB lies within several valleys and is surrounded by hills with elevations rising to over 300 m OD, whereas in the body the highest elevations are around 200 m OD. The land slopes east towards Enniskerry with the lower elevations at 50 – 100 m OD.		
Geology and Aquifers	Aquifer type(s) Main aquifer lithologies	Lg: Locally Important Gravel Aquifer Sands & Gravels		
	Key structures.	N/A		
	Key properties	Though permeability testing data are limited, productivity, borehole logging and quarry data tend to indicate that coarse material predominates and that the permeability and storativity in the aquifer are high.		
	Thickness	By definition (DELG/EPA/GSI, 1999) this aquifer must be at least 10m thick. Drilling evidence suggests the thickness of this deposit varies from 10 to 30 m		
Overlying Strata	Lithologies	None		
	Thickness	N/A		
	% Area aquifer near surface	High		
	Groundwater Vulnerability	High		
Recharge	Main recharge mechanisms	This GWB is recharged by rainwater percolating through the topsoil and unsaturated sand and gravel deposits. Surface runoff is probably less than 20% of effective rainfall. The presence of less permeable layers in the deposit, even if thin, may 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 will 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	<i>[Information to be added at a later date]</i>		
Discharge	Springs and large known abstractions	There are no recorded large abstractions from this GWB.		
	Main discharge mechanisms	Groundwater will leave this aquifer where the water table is above river stage and a permeable riverbed exists. There is also likely to be groundwater seepage from the extremities of the gravel body at the lower elevations, which may appear as springs, seeps or a rise in baseflow to a river. Water may also come to the surface where there is a barrier to groundwater flow, e.g. a less permeable layer of till within the gravel deposit.		
	Hydrochemical Signature	There is no information on the hydrochemical nature of the groundwater.		
Groundwater Flow Paths		Although the aquifer is permeable, groundwater velocity is slow, because storativity is high and water table elevations are generally subdued. This also means that discharge to rivers will not be flashy and will be sustained through drier periods of the year.		
Groundwater & surface water interactions		Ballyman Glen , approximately 3 km north of Enniskerry, is orientated in an east-west direction with a stream running through the centre. The Glen comprises riparian wet woodland and contains a small strip of fen, which runs along the county boundary and extends into County Dublin. This fen is very alkaline and is associated with petrifying spring/seepage areas that have given rise to thick deposits of marl. The nature of such springs suggests they are discharging from the gravels, which in Wicklow are commonly derived from limestone. Excessive drawdown in the area would dry up the springs and streams, which would impact on this fen and wet woodland. An area of land sloping towards the fen is currently being used as a landfill site for domestic refuse. The earth banks around the dump are unstable and, as a result, silt is being released into the watercourses. The water table of the fen may have been altered in recent times as some of the vegetation is showing signs of stress, and rubbish and old clay pigeons are scattered throughout the area. Fens are rare in Wicklow/Dublin and this is one of only two sites in Wicklow for the Narrow-leaved Marsh-Orchid. The fen vegetation is well developed, with an unusually large number of sedge species present. The presence of alkaline fen and of petrifying spring/seepage areas on the site is particularly notable, as these habitats are listed, the latter with priority status, on Annex I of the E.U. Habitats Directive. It is imperative that the effects of the landfill site are closely monitored and controlled to prevent any deterioration in the quality of the site.		

Conceptual model	This GWB is located around Enniskerry. The elevations rise from the east (~50-100 m OD) to the west (~ 200 m OD) and the deposits covers a number of valleys in the area. The extent of the body is defined by the presence of gravel deposits in excess of 10 m thick, exception on the northern boundary, which coincides with the county boundary between Wicklow and Dublin. It is likely that the GWB does extend into Dublin but until subsoil mapping is complete for the area the boundary cannot be defined. The GWB is composed of permeable sand and gravel deposits, with a high storativity. Recharge occurs diffusely through the overlying topsoil. The aquifer is generally unconfined, but may be locally confined where lower permeability deposits overlie the gravels. The water table within gravel aquifers is usually flat and therefore the depth to water will depend on the topography of the area. The flow paths within the aquifer are constrained by the extent of the deposit and therefore will not develop to a regional scale. Groundwater discharge will occur via springs and seeps along the lowest boundary of the body and also along river courses. There may also be discharge to rivers as baseflow where the water table lies above the river stage. There are a some groundwater-dependent ecosystems overlying the aquifer which should be examined closely.
Attachments	
Instrumentation	Stream gauge: 10010 & 10017 Borehole Hydrograph: None EPA Representative Monitoring boreholes: None
Information Sources	DELG/EPA/GSI (1999) <i>Groundwater Protection Schemes</i> . Department of Environment & Local Government, Environmental Protection Agency and Geological Survey of Ireland, joint publication. Wright G R, Woods L (2003) <i>County Wicklow Groundwater Protection Scheme</i> . Report to Wicklow County Council. Geological Survey of Ireland
Disclaimer	Note that all calculation and interpretations presented in this report represent estimations based on the information sources described above and established hydrogeological formulae

