

### Mountmellick GWB: Summary of Initial Characterisation.

Hydrometric Area Local Authority		Associated surface water bodies	Associated terrestrial ecosystems	Area (km <sup>2</sup> )
14 – Barrow Laois Co Co		Triogue	None	15
<b>Topography</b>		The valley of the river Triogue dominates the topography of this groundwater body. The river flows from south to north with its source located on the slopes of the Castlecomer Plateau. The topography is quite flat especially in the topographic divide between the river Triogue and the Owenass, which is located to the north. The total range of elevations from south to north of the groundwater body is from 120m to 40m over a distance of 12km.		
<b>Geology and Aquifers</b>	Aquifer type(s)	<b>Lg</b> : Locally Important Sand/Gravel Aquifer		
	Main aquifer lithologies	<b>Sand and Gravel.</b>		
	Key structures.			
	Key properties	No site-specific data are available but permeability tends to be high in sand & gravels, 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 in other parts of the country.		
Thickness	The thickness of the aquifer is over 10m.			
<b>Overlying Strata</b>	Lithologies	None		
	Thickness			
	% area aquifer near surface	High		
	Vulnerability	High		
<b>Recharge</b>	Main recharge mechanisms	The subsoils are dominated by gravels, which have high rates of infiltration. This is supported by the free draining nature of the land. Recharge is generated from rainfall directly on the groundwater body. The proportion of runoff generated from effective rainfall is estimated to be in the order of 20%.		
	Est. recharge rates	<i>[Information will be added at a later date]</i>		
<b>Discharge</b>	Springs and large known abstractions (m <sup>3</sup> /d)	Readymix Ltd. (Broomfield 45) and Portlaoise PWS (Meelick 409) - this borehole also abstracts water from the Ballysteen limestone.		
	Main discharge mechanisms	The dominant types of discharge mechanisms in this groundwater body are likely to be baseflow to streams and seepages as springs at the extremities of the sand and gravel deposit.		
	Hydrochemical Signature	The sediments within this sand and gravel aquifer are expected to be <b>Calcareous</b> . Hydrochemical data measured at the Portlaoise WSS shows very hard waters (394 mg/l CaCO <sub>3</sub> ) and a high EC (764µS/cm).		
<b>Groundwater Flow Paths</b>		Water levels are close to the ground surface in the low-lying area in the vicinity of springs. Water levels elsewhere are considered to be in the region of 3-7 m below ground level. Groundwater gradients in sand & gravel are expected to be quite flat. Data from other parts of the country indicate that gradients in gravel aquifers are in the order of 0.002 to 0.004. Groundwater flow through the aquifer is diffuse. Groundwater flow is towards the overlying rivers, which in turn are flowing to the north, contrary to the general flow in the Barrow Valley.		
<b>Groundwater &amp; surface water interactions</b>		It is expected that the aquifer contributes significant baseflow to the rivers which cross the groundwater body. There is a low drainage density in the area of the gravel groundwater body. This is a result of the permeable subsoils, which allow surface water to percolate down to the water table with ease.		
<b>Conceptua I model</b>	The groundwater body is considered to be a locally important gravel aquifer. There are no overlying deposits and therefore a high proportion of effective rainfall will infiltrate through the permeable deposits to the water table. This also means that the vulnerability of the groundwater resource is high. The groundwater flow will be diffuse and the direction of groundwater flow is to the northeast. The groundwater body will discharge as baseflow to the associated surface water bodies and also as seepages and springs.			
<b>Attachments</b>				
<b>Instrumentation</b>	Stream gauge: 14101, 14014 Borehole Hydrograph: none EPA Representative Monitoring boreholes: Portlaoise WSS (#22 - S478972)			
<b>Information Sources</b>	Daly EP (1983) Water in the Landscape: Groundwater Resources in Laois. In: "Laois, an environmental history". Ed. Feehan J, Ballykilcavan Press. Deakin J, Fitzsimons V, Gately C, Wright G (2002) <i>County Laois Groundwater Protection Scheme</i> . Geological Survey of Ireland.			
<b>Disclaimer</b>	Note that all calculation and interpretations presented in this report represent estimations based on the information sources described above and established hydrogeological formulae			