

*1<sup>st</sup> Draft Lavagh-Ballygawley GWB Description August.2004*

**Lavagh-Ballygawley GWB: Summary of Initial Characterisation.**

Hydrometric Area Local Authority	Associated surface water features	Associated terrestrial ecosystem(s)	Area (km <sup>2</sup> )
35 Sligo/Mayo Co. Co.	<b>Rivers:</b> Ballysadare, Owenmore, Unshin. <b>Streams:</b> Killoran Lough Stream. <b>Lakes:</b> Killoran South, Cartron, Fin, Riskeen, Killoran North, Drumdivnagh, Knockroe, Toberscanavan, Cloghfin.	Unshin River (001889), Knockmullen Fen (001904), Fin and Riskeen Loughs (001907) (O’Riain, 2004).	44
<b>Topography</b>	The GWB occupies a relatively narrow rectangular area orientated NE-SW, between Lavagh and Ballintogher. The location and boundaries are given in Figure 1. The land surface is characterised by undulating terrain toward the western side and a drumlinised landscape on the eastern side. Elevations range from 30-190 mAOD, sloping in an northeasterly direction. It is bounded to the north and south by the Dinantian Pure Bedded Limestones of the Balleygawley and the Ballymote GWB’s. The eastern and western boundaries are surface water divides.		
<b>Geology and Aquifers</b>	<b>Aquifer categories</b>	<b>L1:</b> Locally important aquifer, moderately productive only in local zones.	
	<b>Main aquifer lithologies</b>	The Lisgorman Shales are the only rock unit present (Dinantian Shales and Limestones).	
	<b>Key structures</b>	The key structural trend is SW-NE, parallel to the northern and southern boundaries, with the beds striking NE-SW and dipping 2-5° to the SE.	
	<b>Key properties</b>	There are no data specific to the GWB, thus information from the Kilkelly GWB is used. Transmissivity is expected to be low across the entire GWB, however, in the vicinity of faults, transmissivity may be higher. Storativity is expected to be low (<0.5%). The data are inadequate to calculate groundwater gradients, these are expected to be greater than 0.005.	
	<b>Thickness</b>	Most groundwater flux is likely to be in the uppermost part of the aquifer; comprising a broken and weathered zone typically less than 3 m thick; a zone of interconnected fissuring 10-15 m thick; and a zone of isolated poorly connected fissuring typically less than 150 m.	
<b>Overlying Strata</b>	<b>Lithologies</b>	Till is the dominant subsoil type.	
	<b>Thickness</b>	There are no depth to bedrock data available.	
	<b>% area aquifer near surface</b>	<i>[Information to be added at a later date]</i>	
	<b>Vulnerability</b>	<i>[Information to be added at a later date]</i>	
<b>Recharge</b>	<b>Main recharge mechanisms</b>	Diffuse recharge occurs via rainfall percolating through the subsoil and rock outcrops. Due to the low permeability of much of the subsoil (blanket peat) and the aquifers, a high proportion of the available recharge will discharge to the streams.	
	<b>Est. recharge rates</b>	<i>[Information to be added at a later date]</i>	
<b>Discharge</b>	<b>Large springs and high yielding wells (m<sup>3</sup>/d)</b>	No large springs or good wells identified.	
	<b>Main discharge mechanisms</b>	The main groundwater discharges are to the streams, rivers and lakes. Small springs and seeps are likely to issue at the stream heads and along their course. The generally poor aquifer properties indicate that the baseflow component of total streamflow is likely to be low.	
	<b>Hydrochemical Signature</b>	There are no data but generally is expected to have a CaHCO <sub>3</sub> signature.	
<b>Groundwater Flow Paths</b>	Groundwater flow is expected to be concentrated in fractured and weathered zones and in the vicinity of fault zones. Flow paths are likely to be up to 300 m, with groundwater discharging rapidly to nearby streams and small springs. Groundwater flow directions are expected to follow topography.		

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<b>Groundwater &amp; Surface water interactions</b>	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.
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<b>Conceptual model</b>	<ul style="list-style-type: none"> <li>• The GWB occupies a relatively narrow rectangular area orientated NE-SW, between Lavaghand and Ballintogher. The land surface is characterised by the undulating terrain toward the western side and a drumlinised landscape on the eastern side. Elevations range from 30-190 mAOD, sloping in an northeasterly direction.</li> <li>• It is bounded to the north and south by the Dinantian Pure Bedded Limestones of the Balleygawley and the Ballymote GWB's. The eastern and western boundaries are surface water divides.</li> <li>• The GWB is composed primarily of low transmissivity rocks. Most of the groundwater flux is likely to be in the uppermost part of the aquifer: comprising a broken and weathered zone typically less than 3m thick; a zone of interconnected fissuring 10-15m; and a zone of isolated, poorly connected fissuring typically less than 150m.</li> <li>• Storativity is expected to be low (&lt;0.5%). The data are inadequate to calculate groundwater gradients, however, these are generally expected to be greater than 0.005.</li> <li>• Recharge occurs diffusely through the subsoils and rock outcrops. Recharge is limited by the low permeability bedrock, thus most of the available recharge discharges rapidly to nearby streams and small springs.</li> <li>• Groundwater flow is expected to be concentrated in fractured and weathered zones and in the vicinity of fault zones. Flow paths are likely to be up to 300 m, with groundwater discharging rapidly to nearby streams and small springs.</li> <li>• The rock units in GWB are generally of low permeability and baseflow to rivers and streams is likely to be relatively low.</li> </ul>
<b>Attachments</b>	Figure 1.
<b>Instrumentation</b>	<b>Stream gauges:</b> 35001, 35026. <b>EPA Water Level Monitoring boreholes:</b> None <b>EPA Representative Monitoring points:</b> None
<b>Information Sources</b>	MacDermot, C.V. Long C.B. and Harney S.J (1996) <i>Geology of Sligo-Leitrim: A geological description of Sligo, Leitrim and adjoining parts of Cavan, Fermanagh, Mayo and Roscommon, to accompany bedrock geology 1:100,000 scale map, Sheet 7, Sligo - Leitrim.</i> Geological Survey of Ireland, 100pp.  Geological Survey of Ireland: The Dinantian (early) Sandstones, Shales and Limestones, The Dinantian Upper Impure Limestones, Precambrian Aquifer Chapters. Unpublished.
<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.

**Figure 1. Location and Boundaries of GWB**

