

**Dromahair GWB: Summary of Initial Characterisation.**

Hydrometric Area Local Authority		Associated surface water features	Associated terrestrial ecosystem(s)	Area (km <sup>2</sup> )
35 Leitrim / Sligo Co. Co.		<b>Rivers:</b> Bonet, Owenmore, Owenbeg, Shanvaus, Brackary. <b>Lakes:</b> Carrigeencor, Cloonaquin, Cloonlagher, Anarry, Dagee, Gill, Lumman, Middle, Ox Bow, Stonepark.	Bonet River (001404), Lough Gill (001976) (O’Riain, 2004).	79
<b>Topography</b>	The GWB occupies a an area orientated NE-SW, located between Dromahair and Manorhamilton. The location and boundaries are given in Figure 1. The land surface is characterised by mountainous terrain to the west of Dromahair and Manorhamilton, and by low lying topography to the south of Manorhamilton and near Lough Gill. Elevations range from 20-410 mAOD. It is bounded to at either end by an upland area acting as a surface water divide. It is bounded to the north and south by the karst aquifers of the Ballintogher and Carrowmore East GWB’s.			
<b>Geology and Aquifers</b>	<b>Aquifer categories</b>	<b>Pl:</b> Poor aquifer, generally unproductive except for local zones. <b>Pu:</b> Poor aquifer, generally unproductive. <b>Ll:</b> Locally important aquifer which is moderately productive only in local zones.		
	<b>Main aquifer lithologies</b>	Table 1 presents a list of rock units in the GWB.		
	<b>Key structures</b>	The key structural trend is SW-NE, parallel to the northern and southern boundaries. Faults trending NW-SW cross the GWB.		
	<b>Key properties</b>	There are no data specific to the Precambrian Quartzites, Gneisses & Schists. Transmissivities are expected to be in the range of 0.1-10 m <sup>2</sup> /d. 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, however, these are generally expected to be greater than 0.01.		
	<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>	Data on the subsoils are available for the area of the GWB that is in County Sligo, to the west of Dromahair. The subsoil is predominantly cutover peat and till.		
	<b>Thickness</b>	There are no depth to bedrock data available. Rock outcrops on the upland areas.		
	<b>% area aquifer near surface</b>	[Information to be added at a later date]		
	<b>Vulnerability</b>	[Information to be added at a later date]		
<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. In addition, the steep slopes in the mountainous areas promote surface runoff. The stream density is high, indicating the high proportion of surface runoff.		
	<b>Est. recharge rates</b>	[Information to be added at a later date]		
<b>Discharge</b>	<b>Large springs and high yielding wells (m<sup>3</sup>/d)</b>	None 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 available for the Precambrian rocks. However, limited data (n=1) from the Foxford GWB is given as follows. Alkalinity (mg/l as CaCO <sub>3</sub> ): 95. Total Hardness (mg/l): 96. Conductivity (µS/cm): 267. Iron (mg/l): 0.1. Manganese (mg/l): 0.01.		

*1<sup>st</sup> Draft Dromahair Description August 2004*

<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 150 m, with groundwater discharging rapidly to nearby streams and small springs. Groundwater flow directions are expected to follow topography..
<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.
<b>Conceptual model</b>	<ul style="list-style-type: none"> <li>• The GWB occupies a an area orientated NE-SW, located between Dromahair and Manorhamilton. The land surface is characterised by mountainous terrain to the west of Dromahair and Manorhamilton, and by low lying topography to the south of Manorhamilton and near Lough Gill. Elevations range from 20-410 mAOD.</li> <li>• It is bounded to at either end by an upland area acting as a surface water divide. It is bounded to the north and south by the karst aquifers of the Ballintogher and Carrowmore East GWB's.</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 peat and 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 150 m, with groundwater discharging rapidly to nearby streams and small springs. The overall flow direction is to the north.</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>	Table 1 and Figure 1.
<b>Instrumentation</b>	<b>Stream gauge:</b> 35020, 35023, 35028, 35042, 35044. <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 Precambrian Aquifer Chapters. Unpublished. O' Riain, G., (2004). <i>Water Dependent Ecosystems and Subtypes Draft Report.</i> WFD Support Projects. Compass Informatics in association with National Wildlife and Parks Service (DEHLG).
<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.

**Table 1 List of Rock units in GWB**

StratCode	UnitName	Description	RockUnit	Aquifer Class
BS	Ballyshannon Limestone Formation	Pale grey calcarenite limestone	Dinantian Pure Bedded Limestones	Pending Classification
BN	Bundoran Shale Formation	Dark shale, minor fine-grained limestone	Dinantian Shales and Limestones	LI
mkDA	Dartry Limestone Formation& Mudbank limestone	Dark fine-grained cherty limestone	Dinantian Pure Unbedded Limestones	Rkc
GC	Glencar Limestone Formation	Dark fine limestone & calcareous shale	Dinantian Upper Impure Limestones	LI
LQ	Leckee Quartzitic Formation	Pale psammite & quartzite	Precambrian Quartzites, Gneisses & Schists	PI
UMme	Meelick Member	Schist, aluminous schist, pebble beds	Precambrian Quartzites, Gneisses & Schists	PI
Mb	Metabasite	variably altered	Precambrian Quartzites, Gneisses & Schists	PI
MO	Moy Sandstone Formation	Sandstone, pebbly conglomerate	Dinantian Sandstones	Lm
mk	Mudbank Limestones	Massive grey micritic limestone	Dinantian Pure Unbedded Limestones	LI
UMna	Newantrim Member	Amphibolitic basic metavolcanics	Precambrian Quartzites, Gneisses & Schists	PI
SWK	Pelitic & semi-pelitic paragneiss	Granoblastic kyanite pelite/ -semipelite	Precambrian Quartzites, Gneisses & Schists	Pu
SWQ	Psammitic paragneiss	Granoblastic quartzofeldspathic psammite	Precambrian Quartzites, Gneisses & Schists	PI
S	Serpentine	Serpentine	Granites & other igneous intrusive rocks	PI
TW	Twiggspark Formation	Sandstone, sandy limestone & mudstone	Dinantian (early) Sandstones, Shales and Limestones	PI

**Figure 1 Location and Boundaries of GWB**

