

Belhaval Lough: Summary of Initial Characterisation.

Hydrometric Area Local Authority	Associated surface water bodies	Associated terrestrial ecosystem(s)	Area (km ²)
35 Leitrim Co. Co.	River: Scardan, Killanummery, Diffagher, Owenmore, Streams: Tullinwillin, Cashel. Lakes: Belhavel, Altscrahaigh, Carran, Tullinloughan, Kip, Aneanyore, Balnabahy.	None	62
Topography	The GWB occupies a rectilinear area orientated NE-SW located on the northern flanks of the upland area to the northwest of L. Allen. Belhaval lough is located in the centre of the GWB, from which the land surface rises to the southwest and northeast. Elevations range from 70-390 mAOD on the southern side of Belhaval Lough and 70-440 mAOD on the northern side. Figure 1 shows the location and boundaries. The GWB is bounded to the north by the Pure Bedded Limestones of the Killarga GWB and to the south by topographic divides which includes the division of the Shannon and Western RBD areas. The principal drainage is to the northwest.		
Geology and Aquifers	Aquifer categories	Pl: Poor aquifer which is generally unproductive except for local zones; Pu: Poor aquifer which is generally unproductive Lm: Locally important aquifer, generally moderately productive.	
	Main aquifer lithologies	Namurian Shales, Namurian Sandstones, Namurian Undifferentiated, Dinantian Shales and Limestones, & Dinantian Mixed Sandstones, Shales and Limestones.	
	Key structures	The key trend is NE-SW, parallel to the northern boundary. The rock units are gently dipping to the east.	
	Key properties	No data on hydrogeological properties specific to this GWB are available. Transmissivity is expected to be in the range of 2-20 m ² /d across the 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.	
	Thickness	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.	
Overlying Strata	Lithologies	<i>[Information to be added at a later date]</i>	
	Thickness	There are no depth to bedrock data available, however, subsoil is likely to be thinnest on upland areas. Rock outcrops occurs predominantly on the mountain tops and upper slopes.	
	% area aquifer near surface	<i>[Information to be added at a later date]</i>	
	Vulnerability	<i>[Information to be added at a later date]</i>	
Recharge	Main recharge mechanisms	Diffuse recharge occurs via rainfall percolating through the subsoil and rock outcrops. Due to the low permeability of much of the aquifers, a high proportion of the available recharge will discharge to the streams. In addition, the steep slopes in the higher relief areas promote surface runoff. The stream density is high, indicating the high proportion of surface runoff.	
	Est. recharge rates	<i>[Information to be added at a later date]</i>	
Discharge	Springs and large known abstractions (m³/d)	None identified. <i>[More Information to be added at a later date]</i>	
	Main discharge mechanisms	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.	
	Hydrochemical Signature	No relevant hydrochemical data are available in this GWB for assessment. The GWB is composed primarily of Namurian Shales and Sandstones and various Dinantian Sandstones, Shales and Limestones. Groundwaters in Namurian rocks are slightly hard and have moderate alkalinities. Both iron and manganese can exceed allowable concentrations, these components coming from the shales. Reducing conditions may occur. Groundwater in the Dinantian Shales and Limestones will have a calcium-bicarbonate signature and will be generally hard and alkaline. Both iron and manganese can exceed allowable concentrations, these components coming from the shales. The Dinantian Shales and Limestones and Dinantian Mixed Sandstones, Shales and Limestones are calcareous.	
Groundwater Flow Paths	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 short, up to 150 m, with groundwater discharging rapidly to nearby streams and small springs. Flow directions are expected to follow topography, generally to the north.		
Groundwater & Surface water interactions	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.		

Conceptual model	<ul style="list-style-type: none"> • The GWB occupies a rectilinear area orientated NE-SW located on the northern flanks of the upland area to the northwest of L. Allen. Belhaval lough is located in the centre of the GWB, from which the land surface rises to the southwest and northeast. Elevations range from 70-390 mAOD on the southern side of Belhaval Lough and 70-440 mAOD on the northern side. • The GWB is bounded to the north by the Pure Bedded Limestones of the Killarga GWB and to the south by topographic divides which includes the division of the Shannon and Western RBD areas. The principal drainage is to the north. • The GWB is composed of low transmissivity rocks and storativity is expected to be low. • Groundwater flow will be concentrated in fractured and weathered zones and in the vicinity of fault zones. • Diffuse recharge occurs via rainfall percolating through the subsoil and rock outcrops. Due to the low permeability of much of the aquifers, a high proportion of the available recharge will discharge to the streams. • Flow paths are likely to be up to 150 m with groundwater discharging rapidly to nearby streams and small springs and flow directions are expected to follow topography. • The rock units in GWB are generally of moderate to low permeability and baseflow to rivers and streams is likely to be relatively low.
Attachments	Table 1 and Figure 1.
Instrumentation	Stream gauges: None EPA Water Level Monitoring boreholes: None EPA Representative Monitoring points: (LEI 022)
Information Sources	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.
Disclaimer	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

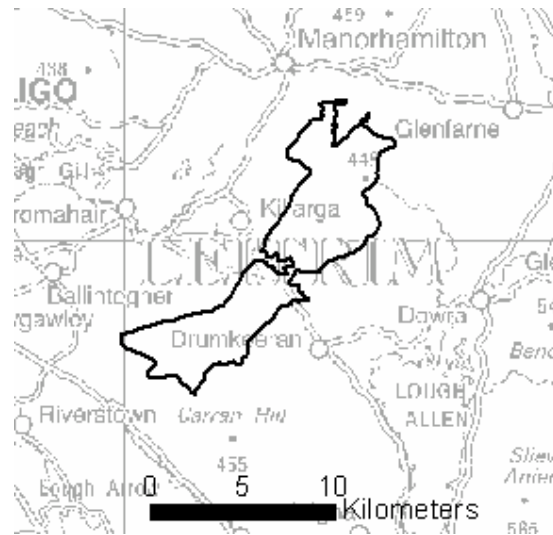


Table 1. List of Rock Units in GWB

StratCode	UnitName	Description	RockUnit	Aquifer Class
BE	Bellavally Shale Formation	Grey micrite, shale, laminite evaporite	Dinantian Mixed Sandstones, Shales and Limestones	LI
BR	Briscoonagh Sandstone Formation	Fine-grained sandstone, minor shale	Namurian Sandstones	PI
CN	Carraun Shale Formation	Grey/black shale with minor limestone	Dinantian Shales and Limestones	PI
DE	Dergvone Shale Formation	Shale & minor turbiditic sandstone	Namurian Shales	Pu
BEdo	Doobally Sandstone	Medium-grained sandstone	Dinantian Mixed Sandstones, Shales and Limestones	LI
GD	Glenade Sandstone Formation	Pale orthoquartzitic sandstone	Dinantian Sandstones	Lm
GO	Gowlaun Shale Formation	Dark grey silty sideritic shale	Namurian Shales	Pu
LH	Lackagh Sandstone Formation	Cyclothem sandstone, siltstone, coal	Namurian Sandstones	PI
DEIn	Lacoon Flagstone Member	Interbedded sandstone & thin shale	Namurian Sandstones	PI
ME	Meenymore Formation	Shale, laminated carbonate, evaporite	Dinantian Mixed Sandstones, Shales and Limestones	LI