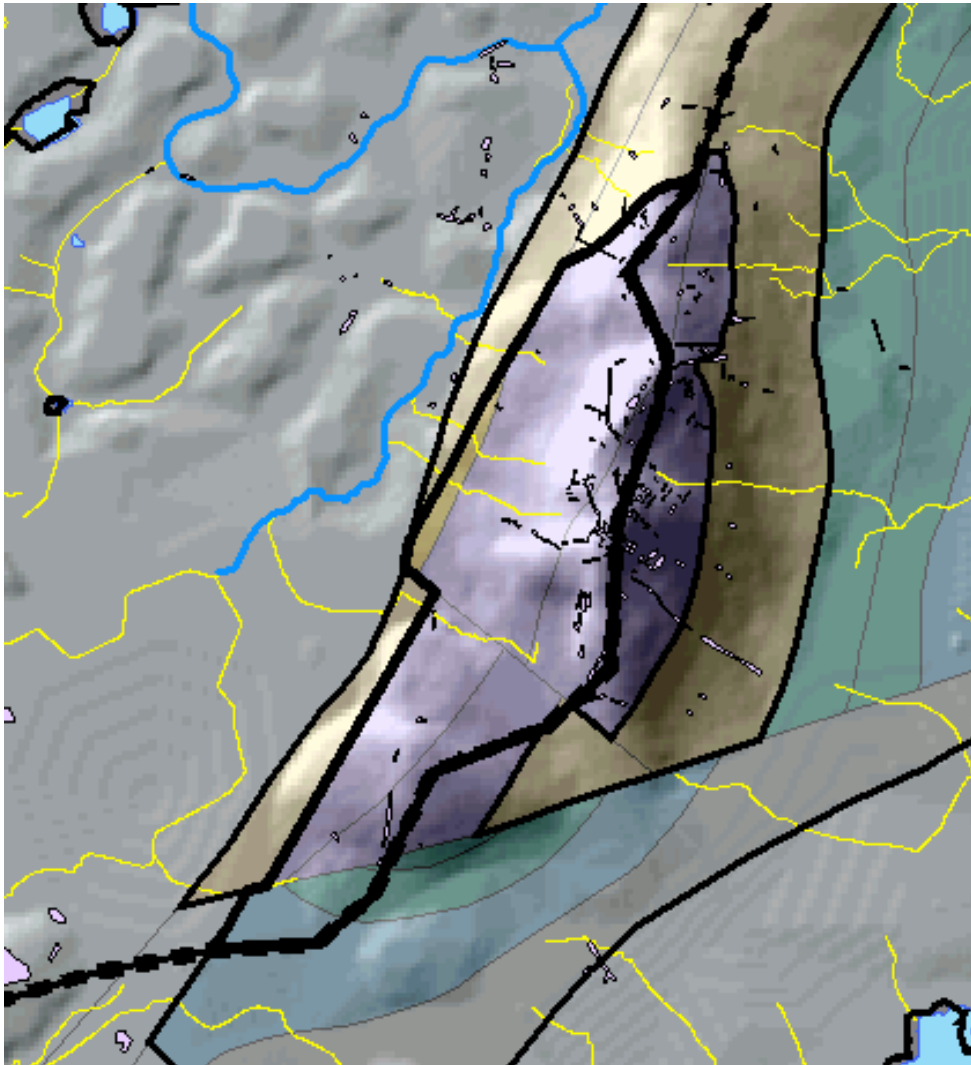


Slieve Bawn Telton Groundwater Body: Summary of Initial Characterisation.

Hydrometric Area Local Authority	Associated surface water features	Associated terrestrial ecosystem(s)	Area (km ²)
26 – Shannon Upstream Roosky Roscommon Co. Co.	Some small streams Loughs: None	n/a	11
Topography	This groundwater body consists of a small northeast southwest trending area on the western side of Slieve Bawn, Co. Roscommon. Slieve Bawn is part of a northeast southwest trending ridge formed by the Strokestown Inlier. The terrain consists of the upper slopes of Slieve Bawn which rise to a top elevation of 260 mAOD. The elevation is greatest in the east of the body. Streams rising in these uplands flow down slope and out of the body in a northwesterly and southwesterly direction. The lowest points are 60 mAOD in the south and west of the body of the body.		
Geology and Aquifers	Aquifer categories	The main aquifer category is: PI: Poor aquifer which is generally unproductive except for local zones In the south of the body there is a very small area (0.8 km ²) with an aquifer category of: LI: Locally important aquifer which is moderately productive only in local zones	
	Main aquifer lithologies	The main aquifer lithology is Ordovician Metasediments. In the south of the body there are two very small isolated areas of Dinantian (early) Sandstones, Shales and Limestones (0.3km ²) and of Dinantian Lower Impure Limestones (0.5 km ²).	
	Key structures	This groundwater body is part of the Strokestown Inlier, a fault bounded inlier with a core of Ordovician metasediments, flanked by Dinantian Sandstones, Dinantian (early) Sandstones, Shales and Limestones, and Dinantian Impure Limestones (Upper & Lower). The Dinantian Sandstones rest unconformably on Ordovician metasediments of this groundwater body. The inlier as a whole is surrounded by Dinantian Pure Bedded Limestones which form a karstic groundwater body. The major northeast southwest trending Strokestown Fault lies to the northwest of the inlier. This groundwater body, which occurs at the centre of the inlier, is cut by a series of northwest southeast faults which cross the inlier.	
	Key properties	No data on hydrogeological properties specific to this groundwater body are available. From experience in other areas of Ireland transmissivity values for Ordovician Metasediments similar to those found in this groundwater body range from 5-20 m ² /d, with the median value in the lower end of the range. In general transmissivity values in this groundwater body can be expected to be quite low, except in localised areas in the vicinity of fault zones where there has been a high degree of fracturing. The rock units in this groundwater body are not considered to be major aquifers, although there can be some local enhancement of permeability due to structural deformation. Storativity in the rocks in this groundwater body will be low.	
	Thickness	This groundwater body is composed primarily of Ordovician Metasediments which in this area extend to depths of 1400 m. In such low permeability rocks however, the effective thickness of the aquifer is likely to be within 15 m of the top of the rock, comprising a weathered zone of a few metres and a zone of interconnected fissures below this of about 10 m thick. Deeper flow can occur in areas that have undergone a high degree of structural deformation and faulting. In the Ordovician Metasediments of Slieve Bawn, permeability will be developed primarily in the upper few metres of broken and weathered rock and in the vicinity of fault zones.	
Overlying Strata	Lithologies	Lower Paleozoic Sandstone and Shale Till (TLPSSs), some areas of shallow rock (Rck), small areas of cut peat (Cut). Data source - Teagasc Parent Material mapping. <i>[Information to be added at a later date]</i>	
	Thickness	Bedrock is less than 3m below ground surface in most of the area of this groundwater body. Rock outcrops at the surface on the highest ground in the east of the body, and in several areas throughout the body. In the remaining areas subsoil thickness does not generally exceed 10m except on lower ground in the extreme south of the body.	
	% area aquifer near surface	In over 75% of the area of this groundwater body the bedrock aquifer is within 3m of ground surface. <i>[Information to be added at a later date]</i>	
	Vulnerability	Over 75% of this groundwater body is in an area of Extreme groundwater vulnerability. Areas of High vulnerability occur in the centre and south of the body small areas of Moderate vulnerability occur on lower ground in the extreme south of the body. (This groundwater body occurs within the area of the Roscommon Groundwater Protection Scheme where groundwater vulnerability has been mapped.)	
Recharge	Main recharge mechanisms	Diffuse recharge will occur over the entire groundwater body via rainfall soaking through the subsoil. More recharge will occur where overlying strata are thinner. Given the low permeability of the rocks in this body some potential recharge is likely to be rejected and flow as runoff to the streams which rise and flow out of the body.	
	Est. recharge rates	<i>[Information to be added at a later date]</i>	
Discharge	Springs and large known abstractions (m ³ /d)	None.	

	Main discharge mechanisms	The main discharges will be to the streams that rise in the body and flow to the northwest. Given the large area of bedrock close to the surface in this groundwater body, and the low permeability nature of the rocks there is a high frequency of drainage ditches to which groundwater also discharges. There may be some local discharge to the adjoining Dinantian Sandstones of the Scramoge North GWB, but given the local nature of flow within this groundwater body such discharges will not be significant
	Hydrochemical Signature	No relevant hydrochemical data are available in this GWB for assessment. The hydrochemical signature of groundwater in Ordovician Metasediments is generally that of a calcium bicarbonate type. Hardness can vary in these rocks from soft to hard depending on the influence of the overlying subsoils, harder waters occurring where the subsoils are more carbonate rich. In general groundwater from the Ordovician Metasediments in this groundwater body could be expected to be soft to moderately soft. High levels of naturally occurring iron and manganese associated with sandstone and shale dominated rocks may be problematic. The Ordovician Metasediments are siliceous.
	Groundwater Flow Paths	Groundwater flow in this groundwater body will be of a local nature. Groundwater flow will be concentrated in fractured and weathered zones and in the vicinity of fault zones (these rocks do not exhibit intergranular permeability). Groundwater flow paths will be short, in general between 30 and 300 m, with groundwater discharging locally to drainage ditches and streams. Most groundwater flow is likely to circulate in the upper few metres of bedrock, recharging and discharging in local zones.
	Groundwater & Surface water interactions	There are no dependant ecosystems currently listed in this groundwater body. Groundwater levels are likely to be close to the ground surface reflecting the low permeability nature of the rocks.
	Conceptual model	<ul style="list-style-type: none"> • This groundwater body consists of a small northeast southwest trending area on the western side of Slieve Bawn, Co. Roscommon. The body is bounded to the east and south by a groundwater divide and topographic high coinciding with a surface water catchment divide. The body is bounded to the north and west by the unconformable contact with the Dinantian Sandstones of the adjoining Scramoge North GWB. • The terrain consists of the upper slopes of Slieve Bawn which rise to a top elevation of 260 m. Streams rising in these uplands flow out of the body in a northwesterly direction. • The groundwater body is composed primarily of low permeability Ordovician Metasediments, with a small area of low permeability Dinantian rocks in the extreme south of the body. Localised zones of enhanced permeability can occur in the vicinity of fault zones. • Groundwater flows is concentrated in the upper few metres of broken and weathered rock and along faults, joints and fractures. • Recharge occurs diffusely through the subsoils and via outcrops. • Groundwater is unconfined within this GWB. Most groundwater flow will occur in a zone near the surface of the rock. In general the effective thickness of the aquifer is within 15 m of the top of the rock, comprising a weathered zone of a few metres and a connected fracture zone below this. Groundwater flow will be of a local nature. Groundwater flow paths will be short, in the order of between 30 and 300 m. Overall, groundwater flow direction is to the west and northwest. • Groundwater will discharge locally to the streams and drainage ditches. There may be some local discharge to the adjoining Dinantian Sandstones of the Scramoge North GWB, but given the local nature of flow within this groundwater body such discharges will not be significant.
	Attachments	None
	Instrumentation	Stream Gauges: None EPA Water Level Monitoring boreholes: None EPA Representative Monitoring boreholes: None
	Information Sources	Lee, M. & Daly D. (2003) <i>County Roscommon Groundwater Protection Scheme</i> . Main Report. Roscommon County Council & Geological Survey of Ireland, 54pp. Morris J.H., Somerville I.D. and MacDermot C.V. (2002). <i>Geology of Longford-Roscommon</i> . A Geological Description to Accompany the Bedrock Geology 1:100,000 Bedrock Series Sheet 12. With contributions by D.G. Smith, M. Geraghty, B. McConnell, K. Carlingbold, W. Cox, D. Daly. Geological Survey of Ireland, 121pp. (Publication pending). Aquifer Chapters: Ordovician Metasediments, Dinantian Lower Impure Limestones, Dinantian (early) Sandstones, Shales and Limestones.
	Disclaimer	Note that all calculation and interpretations presented in this report represent estimations based on the information sources described above and established hydrogeological formulae

GROUNDWATER BODY (For Reference)



List of Rock units in Slieve Bawn Telton Groundwater Body

Rock unit name and code	Description	Rock unit group
Aghamore Formation (AE)	Lava and volcanoclastic breccia	Ordovician volcanics
Lackan Formation (LN)	Feldspathic sandstone with jasper	Ordovician Metasediments
Finnalaghta Formation (FA)	Blue-grey greywacke & black argillite	Ordovician Metasediments
Ballysteen Formation (BA)	Dark muddy limestone, shale	Dinantian Lower Impure Limestone
Moathill Formation (MH)	Limestone, calcareous sandstone, shale	Dinantian (early) Sandstones, Shales and Limestones
Meath Formation (ME)	Limestone, calcareous sandstone	Dinantian (early) Sandstones, Shales and Limestones

NOTES ON GWB DESCRIPTION

NOTES

Groundwater flow is likely to occur in faults and fractures within this aquifer. The higher clay contents in shaly units may hinder fracturing and therefore limit the aquifer's potential to yield supplies. This lower permeability is implied on the ground surface; high stream density and the rapid response of streams to rainfall events indicate that surface water cannot easily infiltrate into the groundwater system.

The one 'good' yielding well recorded in this aquifer suggests that there is some localised potential for groundwater abstraction, which is possibly enough to sustain individual homes, or small farms. Given the low permeability of these rocks, they are considered to be a poor aquifer, which is generally unproductive except in local zones (P1).

Although fractured these rocks generally have a low permeability and are mostly regarded as poor aquifer. Such rocks will often yield enough water to a well to supply a house or small farm (0.2-0.5l/s), and occasionally in major fracture zones, may yield a good deal more. However, since the yield often depend on the permeability developed in the uppermost few meters of broken and weathered rock, the yields will often decrease markedly in dry spells as the water table falls, and these supplies may therefore be unreliable. (Geraghty *et. al.* 1997)