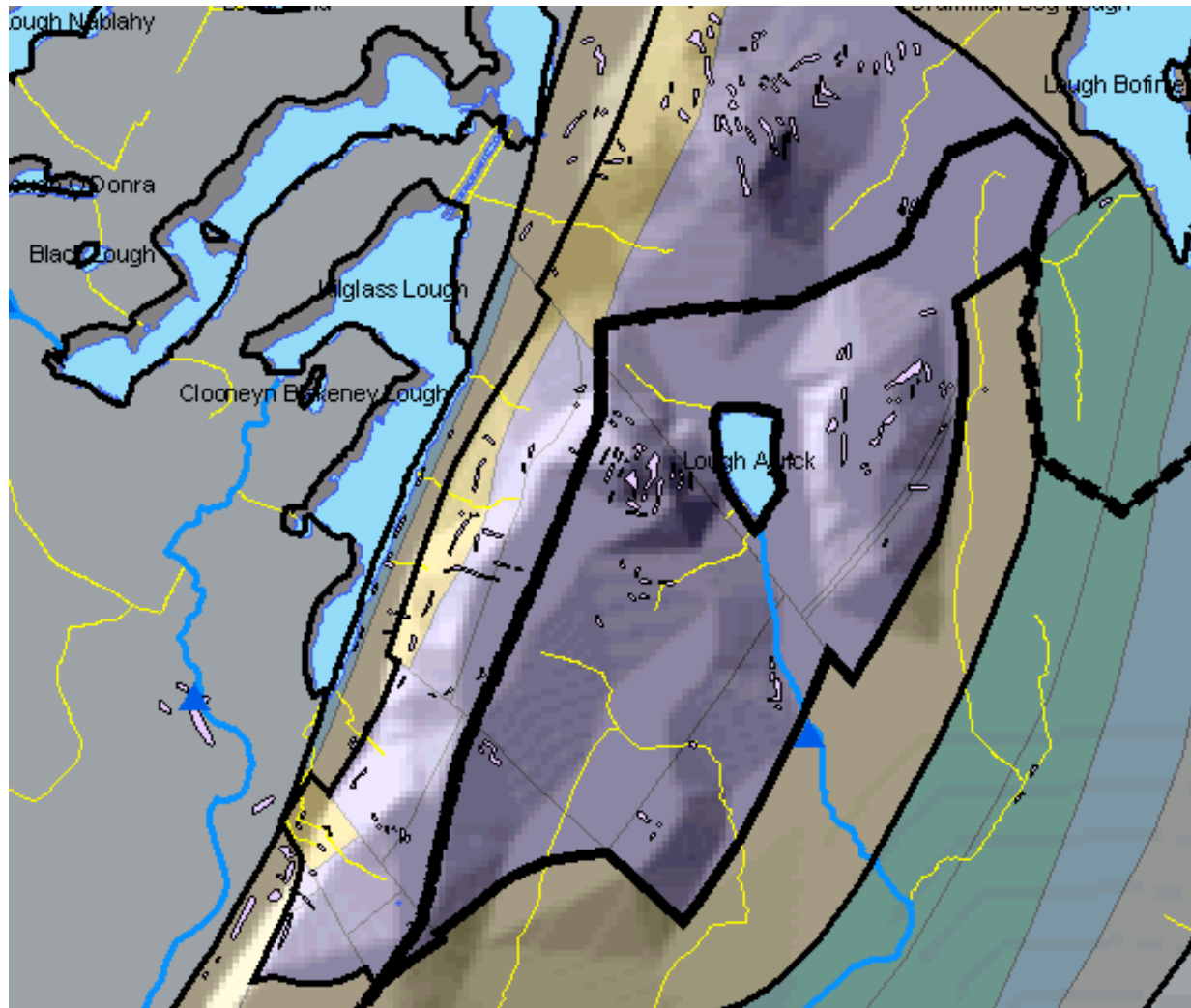


Lough Acrick Groundwater Body: Summary of Initial Characterisation.

Hydrometric Area Local Authority	Associated surface water features	Associated terrestrial ecosystem(s)	Area (km ²)
26 – Hind/Lough Ree Roscommon Co. Co.	Rivers: Feerish Loughs: Acrick	n/a	13
Topography	This groundwater body consists of a small northeast southwest trending upland area surrounding Lough Acrick, Co. Roscommon. This area is part of a northeast southwest trending ridge formed by the Strokestown Inlier. The elevation is greatest to the west of the body. Ground slopes towards Lough Acrick from the hills on either side of the lake and to the east. Streams rising in the body flow towards Lough Acrick and the Feerish River and south and westwards out of the body.		
Geology and Aquifers	Aquifer categories	The main aquifer category is: PI: Poor aquifer which is generally unproductive except for local zones <i>In the northeast of the body a tiny area (0.01 km²) with a classification of LI: Locally important aquifer which is moderately productive only in local zones, falls within the boundary of the body.</i>	
	Main aquifer lithologies	The main aquifer lithology is Ordovician Metasediments. <i>In the northeast of the body there is a tiny isolated area of Dinantian (early) Sandstones, Shales and Limestones (0.01km²). In the northwest of the body there is a tiny area (<0.01km²) of Ordovician Volcanics.</i>	
	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), Devonian Sandstone Till (TDSs), areas of shallow rock (Rck), Alluvium (A), 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 on the higher ground east and west of Lough Acrick where rock outcrop is common. Elsewhere in the groundwater body bedrock is likely to be within 10 m of ground surface.	
	% area aquifer near surface	In over 50% 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 50% of this groundwater body is in an area of Extreme groundwater vulnerability. Areas of High vulnerability occur north and south of Lough Acrick and on lower ground in the north and south of the body. Small areas of Moderate and Low vulnerability occur at the margins of the body in the northeast and south. (This groundwater body occurs within the area of the Roscommon Groundwater Protection Scheme where groundwater vulnerability has been mapped.) <i>[Information to be added at a later date]</i>	
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 flowing 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 southeast and to Lough Acrick and the Feerish River. 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 South 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 surrounding Lough Acrick, Co. Roscommon. • The body is bounded to the north and west by a groundwater divide and topographic high coinciding with a surface water catchment divide. The body is bounded to the east and south by the unconformable contact with the Dinantian Sandstones of the adjoining Scramoge South GWB. • The terrain consists of the upper slopes of a ridge formed by the Northern part of the Strokestown Inlier which rise to a top elevation of 150 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. 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 south and southeast. • Groundwater will discharge locally to the streams and drainage ditches. There may be some local discharge to the adjoining Dinantian Sandstones of the Scramoge South 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). <i>Aquifer Chapters: Ordovician Metasediments, Dinantian (early) Sandstones, Shales and Limestones.</i>
	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 Lough Acrick Groundwater Body

Rock unit name and code	Description	Rock unit group
Finlaghata Formation (FA)	Blue-grey greywacke & black argillite	Ordovician Metasediments
Coronea Formation (CA)	Turbidite, red shale, minor volcanic	Ordovician Metasediments
<i>Red shale (rs) (0.01 km² of GWB)</i>	-	<i>Ordovician Meatsediments</i>
<i>Aghamore Formation (AE) (< 0.01 km² of GWB)</i>	<i>Lava and volcaniclastic breccia</i>	<i>Ordovician volcanics</i>
<i>Meath Formation (ME) (0.01 km² of GWB)</i>	<i>Limestone, calcareous sandstone</i>	<i>Dinantian (early) Sandstones, Shales and Limestones</i>

