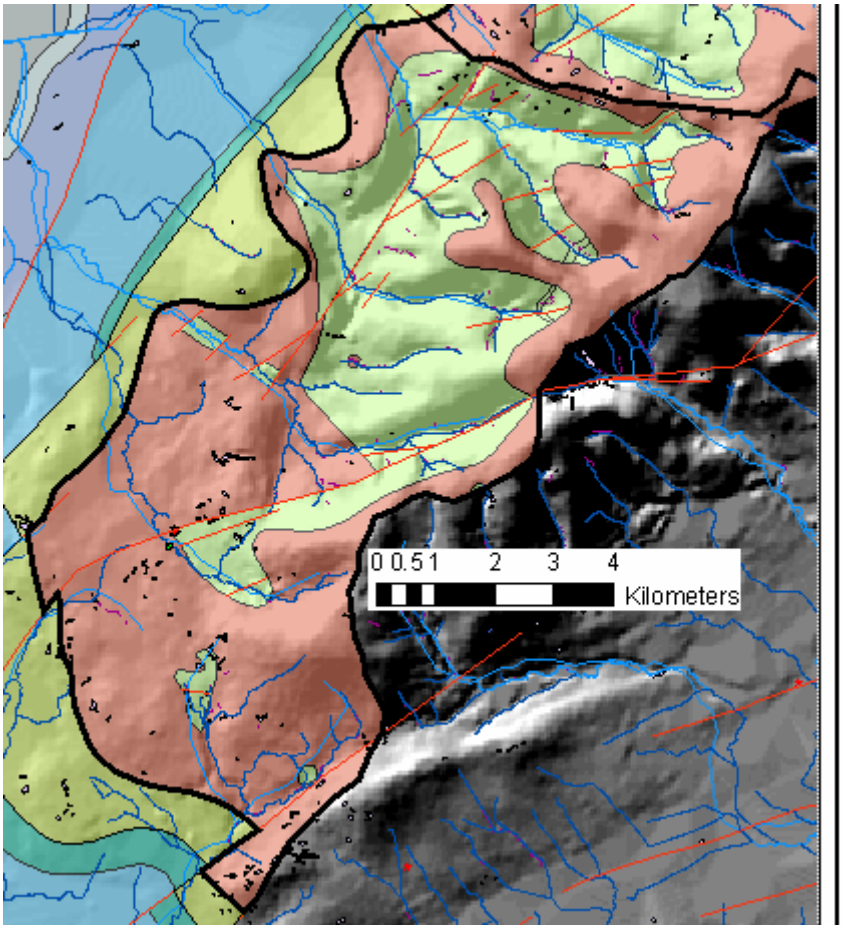
Slieve Bloom South GWB: Summary of Initial Characterisation.

Hydrometric Area Local Authority	Associated surface water bodies	Associated terrestrial ecosystem(s)	Area (km^2)
25 - Little Brosna Catchment Offaly, Laois Co. Co.'s	Rivers: Camcor, Clareen, Breaghmore, Bunow, Golden Grove Stream.	Slieve Bloom Mountains (412)	79

Topography	The Slieve Bloom dominates the topography of this area in the Midlands. The highest peak is Arderin (527 mAOD), which is halfway along the eastern boundary of the groundwater body. The land surface drops off to the west, and southwest very sharply to elevations of around 140 mAOD. The lower slopes are shallower in the south of the GWB. Mountain streams draining the hillside cut deep valleys.	
Geology and Aquifers	Aquifer categories	**Ll:** Locally important aquifer which is moderately productive only in local zones, **Pl:** Poor aquifer which is generally unproductive except for local zones.
	Main aquifer lithologies	Devonian Old Red Sandstone, Silurian Metasediments and Volcanics.
	Key structures	The rocks in the GWB are part of the core of a large NE-SW oriented anticline. The strata dip at 10–20^o, radially outwards from northwest to south. A number of faults with a NE-SW direction are mapped in the centre of the GWB, with one major fault crossing the entire Slieve Bloom range. Large faults in this orientation dissect the surrounding Bredagh GWB. Compression during the folding caused some fracturing and jointing of the rocks.
	Key properties	These aquifers are considered to have low transmissivity and storativity. The transmissivity of the Devonian ORS aquifer will, on average, be better than that of the Silurian strata. Groundwater gradients, following topography, will be steep (0.05-0.15).
	Thickness	The rocks forming this aquifer are more than several hundreds of metres thick. However, the effective thickness of this aquifer is usually ≤ 15 m, although isolated deeper inflows may occur.
Overlying Strata	Lithologies	The lithology of the subsoil varies with the elevation. There is peat on the elevated slopes of the mountains, lower down the mountain there is Limestone Till. Gravel lenses capable of providing drinking water supplies exist in the till, as evidenced by the Clareen GWS spring.
	Thickness	There are no depth to bedrock data for this area. Rock outcrops patchily across the GWB, and along streams.
	% area aquifer near surface	*[Information will be added at a later date]*
	Vulnerability	Groundwater vulnerability is Extreme over the majority of the GWB. Probable vulnerability is High in the southwest corner, with just a very small area of Moderate vulnerability.
Recharge	Main recharge mechanisms	Diffuse recharge will occur over the entire groundwater body via rainfall soaking through the subsoil. A large percentage of rainfall will not recharge the aquifer, but will runoff to the surface water bodies.
	Est. recharge rates	*[Information will be added at a later date]*
Discharge	Springs and large known abstractions (m^3/d)	Roscomroe (17 m^3/d), Clareen (400 m^3/d) – this abstracts water from the overlying strata which are not currently defined as a gravel aquifer. *[More information will be added at a later date]*
	Main discharge mechanisms	The groundwater body discharges to over lying rivers in the area as baseflow. It is also possible that groundwater may pass from this groundwater body into the Clonaslee Sandstone.
	Hydrochemical Signature	No data are currently available for this GWB, but groundwater is likely to be moderately hard to hard, with moderate alkalinities and conductivities. Groundwater hardness is likely to be elevated in areas covered by limestone till. The pH will be neutral. The bedrock strata of the Old Red Sandstone and Silurian aquifers are **siliceous**.
Groundwater Flow Paths		These rocks are devoid of intergranular permeability; groundwater flow occurs in fractures and faults. Flows in the aquifer are likely to be concentrated in a thin zone at the top of the rock; the weathered zone may be up to 3 m thick, with a connected fractured zone a further 10 m, below which is a generally poorly fractured zone. Unconfined groundwater flow paths are short (30-300 m), with groundwater discharging to the streams. Groundwater flows and discharges to the nearest surface water channel. Overall, groundwater flow follows the general decrease in elevation, and flows towards the north, northwest and west.
Groundwater & Surface water interactions		Due to the shallow groundwater flow in this aquifer the groundwater and surface waters are closely linked. The aquifer discharges readily to the overlying (gaining) streams. The lack of storage in the aquifer will mean that baseflows during the summer will be very low.

Conceptual model	• The groundwater body is bounded to the east and south by the Brosna catchment boundaries, and to the north and west by the contact with the Clonaslee Sandstones of the Clonaslee West GWB, under which this aquifer passes. The topography is mountainous and highly dissected by the streams running off the uplands. • The groundwater body is comprised of low transmissivity and storativity rocks. • Flow occurs along fractures, joints and major faults. Flows in the aquifer are concentrated in a thin zone at the top of the rock. • Recharge occurs particularly in the upland areas where rock outcrops, or subsoils are thin. Much of the potential recharge runs off. • Depending upon topography, the water table can vary between a few metres up to >10 m below ground surface. Overall, groundwater flow follows topography, radiating north and northwestwards outwards from Slieve Bloom. Locally, groundwater flows to the surface water bodies. Flow path lengths in the upland areas are short (≤ 300 m). The increased hydraulic gradient, due to the sloping topography, will allow groundwater to flow faster than if it were flowing through a similar rock type in low-lying land. • Groundwater discharges to the numerous streams and rivers crossing the aquifer.
Attachments	None.
Instrumentation	Stream gauges: 25125, 25151, 25152. EPA Representative Monitoring boreholes: Clareen (OFF4) – in overlying gravel deposit.
Information Sources	Daly, D., Cronin, C., Coxon, C. and Burns, S-J (1998) *County Offaly Groundwater Protection Scheme.* Geological Survey of Ireland Report to Offaly Co. Co., 54 pp. Deakin, J., Fitzsimons, V., Gately, C. and Wright, G.R. (revised 2002) *County Laois Groundwater Protection Scheme (draft).* Geological Survey of Ireland Report to Laois Co. Co., 44 pp. Daly, E.P. (1985*). Hydrogeology of the Kiltorcan Aquifer System.* Groundwater Section, GSI Internal Report. ORS Aquifer chapter SIL Aquifer chapter
Disclaimer	Note that all calculation and interpretations presented in this report represent estimations based on the information sources described above and established hydrogeological formulae



Rock units in GWB

Rock unit name and code	Description	Rock unit group
Cadamstown Formation (CW)	Yellow & red sandstone & green mudstone	Devonian Old Red Sandstone
Capard Formation (CP)	Silurian Greywacke	Silurian Metasediments and Volcanics