

Portlaoise GWB: Summary of Initial Characterisation.

Hydrometric Area Local Authority	Associated surface water bodies	Associated terrestrial ecosystems	Area (km ²)
Offlay Co. Co. Laois Co. Co. Hydrometric Area 14	Cushina, Barrow, Rosenallis Stream, Owenass, Blackwater, Triogue,	Raheen Lough	244
Topography		The topography of this groundwater body can be considered in separate areas. The highest elevations are to the south in the foothills of Slieve Bloom, west of Portlaoise. The drainage direction in this area is to the north to Mountmellick where it turns eastward and then south at Monasterevin. To the east there is a drainage divide at Clonygowan, south of this surface drainage is to the south to meet the Barrow between Mountmellick and Portarlinton. North of this the flow in the River Cushina is to the east towards the Derrylea Bog. In the northern section of the groundwater body the elevation decreases from the north with the Figile River flowing south to meet the Cushina east of the Derrylea Bog.	
Geology and Aquifers	Aquifer type(s)	LI – Moderately productive only in local zones	
	Main aquifer lithologies	BA - Ballysteen Formation - Fossiliferous dark-grey muddy limestone WA – Waulsortian Formation – Massive Unbedded Pure Limestone,. CD – Calp - Dark-grey to black limestone and shale	
	Key structures.	The area is relatively free of intense structural deformation. The bedrock is gently dipping.	
	Key properties	No information is available on the hydrogeological properties of this groundwater body. Estimated transmissivities can be considered to range 1 – 10m ² /d.	
	Thickness	Effective thickness is not expected to be large but the bedrock may be permeable to depths of around 25m in some areas.	
Overlying Strata	Lithologies	Limestone till dominates the subsoil types to the south with some localities of till with gravel, gravel aquifers and rock close to surface. To the north in Offaly this gives way to large areas covered by peat.	
	Thickness	Thickness is generally between 1 and 3m.	
	% area aquifer near surface	20%	
	Vulnerability	The area is mostly HIGH vulnerability in the south; there are larger areas of MODERATE vulnerability to the North.	
Recharge	Main recharge mechanisms	Most diffuse recharge to this aquifer will occur across the area where there is thin or permeable subsoil. Allogenic and point recharge may occur along the boundary between the sandstones of the Slieve Bloom Mts. and the limestones of this GWB. The more acidic waters from the sandstones are likely to enhance the development of karstic solution of the bedrock and allow water to enter the aquifer along stream beds where the water table is below the river stage or directly at the contact at small swallow holes or seeps.	
	Est. recharge rates	<i>[Information will be added at a later date]</i>	
Discharge	Springs and large known abstractions (m ³ /d)	Mountmellick Products Ltd (Ballycullenbeg - 95), Mountmellick PWS (1200) and Roche Gibney Ltd (Portlaoise - 34,	
	Main discharge mechanisms	Discharge from this aquifer is to the surface water bodies overlying it and also to the Bagenalstown GWB. Discharge from the aquifer will occur via springs and also as baseflow along riverbeds.	
	Hydrochemical Signature	The bedrock strata of this groundwater body are Calcareous . The limited chemical analyses show high electrical conductivity values.	
Groundwater Flow Paths		Groundwater flow paths through this aquifer are considered to be short and the age of groundwater is considered to be young. This groundwater body is not expected to have regionally developed karstic flow systems. There may be dissolution of the limestone along fractures but it is not likely to continue to great depths.	
Groundwater & surface water interactions		There are important links between the groundwater and surface water at the karst features recorded within this groundwater body.	
Conceptual model	This groundwater body is defined by the area in the northwest of the Barrow valley comprising the Ballysteen Limestone, the Waulsortian Limestone and the Calp-type limestones. It is considered to be a locally important aquifer and may have a developed karst system in local areas, which concentrates recharge and discharges it at a spring. Groundwater flow is considered to occur at shallow depths and the age of the groundwater is young. There is very little monitoring data available for such a large area of a karstic rock with some important public supplies.		

Attachments	
Instrumentation	Stream gauge: 14016, 14004, 14017, 14006, 14009, 14047, 14003, 14008, 14033, 14054, 14032, 14102, 14042, 14010 Borehole Hydrograph: None EPA Representative Monitoring boreholes: Mountmellick (#19- N452059)
Information Sources	Deakin, J., Fitzsimons, V., Gately, C., Wright, G. 2002. <i>Laois Groundwater Protection Scheme</i> . Geological Survey of Ireland. McConnell, B., Philcox, M., A.G. Sleeman, G. Stanley, A.M. Flegg, E. P. Daly and W.P. Warren. 1994. <i>A Geological description to accompany the Bedrock Geology 1:100,000 Scale Map Series, Sheet 16, Kildare-Wicklow</i> . B. McConnell (ed) Geological Survey of Ireland, 70 pp.
Disclaimer	Note that all calculation and interpretations presented in this report represent estimations based on the information sources described above and established hydrogeological formulae