

### Barraghcore GWB: Summary of Initial Characterisation.

| Hydrometric Area<br>Local Authority                       |   | Associated surface water bodies  | Associated terrestrial ecosystems | Area (km <sup>2</sup> ) |
|---|---|--|-----------------------------------|-------------------------|
| Carlow Co. Co.<br>Kilkenny Co. Co.<br>Hydrometric Area 14 |   | Barrow, Monefelim, Gowran,<br>Powerstown   | Red Bog                           | 25                      |
| <b>Topography</b>   |   | This groundwater body is located near Goresbridge, on the boundary between counties Carlow and Kilkenny. The topography in the area slopes from the southwest towards the River Barrow in the east. Elevations range from 80mOD in the south at the Nore/Barrow catchment divide to 40mOD along the River Barrow.  |                                   |                         |
| <b>Geology and Aquifers</b>                               | Aquifer type(s)<br>Main aquifer lithologies   | <b>Rk<sup>d</sup></b> : Regionally important karstified aquifer dominated by diffuse flow<br>Dolomitised Ballysteen Limestone – BAdo – Dolomitised fossiliferous dark gray muddy limestone.  |                                   |                         |
|   | Key structures.   | The limestones in this area dipping in towards the west, i.e. opposite to the direction of the slope of the land and direction of groundwater flow.  |                                   |                         |
|   | Key properties  | Although there are no investigations for this GWB in particular, hydrogeological investigation of the dolomites of the Barrow Valley has found them to be highly permeable with additional storage provided by the permeable tills that often overlie the area.  |                                   |                         |
|   | Thickness   | The majority of flow is expected to occur in the upper weathered zone which may be less than 3m. In the dolomite aquifer it is then common to have a considerable degree of flow to depths on 30m in a network of dolomitised fractures, which permit the flow of water. Deeper groundwater flow in the aquifer may extend up to 100m below ground.                              |                                   |                         |
| <b>Overlying Strata</b>                                   | Lithologies   | The main lithology found in the area is undifferentiated till which is of moderate permeability. Along the river there are some gravel deposits which have a higher permeability.  |                                   |                         |
|   | Thickness   | There is a large area of rock close to surface in the south of the GWB with subsoil thickness increasing towards the north.  |                                   |                         |
|   | % area aquifer near surface   | 20%  |                                   |                         |
|   | Vulnerability   | Mostly High with areas of Extreme where the rock is close to surface in the south.   |                                   |                         |
| <b>Recharge</b>   | Main recharge mechanisms  | Diffuse recharge will occur via rainfall percolating through the subsoil. The proportion of the effective rainfall that recharges the aquifer is largely determined by the thickness and permeability of the soil and subsoil, and by the slope. Close to the River Barrow a certain amount of recharge may be rejected as the water table is likely to be close to the surface. |                                   |                         |
|   | Est. recharge rates   | <i>[Information will be added at a later date]</i>   |                                   |                         |
| <b>Discharge</b>  | Springs and large known abstractions  | None   |                                   |                         |
|   | Main discharge mechanisms   | Groundwater discharge will be directly to the River Barrow as baseflow. Hydrogeological analysis in this area has indicated that the Barrow has a high baseflow which indicates that the aquifer surrounding the river has significant storage.  |                                   |                         |
|   | Hydrochemical Signature   | There is no hydrochemical data available for this particular GWB but Dolomite aquifers typically produce hard waters with a calcium/magnesium bicarbonate signature.   |                                   |                         |
| <b>Groundwater Flow Paths</b>                             |   | Groundwater flow in this GWB is considered to take place towards the River Barrow and the other rivers in the area. It is expected that the majority of flow will occur in the upper area of the rock but that the aquifer is capable of storing water and hence the through put will be less flashy.  |                                   |                         |
| <b>Groundwater &amp; surface water interactions</b>       |   | <i>Information to be added at a later date</i>   |                                   |                         |
| <b>Conceptual model</b>                                   | This groundwater body is located near Goresbridge, on the boundary between counties Carlow and Kilkenny. The topography in the area slopes from the southwest towards the River Barrow in the east. The boundaries of this GWB are defined to the southwest by the Rivers Nore and Barrow catchment divide. Elsewhere the boundaries of the bodies are defined by the extent of the dolomite in that area. Recharge will occur via effective rainfall percolating through the overlying subsoils. Groundwater flow is expected to occur in the upper weathered area of the rock and through dolomitised fractures. Discharge from the aquifer is expected to occur as baseflow to the River Barrow. |  |                                   |                         |
| <b>Attachments</b>  |   |  |                                   |                         |
| <b>Instrumentation</b>                                    | Stream gauge: None<br>Borehole Hydrograph: None<br>EPA Representative Monitoring boreholes: None  |  |                                   |                         |
| <b>Information Sources</b>                                | Buckley, R., Fitzsimons, V., Hegarty, S., Gately, C. (2002). <i>County Kilkenny Groundwater Protection Scheme</i> . GSI report for Kilkenny Council, 167pp.<br>Tietzsch-Tyler, D. and Sleeman, A.G. (1994). <i>Geology of Carlow - Wexford. A geological description to accompany the Bedrock Geology 1:100,000 map series, Sheet 19, Carlow - Wexford</i> . With contributions by B.J. McConnell, E.P. Daly, A.M. Flegg, P.J. O'Connor and W.P. Warren. Edited by B. McConnell. Geological Survey of Ireland.  |  |                                   |                         |
| <b>Disclaimer</b>   | Note that all calculations and interpretations presented in this report represent estimations based on the information sources described above and established hydrogeological formulae   |  |                                   |                         |