

*1<sup>st</sup> Draft Glenomra River Gravel GWB Description November 2004*

**Glenomra Gravel GWB Summary of Initial Characterisation.**

Hydrometric Area Local Authority		Associated surface water features	Associated terrestrial ecosystem(s)	Area (km <sup>2</sup> )
27 Clare Co. Co		<b>Rivers:</b> Glenomra <b>Lakes:</b> Loch an Duin		6.6
<b>Topography</b>	The Glenomra River sand/gravel deposit straddles the boundaries of hydrometric areas 25 and 27. The majority of the deposit is in Hydrometric area 27 (Fergus subcatchment). The eastern portion of the deposit is in Hydrometric area 25 and is considered with the Southern Gravel GWB Group of the Shannon Lower subcatchment. The deposit is located along a river valley, predominantly to the northern side of the Glenomra river, on the lowermost slopes of Slieve Bernagh and is situated between 40 to 100 m OAD.			
<b>Geology and Aquifers</b>	<b>Aquifer categories</b>	The deposit is classified as a <b>Locally Important Sand and Gravel Aquifer (Lg)</b> (Deakin, <i>et al</i> , 2000). It is greater than 1 km <sup>2</sup> , has a thickness of 5-15 m, thus is likely to have greater than 5 m of saturated sand/gravel. Hence the locally important classification (DELG/EPA/GSI (1999)). For the purposes of the WFD only sand/gravel aquifers greater than 4 km <sup>2</sup> are considered as GWB's.		
	<b>Main aquifer lithologies</b>	Glaciofluvial sand/gravel deposit.		
	<b>Key structures</b>	N/A		
	<b>Key properties</b>	Sand/gravel aquifers generally consist of unconsolidated coarse grained material, usually containing less than 8% fines (O'Suilleabháin, 2000) resulting in an intergranular porosity and relatively high permeabilities and storativity. There are no data in this GWB on yields, permeabilities or transmissivities, but these are expected to be high. Permeability is generally greater than 10 m/d (O'Suilleabháin, 2000). Typically transmissivity is generally greater, ranging from 200 – 1500 m <sup>2</sup> /d. Storativity is expected to be high (10%). Groundwater is likely to be unconfined. The data are inadequate to calculate groundwater gradients, but these are expected to be greater than 0.001 and are expected to be similar to the gradient along the rivers.		
	<b>Thickness</b>	The thickness of the Glenomra sand/gravel deposit is 5-15 m.		
<b>Overlying Strata</b>	<b>Lithologies</b>	None		
	<b>Thickness</b>	N/A		
	<b>% area aquifer near surface</b>	[Further Information to be added at a later date]		
	<b>Vulnerability</b>	[Further Information to be added at a later date]		
<b>Recharge</b>	<b>Main recharge mechanisms</b>	Diffuse recharge occurs via rainfall percolating through the unsaturated sand/gravel. A high proportion of runoff from the hills is likely to recharge the sand/gravel aquifer along its margins. The Glenomra river is also likely to provide some recharge to the aquifer, particularly at high river stage. Due to the high permeability of sand/gravel, a high proportion of the available recharge will percolate down to the water table.		
	<b>Est. recharge rates</b>	[Information to be added to and checked]		
<b>Discharge</b>	<b>Large springs and large known abstractions (m<sup>3</sup>/d)</b>	None		
	<b>Main discharge mechanisms</b>	Groundwater discharges to streams that flow across the deposit and to the Glenomra river.		
	<b>Hydrochemical Signature</b>	There are no data available, however alkalinity, hardness and conductivity are expected to be high. The groundwater is expected to have a calcium bicarbonate signature.		
<b>Groundwater Flow Paths</b>		The length of flow paths depend on the size of the sand/gravel deposit. The deposit is narrow, and most of the streams are perpendicular to the deposit, thus flow paths are expected to be relatively short, up to 300 m in length. Groundwater flow directions are expected to be to the southwest, toward the Glenomra river.		
<b>Groundwater &amp; Surface water interactions</b>		In general groundwater from sand/gravel deposits discharges to streams/rivers flowing through the deposits. Hydraulic connection between the groundwater in the aquifer and the river is expected to be high, thus water will be able move into and out of the aquifer depending on the river stage.		

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<b>Conceptual model</b>	<ul style="list-style-type: none"> <li>• The Glenomra River sand/gravel deposit straddles the surface water catchment boundaries between hydrometric areas 25 and 27. The majority of the Glenomra River sand/gravel deposit is in Hydrometric area 27 (Fergus subcatchment). The deposit is located along a river valley. The deposit is situated between 40 to 100 m OAD.</li> <li>• Transmissivities expected to be high. Storativity is expected to be high (10%). Groundwater is likely to be unconfined. Gradients are expected to be greater than 0.001.</li> <li>• Diffuse recharge occurs via rainfall percolating through the unsaturated sand/gravel, from runoff from the hills on either side, and possibly from the Glenomra river itself.</li> <li>• Groundwater discharges to streams that flow through the deposits and to the Glenomra river.</li> <li>• Flow path lengths are expected to be relatively short, up to 300 m. Flow directions are expected to be to the southwest.</li> </ul>
<b>Attachments</b>	Figure 1.
<b>Instrumentation</b>	<b>Stream gauges:</b> n/a <b>EPA Water Level Monitoring boreholes:</b> n/a <b>EPA Representative Monitoring points:</b> n/a
<b>Information Sources</b>	DELG/EPA/GSI (1999) <i>Groundwater Protection Schemes</i> . Department of the Environment and Local Government, Environmental Protection Agency and Geological Survey of Ireland. Deakin, J., Daly, D. (2000). <i>County Clare Groundwater Protection Scheme</i> . Geological Survey of Ireland, 62pp. O'Suilleabhain, C., (2000). <i>Assessing the boundary between high and moderately permeable subsoils</i> . Unpublished MSc., University of Dublin. Department of Civil, Structural and Environmental Engineering, Trinity College Dublin.
<b>Disclaimer</b>	Note that all calculation and interpretations presented in this report represent estimations based on the information sources described above and established hydrogeological formulae

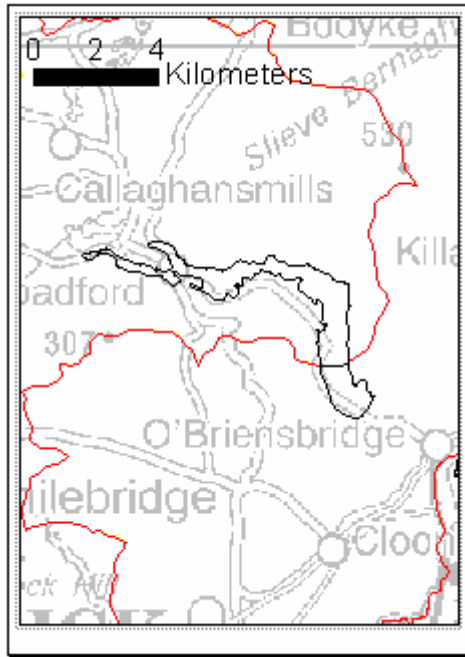


Figure 1. Location and boundaries of Glenomra Gravels. Red line is hydrometric boundary.