

Longwood Gravel GWB: Summary of Initial Characterisation*(This GWB deleted from list 7/9/04)*

Hydrometric Area Local Authority		Associated surface water bodies	Associated terrestrial ecosystems	Area (km ²)
Meath Co. Co. Hydrometric Area 07		Boyne	None	3.6
Topography		This GWB is located to the east of Longwood in Co. Meath. The area is hummocky and the majority of the area is located at 70 m OD. In general the land appears to slope towards the north and west to the River Boyne.		
Geology and Aquifers	Aquifer type(s)	Lg: Locally important sand and gravel aquifer.		
	Main aquifer lithologies	Sand and Gravel: Clean, coarse morainic & outwash gravels.		
	Key structures.	N/A		
	Key properties	Though permeability testing data are limited, productivity, borehole logging and quarry data indicate that coarse material predominates and that permeability and storativity in the aquifer are high. The Roadstone Longwood Pit located at Stoneyford within this GWB.		
	Thickness	By definition (DELG/EPA/GSI, 1999) this gravel deposit must be at least 10 m thick. Drilling in this area suggests the gravel deposits are about 10 m thick.		
Overlying Strata	Lithologies	None		
	Thickness	N/A		
	% Area aquifer near surface	High		
	Vulnerability	High		
Recharge	Main recharge mechanisms	This GWB is recharged from rainwater percolating through the topsoil and unsaturated sand and gravel deposits. Surface runoff is probably less than 20% of effective rainfall. The presence of less permeable layers in the deposit, even if thin, can create perched water tables and prevent recharge of the true water table. Where the water table lies below the local river network it is likely that some stream water may pass into the aquifer. This will be most likely in the higher elevations where a river flows onto the aquifer from where it has previously been flowing over impermeable subsoil or bedrock.		
	Est. recharge rates	<i>[Information to be added at a later date]</i>		
Discharge	Springs and large known abstractions	None		
	Main discharge mechanisms	Groundwater will leave this aquifer as baseflow to rivers where the water table is above river stage and a permeable riverbed exists. There is also likely to be groundwater seepage from the extremities of the gravel body at the lower elevations, which may appear as springs, seeps or a rise in baseflow to a river. Water may also come to the surface where there is a boundary to groundwater flow i.e. an impermeable layer of till within the gravel deposit.		
	Hydrochemical Signature	There is no information on the hydrochemical nature of the groundwater.		
Groundwater Flow Paths		Although the aquifer is permeable groundwater velocity is slow because storativity is high and water table elevations are generally subdued. This also means that discharge to rivers will not be flashy and will be sustained through drier periods of the year. The general direction of groundwater flow in this aquifer appears to be to the north and west towards the River Boyne.		
Groundwater & surface water interactions		The interaction between surface water and groundwater through out this aquifer is complex and will depend on the position of the water table. The nature of this interaction will not be uniform over the area of the body. During flooding, when the river stage is above the water table in the gravel aquifer, river water will seep into the gravel aquifer. The aquifer provides storage for this rainwater and it is not until the river stage has reduced and the hydraulic gradient is reversed that the water is released into the river. This phenomenon is known as bank storage and is indicative of a high interactive surface water groundwater system. It also accounts for the fact that such rivers bounded by gravel aquifers have a less 'flashy' flooding and higher baseflow and dry weather flow.		

Conceptual model	This GWB is northwest of Longwood in Co. Meath. This area is extremely flat and the majority of the area is located at 70 m OD. The extent of the body is defined by the presence of gravel deposits in excess of 10m thick. Note that this aquifer has not been mapped at surface and the boundaries are delineated on the basis of drilling data. As such, the boundaries may change when new site investigation data become available. The GWB is composed of permeable sand and gravel deposits, which will also have a high storativity. Recharge occurs diffusely through the overlying topsoil. The aquifer is generally unconfined, but may become locally confined where lower permeability deposits overlie the gravels. The water table within gravel aquifers is usually flat and therefore the depth to water will depend on the topography of the area. The flow paths within the aquifer are constrained by the extent of the deposit and therefore will not develop to a regional scale. Groundwater discharge will occur via springs and seeps along the lowest boundary of the body and also along river courses. There may also be discharge to rivers as baseflow where the water table lies above the river stage.
Attachments	
Instrumentation	Stream gauge: None Borehole Hydrograph: None EPA Representative Monitoring boreholes: None
Information Sources	DELG/EPA/GSI (1999) <i>Groundwater Protection Schemes</i> . Department of Environment & Local Government, Environmental Protection Agency & Geological Survey of Ireland, joint publication. Woods L, Meehan R, Wright GR (1998) <i>County Meath Groundwater Protection Scheme</i> . Report to Meath County Council. Geological Survey of Ireland. 54 p.
Disclaimer	Note that all calculation and interpretations presented in this report represent estimations based on the information sources described above and established hydrogeological formulae

