Kill 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)
Kildare Co. Co. Hydrometric Area 09		Some small streams	None	1.8
Topography		This small GWB is located to the southwest of Kill in eastern Co. Kildare on a flat area of land with elevations ranging from 120 m OD in the southeast to 90 m OD in the northwest, giving a topographic gradient of 0.012.		
Geology and Aquifers	Aquifer type(s)	Lg: Locally Important Gravel Aquifer		
	Main aquifer lithologies	Sand & Gravel. The geology of the deposits in Arthurstown (to the southeast of the body) is quite variable, but, in general, sand & gravels overlies till and the entire sequence thickens to the northwest toward Kill (Long & McCullen, 1999).		
	Key structures.	N/A		
	Key properties	Particle size analyses show that the sand & gravel has less than 8% fines. Long & Mc Cullen (1999) report that permeabilities of the sand & gravel at Kill as in the order of 6.1 x 10^{-4} to 6.9 x 10^{-7} m/s and the numerical average is 2.1 x 10^{-4} m/s (equivalent to 18 m/day).		
	Thickness	By definition (DELG/EPA/GSI, 1999) this gravel deposit must be at least 10m thick. The sand & gravel varies in thickness, up to 6 m in places. There are no data for the rest of the deposit but it is assumed that the sand & gravels thicken toward Kill. The depth to bedrock is quite variable around Kill and the thickness over the extent of the deposit is interpreted to be greater than 10 m.		
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 from such gravel aquifers is considered to be low and no more 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	*[Information to be added at a later date]*		
Discharge	Springs and large known abstractions	There are no recorded large abstractions from this GWB.		
	Main discharge mechanisms	Groundwater will leave this aquifer 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 in the aquifer 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. Groundwater flow through this aquifer will be from the southeast to northwest and more locally there will be flow towards the small streams that overly the aquifer.		
Groundwater & surface water interactions		The interaction between surface water and groundwater throughout 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 small GWB is located southwest of Kill in eastern Co. Kildare, on a flat area of land with elevations ranging from 120 m OD in the southeast to 90 m OD in the northwest, giving a topographic gradient of 0.012. The extent of the body is defined by the presence of gravel deposits in excess of 10m thick. The GWB is composed of permeable sand and gravel deposits, with 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: Borehole Hydrograph: None EPA Representative Monitoring boreholes:
Information Sources	DELG/EPA/GSI (1999) *Groundwater Protection Schemes.* Department of Environment & Local Government, Environmental Protection Agency & Geological Survey of Ireland, joint publication. Kelly C, Fitzsimons V (2002) *County Kildare Groundwater Protection Scheme*. Report to Kildare County Council. Geological Survey of Ireland 55pp
Disclaimer	Note that all calculation and interpretations presented in this report represent estimations based on the information sources described above and established hydrogeological formulae