Dysart 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 07	Blackwater	None	4.5

Topography		This small GWB is located about 4 km south of Enfield, around the village of Dysart, Co Kildare. The topography in the area is very low-lying, with most of the body being between 80 and 70 m OD. In general the area slopes towards the River Blackwater, which runs along the eastern boundary of the GWB.
Geology and Aquifers	Aquifer type(s) Main aquifer lithologies	Lg: Locally Important Gravel Aquifer Sand & Gravel.
	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.
	Thickness	By definition (DELG/EPA/GSI, 1999) this gravel deposit must be at least 10m thick. Site investigation data indicate that there are up to 20 m of saturated gravels in places, however, general saturated gravel thickness is in the order of 5-10 m.
Overlying Strata	Lithologies	Till and peat occupy the surface layers
	Thickness	
	% 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. In this instance it appears the water table is quite close to the surface, from a number of standing water levels measured within the gravel body, the occurrence of springs and the proximity to a major river. It is likely that the water table lies closer to the surface in the east where the River Blackwater flows along the eastern boundary of the aquifer; a number of small streams appear in the eastern half of the GWB. Therefore a large proportion of potential recharge will be rejected and will flow laterally to the river. The water level in the aquifer will be strongly linked to the river stage, thus in summer months the river will be at its lowest and the water table will be lower, and vice versa in winter. The total area where overland flow contributes to river flow i.e. where the water table is at the surface, will increase during winter and decrease in summer. The area available for recharge will increase and decrease in an inversely proportional manner to this.
	Est. recharge rates	*[Information to be added at a later date]*
Discharge	Springs and large known abstractions	Warm Spring No. 16 (*Name?)*
	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. The general direction of groundwater flow in this aquifer appears to be to the east, towards the River Blackwater.
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 around the village of Dysart, Co Kildare. The topography in the area is very low-lying with most of the body lying between 80 and 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, with a high storativity. Recharge occurs diffusely through the overlying topsoil, although close consideration should be given to the influence of rejected recharge within this small aquifer. 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) *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