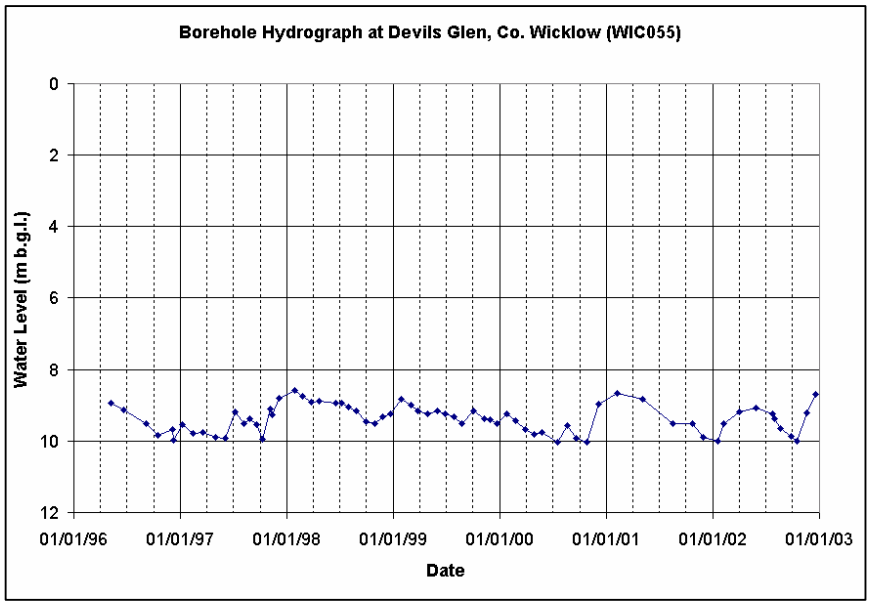
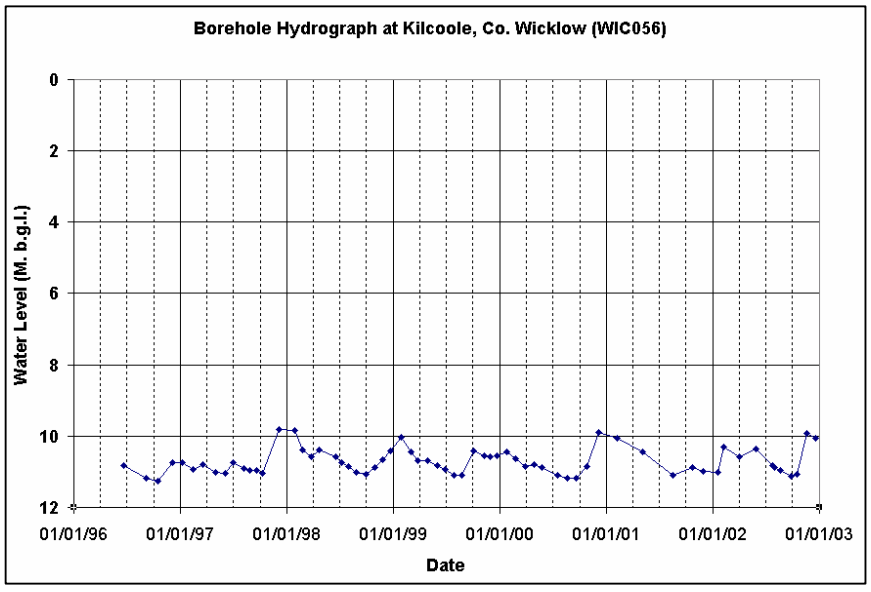
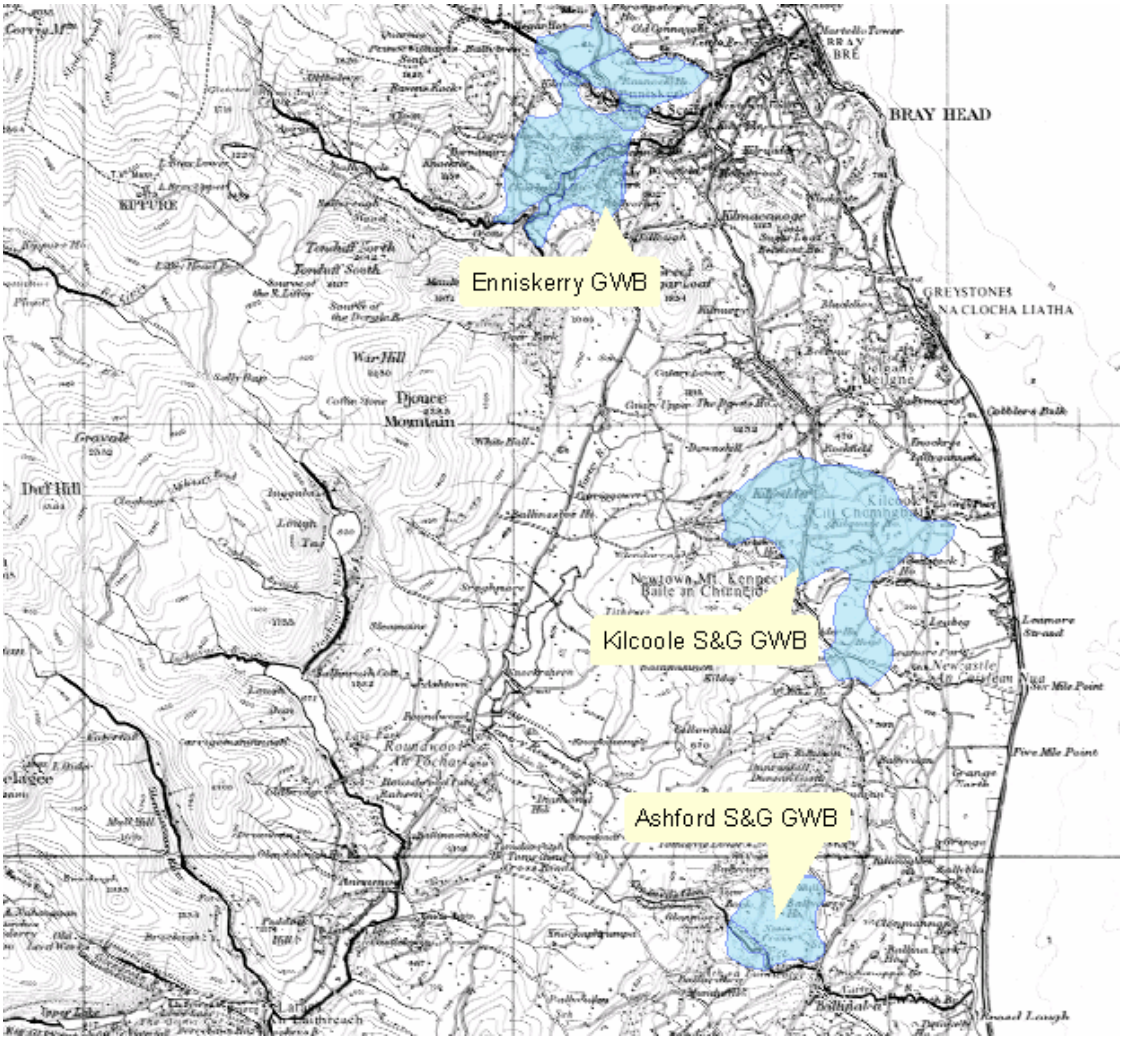
Kilcoole GWB: Summary of Initial Characterisation.

Hydrometric Area Local Authority		Associated surface water bodies	Associated terrestrial ecosystems	Area (km^2)
Wicklow Co. Co. Hydrometric Area 10		Newtownmountkennedy Newcastle	None	12
Topography		This GWB is located to the east of the village of Kilcoole, Co. Wicklow. The area lies below the eastern slopes of Mt. Kennedy. Within the GWB elevation falls from west to east, towards the Irish Sea coast, which is just over a kilometre east of the body. The topography of the area appears to be hummocky, a type of landscape often associated with gravel deposits. The majority of the body is contained between 10 and 100 m OD with some small areas extending up the slopes of Mt. Kennedy at 160 m OD.		
Geology and Aquifers	Aquifer type(s)	Lg: Locally Important Sand/Gravel Aquifer		
	Main aquifer lithologies	Sands & 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 the permeability and storativity in the aquifer are high. Roadstone's Ballyhorsey Gravel Pit is within this GWB. A 30 m deep borehole in Kilcoole Industrial Estate in 1979 yielded c. 436 m^3/d for a drawdown of about 10.5 m, giving a Specific Capacity of 41.5 m^3/d/m; better well construction and development would almost certainly provide higher yields. No PSA data are known, but a slot size of 1.8 mm was given for a length of Johnson wellscreen.		
	Thickness	By definition (DELG/EPA/GSI, 1999) this gravel deposit must be at least 10 m thick. Drilling evidence suggests the thickness of this aquifer varies from 10 to 30 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 is probably less than 20% of effective rainfall. The presence of less permeable layers in the deposit, even if thin, may 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 will 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	The available hydrochemical data for the GWB are sparse. Electrical conductivity is 450-650 µS/cm. The pH is typically around 7.5 and alkalinity 210-260 mg/l.		
Groundwater Flow Paths		Although the aquifer is permeable, groundwater velocity is slow, because storativity is high and water table gradient is usually low. Evidence of this can be seen in well hydrographs WIC 056 & 055 penetrating the sand and gravel aquifer. Discharge to rivers will not be flashy and will be sustained through drier periods of the year.		
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. For instance it is likely that surface water will discharge into the GWB along the higher western areas of the body, whereas in the east, near the coast, groundwater must exit the aquifer. The evidence from the hydrographs suggests that the water table is deep below ground even in the east (6 to 8 m at Kilcoole Industrial Estate) where it would be expected to be closest to the surface. Drainage density is low.		

Conceptual model	This GWB is located to the east of Kilcoole, Co. Wicklow, below the eastern slopes of Mt. Kennedy. The topography is hummocky, a type of landscape often associated with gravel deposits. 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, 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 rather 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: 10030 Borehole Hydrograph: Kilcoole (WIC56), Druids Glen (WIC055) EPA Representative Monitoring boreholes: Bulfords Farm (44) Druids Glen (55)
Information Sources	DELG/EPA/GSI (1999) *Groundwater Protection Schemes.* Department of Environment & Local Government, Environmental Protection Agency and Geological Survey of Ireland, joint publication. Wright G R, Woods L (2003) *County Wicklow Groundwater Protection Scheme.* Report to Wicklow County Council. Geological Survey of Ireland
Disclaimer	Note that all calculation and interpretations presented in this report represent estimations based on the information sources described above and established hydrogeological formulae






Enniskerry GWB
Kilcoole S&G GWB
Ashford S&G GWB
BRAY HEAD
GREYSTONES
NA CLOCHA LIATHA
KIPTURE
Djouce Mountain
War Hill
Dwf Hill
Newtown Mt. Kennedy
Baile an Chinnéidigh
Roundwood
An Tochar
Newcastle
An Caisleán Nua
Five Mile Point
Laragh
An Láithreach