Kilmuckridge GWB: Summary of Initial Characterisation.

Hydrometric Area Local Authority	Associated surface water bodies	Associated terrestrial ecosystems	Area (km2)
Hydrometric Area 12 Wexford Co. Co.	Rivers Sow, Blackwater, Castlebridge	Screen Hills	?110

Topography		This groundwater body is located in the southeast of Wexford, to the north of Wexford Harbour. The topography of the area is very hummocky ('kame and kettle') with relief averaging 30m, a type of topography closely linked with unconsolidated gravel deposits.
Geology and Aquifers	Aquifer type(s) Main aquifer lithologies	Lg: Locally Important Gravel Aquifer Morainic Sand and Gravel – Fine uniform sands but with some marls and gravel also occurring (Cullen 1980).
	Key structures.	Geological Structures are not anticipated to have a significant influence on this groundwater body.
	Key properties	Though data are limited, pumping test evidence suggests a transmissivity of around $50m^2/d$. Sand and gravel deposits typically have a high storativity.
	Thickness	By definition (DELG/EPA/GSI, 1999) this gravel deposit should be at least 10m thick. Drilling evidence in the area suggests the thickness is highly variable but may reach 44m. However, there is little or no evidence on which to draw a boundary based on aquifer thickness. The boundary is therefore based on the delineation of an area of 'excessively drained soils' (Gardiner & Ryan, 1964).
Overlying Strata	Lithologies	Irish Sea Till, typically low permeability marl, is known to overlie these deposits in places.
	Thickness	Thin
	% 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 should be 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 on to 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 & large known abstractions	Kilmuckridge ($925m^3/d$)
	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 limited evidence available for this GWB, but data suggest the water is Hard.
Groundwater Flow Paths		A sand and gravel aquifer has primary porosity. Although the aquifer is permeable, groundwater velocity is slower than in most Irish aquifers because storativity is high and water table elevations are usually subdued. This also means that discharge to rivers will not be flashy and will be sustained through drier periods of the year. Groundwater flow from this aquifer radiates from the peaks of the hilly deposits.
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. When river stage is above the water table in the aquifer, river water will seep into the gravel aquifer. The aquifer provides storage for this rainwater; when the river stage has reduced and the hydraulic gradient is reversed, water is released into the river. This bank storage indicates a highly interactive surface water - groundwater system and accounts for the fact that rivers bounded by gravel aquifers have less 'flashy' flooding and higher baseflow and dry weather flow.
Conceptual model	This small GWB is located in southeastern Co. Wexford. The aquifer is comprised of hummocky deposits of gravel. The area is generally located between 30 and 60 m OD. 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 deposits with a high storativity. Recharge occurs diffusely through the overlying topsoil. The aquifer is generally unconfined, but may be locally confined where lower permeability deposits overlie the sands. The depth to water will depend on the local topography. 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	Cullen, K.T. (1980*) Groundwater Development for Urban and Rural Water Supply Schemes*. Gardiner MJ, Ryan P (1964) *Soils of Co. Wexford.* An Foras Taluntais, Soil Survey Bulletin No. 1 Van Putten FAM (1978) The Blackwater-Screen Project. A hydro(geo)logical investigation of the catchment areas of the Sow river, the Blackwater river and the Castlebridge river (Co. Wexford. Unpublished M.Sc. dissertation, Free University of Amsterdam.
Disclaimer	Note that all calculation and interpretations presented in this report represent estimations based on the information sources described above and established hydrogeological formulae