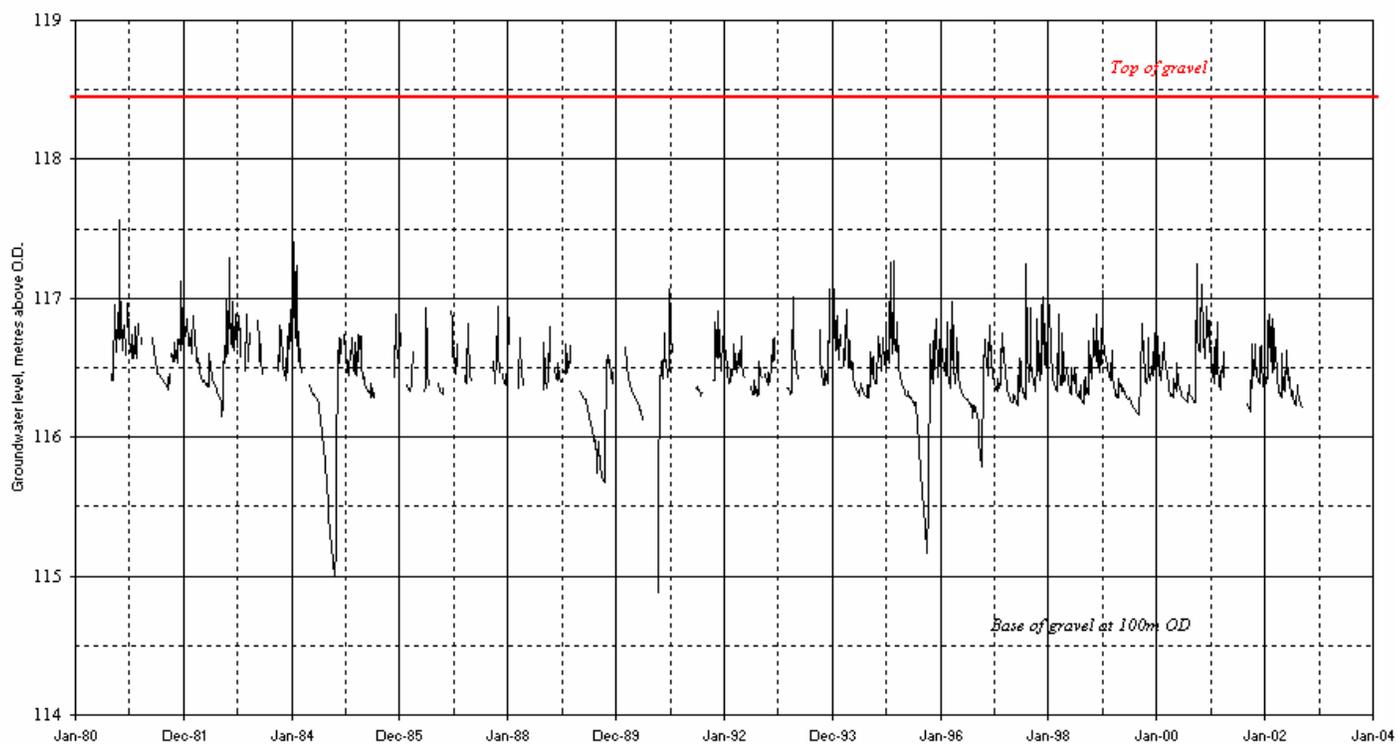


Kilmanagh Gravels GWB: Summary of Initial Characterisation.

Hydrometric Area Local Authority		Associated surface water bodies	Associated terrestrial ecosystems	Area (km ²)
Kings River Co. Kilkenny		King's River	None	28
Topography		This body lies within the valley of the Kilmanagh River, extending 10km southwards from Tullaroan to Callan. The highest point lies north of Tullaroan at 150 m OD. The lowest point lies south of Callan at 70m OD. Slopes are very low along the valley floor (typically 0.001 to 0.002). Away from the main river channels, the natural land drainage is moderate to good to the north of Kilmanagh, but very poor to the south.		
Geology and Aquifers	Aquifer type(s)	Rg: Regionally important gravel aquifer. The portion (10 km ²) north of Kilmanagh is generally unconfined. The remainder is confined.		
	Main aquifer lithologies	SAND & GRAVEL (Glacial outwash). Clays and silts are more common within the confined portion south of Kilmanagh. The underlying bedrock is mostly limestone and dolomite of other groundwater bodies. The dolomite is thought to contribute groundwater to the Sand and Gravel near the junction of the Munster and Kings Rivers near Callan.		
	Key structures.	Bedrock dips upgradient below the Body, hindering significant flow within the uppermost bedrock. Deep faults occur in the limestone area and allow deeper groundwaters in the dolomite aquifer to flow up into the Sand & Gravel aquifer in this area.		
	Key properties	Transmissivity 200 to 250 m ² /day. Porosity 0.1 to 0.25		
	Thickness	Saturated thickness typically 5 to 10m.		
Overlying Strata	Lithologies	Glacial till. Moderate to low permeability gravelly SILTS and CLAYS.		
	Thickness	Typically less than 1m north of Kilmanagh to 3m - 5m near Callan.		
	% area aquifer near surface	33% (comprising the unconfined portion north of Kilmanagh)		
	Vulnerability	Typically HIGH. Some extreme is mapped along the course of the Kilmanagh River.		
Recharge	Main recharge mechanisms	Rainfall recharge in unconfined portion. Kilmanagh river recharges the unconfined portion at times of lower water table. The river course is dry in certain years just upstream of Kilmanagh. Upwelling from dolomite aquifer in southern portion.		
	Est. recharge rates	<i>[Recharge Estimates to be added at a later date]</i>		
Discharge	Springs and large known abstractions	Kilmanagh and Tullaroan group schemes (est. combined discharge 800 m ³ /day). Callan public water supply spring (est. total flow 1440 m ³ /day) Several warm springs near junction of the Munster and Kings Rivers (est. combined flow 1000 m ³ /day). Oldtown, Lakyle Cross,		
	Main discharge mechanisms	Most discharge is to the Callan public water supply spring and the warm springs nearby. Some discharge to the Kilmanagh River upstream of Kilmanagh and to the Kings River near Callan. Low flows at Callan are very low (specific dry weather flow of 0.1 litres/sec/km ²) suggesting that the overall groundwater component of flow is also low.		
	Hydrochemical signature	The waters of this gravel body are "Hard" and have an average EC of around 650 (µs/cm). The chemical is regarded as Calcium-Bicarbonate and it is therefore likely that the gravels are mostly Calcareous .		
Groundwater Flow Paths		Figure X: No annual trends are apparent. Occasional sharp drops are observed, coinciding with periods when the Kilmanagh River has dried-up. This suggests that, in most summers, river recharge supports groundwater levels in the unconfined portion of the Body.		
Groundwater and Surface water interactions		Abstractions in unconfined portion likely to return waters to the body.		
Conceptual model	The body comprises a north-south oriented sand & gravel aquifer which is unconfined in the north and confined in the south. Rainfall recharge occurs mainly in the unconfined portion. In the summer months at least, river recharge from the Kilmanagh river also contributes to this portion. The presence of warm springs in this area suggests that some recharge is also provided by the dolomite aquifer below the confined portion. Flows through the Body move southwards from the unconfined portion, with some discharging back into the Kilmanagh River and some passing into the confined portion. Discharge mainly occurs to the series of small springs that lie close to the junction of the Munster and Kings Rivers, but some discharge is also expected directly to the Kilmanagh River (in the unconfined portion) and the Kings River (in the confined portion).			
Attachments		Well hydrographs for GSI station at 18/92 & EPA station KIK115		
Instrumentation		Stream gauge: 15024, 15047 GSI Borehole hydrograph: Kilmanagh 18/92 & 19/93. EPA Borehole Monitoring : Lakyle Cross (KIK115 - S385465), Water quality: Kilmanagh (#45 - S393525) and Callan		

Information Sources	Buckley R, Fitzsimons V (2002) County Kilkenny Groundwater Protection Scheme. Daly EP (1994) Groundwater Resources of the Nore River Basin. Geological Survey of Ireland internal report. Naughton, M.M. (1978). A Hydrogeological Study of the Upper Kilmanagh River Basin, Republic of Ireland. Unpublished (Research) MSc thesis. University of Alabama.
Disclaimer	Note that all calculation and interpretations presented in this report represent estimations based on the information sources described above and established hydrogeological formulae

**Well Hydrograph,
Kilmanagh-Kings River Catchment, Kilkenny (ref. 2315SWW233)
Gravels**



Well Hydrograph for EPA station KIK115

