Mullinavat GWB: Summary of Initial Characterisation.

Hydrometric Area Local Authority		Associated surface water bodies	Associated terrestrial ecosystems	Area (km^2)
16: S. Tipperary, Kilkenny, Waterford , Cork Co Cos		Lingaun, Pollanassa, Blackwater (Kilmacow), Smartcastle Stream, Suir, Clodiagh (Portlaw), Glasha (Waterford), Nier, Glenboy, Glengalla	Portlaw Woods, Toor Wood, Comeragh Mountains, Nier Vally Woodlands, Glenboy Wood.	672
Topography		The groundwater body consists of upland areas. In the east the groundwater body occupies the lower slopes of a series of mountain ranges: the most easterly are the Kilworth Mountains, east of these are the Knockmealdowns and then the Monavullagh Mountains. The groundwater body extends north here as do the mountains. Just south of Clonmel the body contains the Comeragh mountains, which tail off to the east as the groundwater body thins and circles the limestone synclines of the Suir valley, then expands again in Kilkenny The elevation rises again to a peak at Slievenamon at 721m.		
Geology and Aquifers	Aquifer type(s)	**Ll** – Locally Important Aquifer, moderately productive only in local zones **Pl** – Poor Aquifer, generally unproductive except for local zones		
	Main aquifer lithologies	BE - Ballindysert Formation - Dark grey slate & greywacke CI - Carrigmaclea Formation - Red, brown conglomerate & sandstone SL - South Lodge Formation - Greenish greywacke & shale AY - Ahenny Formation - Grey and blue slates, minor tuffs and wacke KM - Knockmealdown Sandstone Formation - Medium grained pink & purple sandstone BS - Ballytrasna Formation - Purple mudstone with some sandstone CM - Coumshingaun Conglomerate Formation – Boulder-pebble size conglomerate TR - Treanearla Formation - Green thick bedded conglomerate		
	Key structures.	This groundwater body bounds the Carrick-on-Suir limestone syncline on its northern and southern flanks. The extensive faulting present in the limestones extends some distance into this groundwater body. Elsewhere there is a high degree of faulting to the northeast throughout the Ahenny Formation, otherwise the groundwater body is relatively free of faults and fractures in the south.		
	Key properties	Regional-scale aquifer permeability and specific capacity estimates are considered to be 1 m/day and 2 m^3/d/m to 10 m^3/d/m respectively (from Daly 1992).		
	Thickness	The effective thickness is not expected to be large but the bedrock may be permeable to depths of around 25m in some areas.		
Overlying Strata	Lithologies	The thickness of subsoil over this groundwater body varies greatly. In Kilkenny the thickness is very low and there are large areas of rock close to surface. In Tipperary the thickness increases towards the limestone synclines. In north Waterford there is a mixture of subsoils: in the east there is till derived from sandstone, which thins out to the east where there is a large area of rock close to surface. South of Carrick-on-Suir there are deposits of shale till to the east and sandstone till to the west.		
	Thickness	Thickness of subsoil is less than three metres over most of the area of this body. There are areas of thicker subsoil in South Tipperary towards the limestone synclines.		
	% area aquifer near surface	50%		
	Vulnerability	EXTREME vulnerability in the east especially in Kilkenny and areas of HIGH to the west, in South Tipperary and north Waterford.		
Recharge	Main recharge mechanisms	Most recharge probably occurs in the elevated areas of the mountain ranges where the subsoil thickness is thinnest and the rainfall is highest.		
	Est. recharge rates	*[Information will be added at a later date]*		
Discharge	Springs and large known abstractions	Tullohea (204), Killusty (Spring), Garngemockler (46), Ballinvir (70), Commons (100), Clonmel East (Ahenny) WS (27), Windgap South GWS (11 & 20), Windgap Co-op (27), , Piltown/ Fiddown (780), Mullinavat Co-op Creamery (20), Readymis Ltd (Slieveroe - 11), Waterford WS (Abbeylands - 454), Whitestown WS, Clonea (Spring - 20), Mothel Well (Tober Chuain), Crehanagh WS (5), Garravoone (15), Joanstown WS (18), Ballyknock WS (5), Feddins WS (5), Rathgormack (30), Monadiha (18), Poulnagunoge (32), Lyreanearle (10), Knockalisheen WS (Spring - 20) Ballyrohan (145) , Ballymacarbry WS (200), Castlereagh (Spring - 5),		
	Main discharge mechanisms	Discharge from this groundwater body will be at the foot of the hills, which surround the R. Suir in this area. This will either be in the form of springs or in increased baseflow to rivers. There are springs lying at the base of a steep slopes either side of the valley at the point where the valley becomes more constrained downstream. Their location is believed to be topographically controlled, although this topography may be itself controlled by changes in rock type and by faulting.		
	Hydrochemical Signature	The bedrock strata of this groundwater body are **Siliceous.** The groundwaters are 'moderately soft' to 'moderately hard' and the electrical conductivity values range from 177 to 378 µs/cm which are moderate values.		

Groundwater Flow Paths	Groundwater flow paths in this area are considered to be short because the bedrock is not considered to constitute a major aquifer. Therefore it is likely that most groundwater flow circulates in the upper tens of meters, recharging and discharging in local zones. The age of the groundwater is considered to be young. The groundwater flow in this area may be quite fast since the hydraulic gradient, a reflection of the mountainous topography, will be high. The speed will decrease with depth as the permeability also decreases.
Groundwater & surface water interactions	Groundwater will discharge locally to streams and rivers crossing the aquifer and also to small springs and seeps. Owing to the poor productivity of the aquifers in this body it is unlikely that any major groundwater - surface water interactions occur. Baseflow to rivers and streams is likely to be relatively low.
Conceptual model	This groundwater body is defined by the Devonian sandstones (excluding the Kiltorcan Sandstone) in north Waterford and south Kilkenny within the Suir Catchment. The groundwater body will recharge in the elevated peaks of the various mountains that surround the Suir valley in this area. The groundwater flow will be towards the Suir valley and will initially concentrate into the north/south trending streams either side of the main valley. There will also be discharge at the base of the hills via springs.

Attachments	
Instrumentation	Stream gauge: 16046, *16015*, 16041, 16119, 16014, *16020*, 16026, 16040, 16018. Borehole Hydrograph: none EPA Representative Monitoring boreholes: S. Tipperary - Tullowhea (#22 – S321308), Kilkenny - Windgap Co-op (#89 - S412343), Waterford - Ballymacarbry WS (#110 – S195109)
Information Sources	Buckley, R. & Fitzsimons, V (2002) Piltown/Fiddown Public Supply Groundwater Source Protection Zones. Hudson, M. (1996) Ballyrohan Public Supply, Groundwater Source Protection Zones.
Disclaimer	Note that all calculation and interpretations presented in this report represent estimations based on the information sources described above and established hydrogeological formulae