

Cahore Point GWB: Summary of Initial Characterisation.

Hydrometric Area Local Authority	Associated surface water bodies	Associated terrestrial ecosystems	Area (km ²)
11 – Coastal Area Wexford Co Co.	Owenavarragh, Blackwater, Ballyedmond, Aughboy	Ballyteige Marsh, Ardamine Wood, Cahore Polders and Dunes, Ballyroe fen & lake, Wexford slob & harbour, Screen Hills	229
Topography		This body lies on the east coast of Wexford. It extends north from the most northeasterly tip of Wexford Harbour to Courtown. The highest point is Carrigroe Hill at 231m OD, which defines the eastern boundary of the groundwater body. Slopes reduce towards the sea, but there is a hummocky topography in the area around Screen village. The Screen area is ‘excessively drained’ and there are virtually no rivers. Other areas in the north are poorly drained.	
Geology and Aquifers	Aquifer type(s)	LI - Locally important aquifer, moderately productive only in local zones. PI – Poor aquifer, generally unproductive except in local zones. (A small area at the coast around Courtown.) The aquifer is probably confined in the north and unconfined in the south, as determined by the overlying strata lithology.	
	Main aquifer lithologies	To the south the bedrock consists of Cambrian grey-green greywackes and slates called the Newtown Formation (NN). To the north an Ordovician rock unit with dark grey slates and siltstone laminae called the Ballyhoge Formation (BH) overlies this. Other small formations outcrop from Courtown to Cahore Point.	
	Key structures.	The Bedrock has been folded by the Caledonian Orogeny. This does not appear to have enhanced the transmissivity of these rocks, perhaps because they did not shatter when folded. Transmissivity and permeability may be enhanced near some faults.	
	Key properties	Assumed transmissivity $5m^2/d$ - $20m^2/d$ in local zones, but generally less than $5m^2/d$ Porosity estimated as 0.01	
	Thickness	Effective thickness typically 30m	
Overlying Strata	Lithologies	The aquifer is mostly overlain by the Macamore Marl / Irish Sea Till. – The Irish Sea Till is a clay based, lime rich till containing small pebbles and shells, with occasional local lenses of sand and gravel. In the southeast the Screen sands & gravels comprise a thick layer of very sandy till which exhibits a kame-and-kettle topography, forming a very hummocky landscape.	
	Thickness	There is generally a thick covering of strata, typically 30m. Thinner subsoils are present towards the uplands in the east and thickness increases to the southeast up to 40m.	
	% area aquifer near surface	[Information will be added at a later date]	
	Vulnerability	[Information will be added at a later date]	
Recharge	Main recharge mechanisms	Most rainfall recharge in unconfined or outcropping areas of the rock, most likely in the uplands where overlying strata are thinner and to the southeast where they are composed of sands & gravels.	
	Est. recharge rates	[Information will be added at a later date]	
Discharge	Springs and large known abstractions (m ³ /d)	Public supply - Ballina (<40), Monamolin (<50), Oulart (<50), (est. total 140 m ³ /day) Ballimona (1740)? Group schemes – Ballybregagh, Tomberlomina, Garryniskbeg, Garryvadden, and Ballyroe. EPA – Ballycanew, Monamolin National School, Ballyedmond (Edward Harvey), Oulart (30), Blackwater, Ballygarran (370 – Gravels?)	
	Main discharge mechanisms	There is discharge to the Owenavarragh, Blackwater and other associated surface water bodies. There will be some discharge to the Irish Sea. The stream flow gauge at Courtown measures flow in the Owenavarragh river, but this would include water from the Gorey groundwater body to the north, which is a regionally important aquifer. Therefore the analysis of low flows is not representative of one groundwater body.	
	Hydrochemical Signature	Waters are mostly “moderately hard” with a few softer occurrences. The type signature is from Calcium-Bicarbonate to Magnesium-Bicarbonate. The bedrock strata in this groundwater body are Siliceous .	
Groundwater Flow	The samples do not show elevated chloride signature, which would be expected with closer proximity to the sea. The low transmissivity of the bedrock and lack of major abstractions limit saltwater intrusion. Groundwater flow will mostly occur in the top 20m of rock, and will occur in fractures. Flowpaths will be short, most discharging to the closest surface water body. The age of the groundwater is likely to be young (i.e. in the order of months at the most). Hydrochemical analyses show frequent bacteriological pollution and low Fe, which would imply short flow paths and low residence times.		
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	The Body comprises a locally important aquifer whose boundary is defined to the east and south by topographic highs, to the west by the coast and to the north by the boundary with the regionally important aquifer of the Campile Formation. Rainfall recharge occurs mainly in the outcropping areas and the unconfined portions underlying the Screen sands & gravels. Flow through the body moves eastwards from the topographic highs; most flow will occur in the top 20m of the rock. Due to poor transmissivity and short flow paths the proportion of groundwater flow to the sea will be low. The majority of discharge will take place to surface water bodies as baseflow.
Attachments	(Figure 1) Map of GW body incl. Aquifers, Monitoring boreholes, public supplies and water quality data (Figure 2) Durov plot.
Instrumentation	Stream gauge: Borehole Hydrograph: none EPA Representative Monitoring boreholes: Ballygarran (#39 - T150420)
Information Sources	Van Putten, F.A.M. (1978) The Blackwater – Screen Project. Free University of Amsterdam, M.Sc. thesis. Cullen, K.T. (1981) Preliminary Report on the Hydrogeology of North County Wexford. Unpublished report to Wexford Co. Co. Gardiner, M.J., & Ryan, P. (1964) Soils of County Wexford. National Soil Survey of Ireland. An Foras Taluntais, Dublin.
Disclaimer	Note that all calculation and interpretations presented in this report represent estimations based on the information sources described above and established hydrogeological formulae

Chemical Signature of Relatively Uncontaminated Waters (expanded Durov Plot)

