

### Balrothery GWB: Summary of Initial Characterisation.

Hydrometric Area Local Authority		Associated surface water bodies	Associated terrestrial ecosystems	Area (km <sup>2</sup> )
Dublin Hydrometric Area 08		Some small streams	Knock Lake (1203)	14.5
<b>Topography</b>		This GWB is located in north County Dublin along the coast to the north and east of Skerries. There is an area of higher elevation in the south of the GWB at Strifeland (96 m OD) from which the elevation falls in all directions, ultimately leading to the coast.		
<b>Geology and Aquifers</b>	Aquifer type(s)	PI: Poor aquifer, generally unproductive except for local zones		
	Main aquifer lithologies	Silurian Meta sediments		
	Key structures.	The dominant structural feature within the GWB is the Balbriggan Inlier containing faulting of approximate north-south and northeast-southwest trends. There is evidence to suggest that the faulting along the southern boundary of the GWB has intensely deformed the rocks in this area, which may lead to local areas of more permeable rocks.		
	Key properties	This aquifer is comprised of Lower Paleozoic rocks, which are commonly considered to be poor aquifers and transmissivities are presumed to be generally low (<10m <sup>2</sup> /d).		
	Thickness	The majority of groundwater flow occurs in the upper 10m. This section of the rock will be comprised of an upper shallow weathered zone of only a couple of metres overlying a fractured area, with the amount of groundwater flow reducing with depth.		
<b>Overlying Strata</b>	Lithologies	There are a complex variety of subsoil lithologies in this area. The dominant type of subsoil is till: Irish Sea till in the east, which is surrounded in places by till derived from Lower Paleozoic rocks. There is also some indication of gravel deposits around Skerries.		
	Thickness	The thickness of the deposits increases to the east from areas of outcrop at the higher elevations to the west and south.		
	% Area aquifer near surface	Low		
	Vulnerability	No vulnerability mapping is available for Co. Dublin.		
<b>Recharge</b>	Main recharge mechanisms	Diffuse recharge will occur via rainfall percolating through the subsoil. The proportion of the effective rainfall that recharges the aquifer is largely determined by the thickness and permeability of the soil and subsoil, and by the slope. Due to the generally low permeability of the aquifers within this GWB, a high proportion of the recharge will then discharge rapidly to surface watercourses via the upper layers of the aquifer, effectively reducing further the available groundwater resource in the aquifer.		
	Est. recharge rates	<i>[Information to be added at a later date]</i>		
<b>Discharge</b>	Springs and large known abstractions	Balbriggan Golf Club (109m <sup>3</sup> /d)		
	Main discharge mechanisms	This aquifer will discharge to the overlying rivers and streams in the area as baseflow. The low permeability rocks in the area will not sustain large summer baseflows and it is more likely that the majority of groundwater flow will discharge to the rivers after a short lag time in the weathered zone of the aquifer		
	Hydrochemical Signature	There is no hydrochemical analysis available for this GWB.		
<b>Groundwater Flow Paths</b>		The majority of groundwater flow in this area is considered to take place in the upper weathered zone of the aquifer. Groundwater flow will radiate from the recharge mound in the south of the body towards the rest of the area. Flow paths are not considered to extend further than the nearest surface water feature and will generally not be greater than 500m.		
<b>Groundwater &amp; surface water interactions</b>		The interaction between surface water and groundwater within this GWB is likely to be a local and dynamic phenomenon. Groundwater discharge will occur at local surface water bodies via shallow groundwater flow in the upper weathered zone of the aquifer.		

<b>Conceptual model</b>	This GWB is located in north County Dublin along the coast to the north and east of Skerries. There is an area of higher elevation in southern area of the GWB at Strifeland (96 m OD) from which the elevation falls in all directions ultimately leading to the coast. The GWB is composed primarily of low permeability rocks, although localized zones of enhanced permeability do occur. The small areas of volcanic rocks may have a higher permeability. Recharge occurs diffusely through the subsoils and via outcrops. The aquifers within the GWB are generally unconfined, but may become locally confined where the subsoil is thicker and/or lower permeability. Most flow in this aquifer will occur near the surface. In general, the majority of groundwater flow occurs in the upper 10 m, comprising a weathered zone of a few metres and a connected fractured zone below this. Flow path lengths are relatively short, and in general are between 30 and 300 m. Groundwater discharges to the numerous small streams crossing the aquifer, and to the coast.
<b>Attachments</b>	
<b>Instrumentation</b>	Stream gauge: 08014, 08060 Borehole Hydrograph: None EPA Representative Monitoring boreholes: None
<b>Information Sources</b>	McConnell, B., Philcox, M. and Geraghty, M., 2001. <i>Geology of Meath: A geological description to accompany the bedrock geology 1:100,000 scale map series, Sheet 13, Meath.</i> With contributions from J. Morris, W. Cox, G. Wright, and R. Meehan. Geological Survey of Ireland. 77 p.
<b>Disclaimer</b>	Note that all calculation and interpretations presented in this report represent estimations based on the information sources described above and established hydrogeological formulae

Formation Name	Code	Description	Rock Unit Group	Aquifer Classification
Malahide Formation	ML	Argillaceous bioclastic limestone, shale	Dinantian Lower Impure Limestones	L1
Skerries Formation	SS	Laminated blue-grey siltstone, sandstone	Silurian Metasediments and Volcanics	PI
Balbriggan Formation	GG	Variably coloured mudstone	Silurian Metasediments and Volcanics	PI

