

1st Draft Tory Island GWB Description September 2005

Tory Island GWB: Summary of Initial Characterisation.

Hydrometric Area Local Authority	Associated surface water features	Associated terrestrial ecosystem(s)	Area (km ²)
Donegal Co Co	Lakes: Loch O Thuaidh, Loch O Dheas.	Coastal Lagoons (O'Riain, 2004).	~ 3
Topography	Tory Island is located within 500 m of the mainland (Northwest Donegal GWB). It is an elongate island orientated northwest to southeast, approximately 4 km long and 1km across at its widest. The land surface slopes from the northeastern side of the island toward the southwest side. The island is bordered by a rocky coastline, with cliffs along the northern side. Elevations range from 0-70 mAOD. There are two small lakes located at the western end of the island. The population of the island is recorded at 133 people (Census 2002).		
Geology and Aquifers	Aquifer categories	The main aquifer category is: PI: Poor aquifer which is generally unproductive except for local zones.	
	Main aquifer lithologies	The island comprises the Thor Granite and Ards Quartzite.	
	Key structures	Tory Island is part of a circular igneous body that extends from the mainland.	
	Key properties	There are no data available. Transmissivity data available for the granites in the Leinster region is in the order of 20-30 m ² /d. Storativity is expected to be low (<0.5%). The data are inadequate to calculate groundwater gradients, however, these are expected to be greater than 0.01.	
	Thickness	Most groundwater flux will be in the uppermost part of the aquifer.	
Overlying Strata	Lithologies	No data. A large proportion of the island has rock outcropping.	
	Thickness	No data available.	
	% area aquifer near surface	<i>[Further Information to be added at a later date]</i>	
	Vulnerability	<i>[Further Information to be added at a later date]</i>	
Recharge	Main recharge mechanisms	Diffuse recharge is expected to occur via rainfall percolating through the subsoil and rock outcrops.	
	Est. recharge rates	<i>[Information to be added to and checked]</i>	
Discharge	Large springs and large known abstractions (m³/d)	There are no known large springs or large abstractions.	
	Main discharge mechanisms	Shallow groundwater is likely to discharge mainly to the small lakes, or to seeps along the coastline, but the limited bedrock transmissivity means that the baseflow component of the total streamflow will be low.	
	Hydrochemical Signature	No data are available within this particular GWB.	
Groundwater Flow Paths		Groundwater flow is expected to be concentrated in fractured and weathered zones and in the vicinity of fault zones. Flow paths are likely to be short (30-300 m) with groundwater discharging rapidly to the lakes, or to seeps along the coastline. Groundwater flow directions are expected to follow topography.	
Groundwater & Surface water interactions		Shallow groundwater will discharge locally to the small lakes, 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 is likely to be relatively low.	
Conceptual model	<ul style="list-style-type: none"> • Tory Island is located within 500 m of the mainland (Northwest Donegal GWB). It is an elongate island orientated northwest to southeast, approximately 4 km long and 1km across at its widest. The land surface slopes from the northeastern side of the island toward the southwest side. The island is bordered by a rocky coastline, with cliffs along the northern side. • The GWB is composed primarily of low transmissivity rocks. • Groundwater flow is expected to be concentrated in fractured and weathered zones and in the vicinity of fault zones. • Diffuse recharge is expected to occur via rainfall percolating through the subsoil and rock outcrops. • Flow paths are likely to be short (30-300 m) with groundwater discharging rapidly to the two lakes, or to seeps along the coastline. • Flow directions are expected to follow topography. • It is unlikely that any major groundwater - surface water interactions occur. Baseflow is likely to be relatively low. 		

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Attachments	Figure 1.
Instrumentation	Stream gauges: None EPA Water Level Monitoring boreholes: None EPA Representative Monitoring points: None
Information Sources	Long, C.B. & McConnell B.J. (1997) <i>Geology of North Donegal: A geological description to accompany bedrock geology 1:100,000 scale map, Sheet 1 and part of Sheet2, North Donegal</i> . With contributions from P. O'Connor, K. Claringbold, C. Cronin and R. Meehan. Geological Survey of Ireland. 87pp. O' Riain, G., (2004). <i>Water Dependent Ecosystems and Subtypes Draft Report</i> . WFD Support Projects. Compass Informatics in association with National Wildlife and Parks Service (DEHLG).
Disclaimer	Note that all calculation and interpretations presented in this report represent estimations based on the information sources described above and established hydrogeological formulae.

Figure 1. Tory Island.

