

1st Draft Omey Island GWB Description August 2005

Omey Island GWB: Summary of Initial Characterisation.

Hydrometric Area Local Authority	Associated surface water features	Associated terrestrial ecosystem(s)	Area (km ²)
32 Galway Co Co	Lakes: Fahy, Namackan. These two small lakes drain via streams to the coast.	Machair and hard oligo-mesotrophic waters with benthic vegetation (O'Riain, 2004).	~ 2
Topography	Omey Island is located within 500 m of the mainland (Clifden GWB). The land surface generally gently sloping to flat. The island is bordered by a rocky coastline interspersed with sandy beaches. Elevations range from 0-20 mAOD. There are several small streams and lakes.		
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 Omey Granite.	
	Key structures	Omey Island is part of a circular igneous body that extends to the mainland. There are no structural features mapped.	
	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	Till and blanket peat are present. 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, streams 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 available, however, the signature in the Clifden GWB is predominantly Ca-Mg-HCO ₃ .	
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 two lakes, streams or to seeps along the coastline. Groundwater flow directions are expected to follow topography.		
Groundwater & Surface water interactions	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"> • Omey Island is located within 500 m of the mainland (Clifden GWB). The land surface generally gently sloping to flat. The island is bordered by a rocky coastline interspersed with sandy beaches. Elevations range from 0-20 mAOD. There are several small streams and lakes. • 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, streams or to seeps along the coastline. • Flow directions are expected to follow topography. • The rock units are generally of low permeability, thus baseflow to rivers and streams 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	Morris, J.H., Long, B., McConnell, J.B. Archer (1995). <i>Geology of Connemara. An introduction to the physical structure, ancient environments and modern landscapes of parts of northwest Galway and southwest Mayo, to accompany the bedrock geology 1:100,000 scale map series, sheet 10, Connemara.</i> Geological Survey of Ireland Map Series Report. 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. Omey Island.

