Bear Island GWB: Summary of Initial Characterisation.

Hydrometric Area Local Authority	Associated surface water features	Associated terrestrial ecosystem(s)	Area (km^2)
21 Cork Co Co	Lakes: Lomanagh Lough, Lough Alimin Several unnamed streams.	No groundwater dependent terrestrial ecosystems (O'Riain, 2004).	~17

Topography	Bear Island is located in Bantry Bay, approximately 500m off the mainland, with a population of approximately 200 (Census 2002). Elevations range from 0-250mAOD, with the highest ground in the centre of the island. South of the main road that crosses the island east to west, the terrain is generally rugged with steep slopes. North of the road slopes are more gentle. Figure 1 shows the location and boundaries of the GWB. The island is bordered by a rocky coastline, which is comprises cliffs along much of the southern edge of the island. There are several small streams and lakes.	
Geology and Aquifers	**Aquifer categories**	The main aquifer category is: **Ll:** Locally important aquifer which is moderately productive only in local zones.
	Main aquifer lithologies	Dinantian Mudstones & Sandstones, Basalts and other volcanic rocks.
	Key structures	The main structural trend is SW-NE. Widespread faulting and folding is associated with the Variscan Orogeny in the south of Ireland. This is noticeable from the streams and some of the roads that cross the island parallel to the structural trend. Several large faults are mapped on the island, which trend SW-NE and E-W.
	Key properties	Transmissivities will be low, ranging 2-20 m^2/d. Aquifer storativity will be low in all rock units. Groundwater gradients are likely to be in the range 0.01 to 0.04.
	Thickness	Most groundwater flow occurs within the top 15-20 m of the aquifer, in the layer that comprises a weathered zone of a few metres and a connected fractured zone below this. Deeper flows occur along generally isolated faults or significant fractures.
Overlying Strata	**Lithologies**	Till is present. A large proportion of the islands comprises outcropping rock. The southern half of the island has not been mapped by Teagasc Spatial Analysts Group.
	Thickness	Subsoil is generally less than 3 m thick.
	% area aquifer near surface	*[Further Information to be added at a later date]*
	Vulnerability	*[Further Information to be added at a later date]*
Recharge	**Main recharge mechanisms**	Diffuse recharge is expected to occur via rainfall percolating through the subsoil and rock outcrops.
	Est. recharge rates	*[Information to be added to and checked]*
Discharge	**Large springs and large known abstractions (m^3/d)**	No data
	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	[taken from Beara – Sneem GWB] Groundwater is generally moderately soft to moderately hard, with low nitrate values, and low pH. Iron and Manganese can often be a problem.
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, 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	• Bear Island is located in Bantry Bay. Elevations range from 0-250mAOD. The islands are bordered by a rocky coastline. There are several small streams and lakes. • The GWB is composed 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 lakes, streams or to seeps along the coastline. • Flow directions are expected to follow topography. • Owing to the poor productivity of the aquifers in this body it is unlikely that any major groundwater - surface water interactions occur.
Attachments	Figure 1.
Instrumentation	**Stream gauges:** None **EPA Water Level Monitoring boreholes:** None **EPA Representative Monitoring points:** None
Information Sources	O' Riain, G., (2004). *Water Dependent Ecosystems and Subtypes Draft Report.* WFD Support Projects. Compass Informatics in association with National Wildlife and Parks Service (DEHLG). Pracht M (1996) *Geology of Dingle Bay: A geological description, to accompany bedrock geology 1:100,000 scale map, Sheet 20, Dingle Bay*. Geological Survey of Ireland. 58pp. Pracht M (1997) *Geology of Kerry-Cork: a geological description, to accompany bedrock geology 1:100,000 scale map, Sheet 21, Kerry - Cork.* Geological Survey of Ireland. 70pp Pracht M, Sleeman AG (2002) *Geology of West Cork: A geological description, to accompany bedrock geology 1:100,000 scale map, Sheet 24, West Cork.* Geological Survey of Ireland. 79pp. Wright GR, Conlon V (1998) *County Kerry Aquifer Classification.* Unpublished GSI report produced for Kerry County Council. Geological Survey of Ireland.
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. Bear Island GWB.