

Adamstown GWB: Summary of Initial Characterisation.

Hydrometric Area Local Authority		Associated surface water bodies	Associated terrestrial ecosystems	Area (km ²)
13 –Coastal area Wexford Co Co		Corock, Owenduff, Tintern Abbey Stream and Barrow estuary.	Boley Fen, Barrow River Estuary	181
Topography		The drainage pattern in this aquifer reflects the reduction in elevation from north to south. The highest point within the groundwater body area is Carrickbyrne Hill at 234m OD. The lowest areas in the groundwater body are to the west at the mouth of the River Barrow around Campile, which is at sea level.		
Geology and Aquifers	Aquifer type(s)	<p>Mostly: Rf: Regionally Important Fractured aquifer. With Smaller areas of: LI: Locally important aquifer which is moderately productive only in local zones PI: Poor aquifer which is generally unproductive except for local zones</p>		
	Main aquifer lithologies	<p>Mostly: Ordovician Volcanics With Smaller areas of: Devonian Old Red Sandstones Granites & other Igneous Intrusive rocks Ordovician Metasediments This rock contains areas of felsic volcanic rock which are believed to be the main water bearing components.</p>		
	Key structures.	The bedrock is highly fractured and broken due to folding and faulting in the Caledonian Orogeny, which formed the Campile Syncline. Superimposed upon this are a series of minor folds giving rise to pronounced cleavage. The crystalline volcanic rocks will have ruptured under the mountain building forces that affected the whole area. The rock units are steeply dipping to the south.		
	Key properties	Wells tested at Adamstown and Carrickbyrne Hill have yields of 1400m ³ /d, specific capacities of 44.7m ³ /d/m and transmissivity values in the region of 150m ² /d		
Overlying Strata	Thickness	The effective thickness of this aquifer could be quite large. Well logging data from Kilkenny shows large fractures open at depths of 50m.		
	Lithologies	The Clogga Till is a stone clay sand based till containing large angular cobbles and boulders chiefly of shale and granite. There are also some significant silty alluvium deposits close to the Barrow River estuary. In places there appear to be sand and gravel layers of about 6.5m between the bedrock and the overlying silt.		
	% area aquifer near surface	<i>[Information will be added at a later date]</i>		
	Vulnerability	<i>[Information will be added at a later date]</i>		
Recharge	Main recharge mechanisms	Rainfall recharges largely in the north where overlying strata may be thinner in the uplands. Also in locations like Carrickbyrne Hill which appear to coincide with areas where felsic volcanics outcrop.		
	Est. recharge rates	<i>[Information will be added at a later date]</i>		
Discharge	Springs and large known abstractions (m ³ /d)	Adamstown (1400), Carrigbyrne (204).		
	Main discharge mechanisms	The most likely areas for this groundwater body to discharge will be to the associated surface water bodies. This may occur mostly at the geological contact between this groundwater body and the body to the south. It is possible that water could be forced to the surface and into surface water bodies here.		
	Hydrochemical Signature	Low mineralized nature is noteworthy. Waters monitored are shown to be moderately soft to slightly hard. Average electrical conductivity values are Carrickbyrne 418, Tellerought 283 and Ballinamona 384 (µs/cm), low values which confirm low mineralised water. There is evidence of saltwater intrusion at Great Island, Wexford. The bedrock strata of this groundwater body are Siliceous .		
Groundwater Flow Paths		Groundwater flow may be in long flowpaths from north to south. There may be a small/local groundwater divide where some flow will be to the west towards Campile and the Barrow River estuary and the rest will flow south. In areas like Carrickbyrne there will probably be elevated groundwater levels which would radiate from the peak but probably taper towards the south with the regional flow system. Groundwater flow has been estimated at 8m/yr in the extreme west area of the body at Great Island Power Station.		
Groundwater and surface water interactions		There is likely to be an important groundwater connection to Boley Fen, which lies on a geological contact between two groundwater bodies of differing aquifer classification. The relevance of this requires further investigation.		

Conceptual model	<p>This groundwater body is defined to the northwest and southeast by the extent of the Campile Formation. The Barrow River defines the western boundary and the boundary of Hydrometric area 13 defines the northern boundary.</p> <p>Groundwater is mostly recharged in the north and at various hills in the area. Regional flow is mostly north to south. There is probably a local groundwater divide in the area east of Campile. West of this divide, groundwater discharges to the Barrow Estuary and northeast of this, probably discharges to the associated surface water bodies, especially at the geological contact at the southern boundary of the body.</p>
Attachments	
Instrumentation	<p>Stream gauge: 14066</p> <p>Borehole Hydrograph: none</p> <p>EPA Representative Monitoring boreholes: Carrickbyrne WS (#9 - S831245), Tellerought GWS (#49 - S756214), Ballinamona (#37 - S710178).</p>
Information Sources	<p>Pow, S.J., & Brems, D.L. (2001) An Environmental Impact Assessment of Great Island Generating Station upon the Local Soil and Groundwater Quality. ESB International.</p> <p>Cullen, K.T. (1980) Groundwater Development for Urban and Rural Water Supply Schemes. IAH (Irish Group).</p>
Disclaimer	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 Category
Ballylane Formation	BY	Green & grey slate with thin siltstone	Ordovician Metasediments	PI
Campile Formation	CA	Rhyolitic volcanics, grey & brown slates	Ordovician Volcanics	Rf
Dolerite	D		Granites & other Igneous Intrusive rocks	Rf
Granite (undifferentiated)	Gr		Granites & other Igneous Intrusive rocks	Rf
Harrylock Formation	HL	Red conglomerate, sandstone & siltstone	Devonian Old Red Sandstones	LI
Maulin Formation	MN	Dark blue-grey slate, phyllite & schist	Ordovician Metasediments	LI
Oaklands Formation	OA	Green, red-purple, buff slate, siltstone	Ordovician Metasediments	LI