**Aran Island (Donegal) GWB: Summary of Initial Characterisation.**

<table>
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<tr>
<th>Hydrometric Area Local Authority</th>
<th>Associated surface water features</th>
<th>Associated terrestrial ecosystem(s)</th>
<th>Area (km²)</th>
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</table>

**Topography**

Aran Island is located approximately 3km from the mainland (Northwest Donegal GWB). Aran is a rugged mountainous island, characterised by steep slopes and cliffs. Elevations range from 0-220 mAOD. The population of the island is recorded at 543 people (Census 2002).

**Aquifer categories**

The main aquifer category is:

- Pl: Poor aquifer which is generally unproductive except for local zones.

**Main aquifer lithologies**

The island is composed mainly of the Ards Quartzite. Granite is present along the southern and eastern margins of the island.

**Key structures**

A large NW-SW trending syncline is mapped in the southern half of the island. The bedding dips from 45 to 70 degrees.

**Key properties**

There are no data available. Low transmissivities are expected. 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.

**Geology and Aquifers**

**Thickness**

Most groundwater flux will be in the uppermost part of the aquifer.

**Lithologies**

Only the eastern half of the island is mapped. Blanket Peat is mapped on the uplands. Till and outcropping rock are present on the lower slopes. A large proportion of the island has rock outcropping.

**Thickness**

1-3m (Donegal Groundwater Protection Scheme).

**% area aquifer near surface**

Further Information to be added at a later date.

**Vulnerability**

Extreme vulnerability (Donegal Groundwater Protection Scheme).

**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 (m³/d)**

None known.

**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
- Aran Island is located 3km from the mainland (Northwest Donegal GWB). Aran is a rugged mountainous island, characterised by steep slopes and cliffs.
- 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 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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<th>Attachments</th>
<th>Figure 1.</th>
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<tr>
<td>Instrumentation</td>
<td>Stream gauges: None EPA Water Level Monitoring boreholes: None EPA Representative Monitoring points: None</td>
</tr>
</tbody>
</table>

#### Disclaimer
Note that all calculation and interpretations presented in this report represent estimations based on the information sources described above and established hydrogeological formulae.

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Figure 1. Aran Island.