Beltra Lough North GWB: Summary of Initial Characterisation.

<table>
<thead>
<tr>
<th>Hydrometric Area</th>
<th>Associated surface water features</th>
<th>Associated terrestrial ecosystem(s)</th>
<th>Area (km²)</th>
</tr>
</thead>
<tbody>
<tr>
<td>34</td>
<td><strong>Rivers:</strong> Adergool <strong>Lakes:</strong> Bofeenaun, More, Beg, Levally, Nambrackkeagh.</td>
<td>Lough Conn and Lough Cullin (000519)</td>
<td>25</td>
</tr>
</tbody>
</table>

**Topography**

The GWB occupies an area from Beltra to L. Conn, comprising a NE-SW trending valley named Glen Nephin. It occupies the area between Nephin Beg Mountain range and high ground to the south of the valley. Elevations range from 10-130 m AOD. The main surface drainage is north and northwest to L. Conn, which provides the eastern boundary. The northern and southern boundaries are with the poor aquifers of the Foxford and Lahardaun GWB’s. The western boundary is the surface water divide with hydrometric area 32 and is the boundary with Beltra Lough South GWB.

**Aquifer categories**

- **Lm:** Locally important aquifer which is generally moderately productive (14 km²).
- **Rkc:** Regionally important karstified aquifer dominated by conduit flow (11 km²).

**Main aquifer lithologies**

This GWB is composed of Dinantian Sandstones and Dinantian Pure Bedded Limestones. See Table 1 for a list of rock units.

**Key structures**

Faults trending N-S and SW-NE are the main fault sets. The beds dip 10-20° in various directions.

**Key properties**

In general, Dinantian Sandstones, given their dominant sandstone lithology, which generally results in a higher fissure permeability, has the potential to be a transmissive aquifer. Data are limited to 1 well in the neighbouring Beltra Lough South GWB. The data suggests a transmissivity in the order of 10-20 m²/d. In the vicinity of faults, it may be higher. Storativity in the aquifer is expected to be relatively high, in the order of 2%. Water levels are 0-7 m below ground level. Gradients are expected to be greater than 0.001.

There are no data for the Dinantian Limestones. Transmissivities are expected to range from 1 m²/d to greater than 250 m²/d. Storativity is expected to be low - approximately 0.01-0.02 (Daly, 1985). Gradients are expected to be greater than 0.0005.

**Geology and Aquifers**

**Lithologies**

The subsoils are dominated by till and blanket peat.

**Overlying Strata**

There are no data specific to the GWB, however, data from neighbouring GWB’s suggest that the thickness are 3-10 m.

**% 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 occurs via rainfall percolating through the subsoil and rock outcrops. A high proportion of the available recharge will discharge to the streams where there is blanket peat and low permeability till present.

**Ext. recharge rates**

[Information to be added to and checked]

**Discharge**

**Large springs and large known abstractions (m³/d)**

None identified.

**Main discharge mechanisms**

The main groundwater discharges are to the streams, rivers and lakes.

**Hydrochemical Signature**

It has a CaHCO₃ signature. [n=2]

- Alkalinity (mg/l as CaCO₃): 250, 262;
- Total Hardness (mg/l): 252, 262;
- Conductivity (μS/cm): 552, 577; Iron 0.5, 3.0 mg/l; Manganese 0.07, 0.78 mg/l.

High alkalinites and hardness (in the order of 300 and 350 mg/l CaCO₃) are expected for the Limestones. Electrical conductivity is also expected to be high, approximately 700 μS/cm.

**Groundwater Flow Paths**

Groundwater flow is expected to be concentrated in fractured and weathered zones and in the vicinity of fault zones. There is a well connected fissured zone, enabling an element of regional groundwater flow. Flow paths can be expected to be relatively long, and are likely to be up to 2000 m. Groundwater flow directions are expected to follow topography, generally to the northwest.
Groundwater & Surface water interactions

Groundwater will discharge locally to streams and rivers crossing the aquifer and also to 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 to rivers and streams is likely to be relatively low.

Conceptual model

- The GWB occupies an area from Beltra to L. Conn, comprising a NE-SW trending valley named Glen Nephin. It occupies the area between Nephin Beg Mountain range and the ground to the south of the valley. Elevations range from 10-130 m AOD. The main surface drainage is north and northwest to L. Conn.
- The groundwater body is composed of Dinantian Sandstones and Dinantian Pure Bedded Limestones. Transmissivity in the sandstones is in order of 10-20 m²/d. In the vicinity of faults, it may be higher. Storativity in the aquifer is expected to be relatively high, in the order of 2%.
- Transmissivities are expected to range from 1 m²/d to greater than 250 m²/d in the Dinantian Pure Bedded Limestones. Storativity is expected to be low - approximately 0.01-0.02.
- Groundwater flow is expected to be concentrated in fractured and weathered zones and in the vicinity of fault zones. Gradients are expected to be greater than 0.0005. Water levels are generally 0-7 m below ground level.
- Recharge occurs diffusely through the subsoils and rock outcrops.
- It has a CaHCO₃ signature.
- Flow paths can be expected to be relatively long, and are likely to be up to 2000 m. Groundwater flow directions are expected to follow topography, generally toward the L. Conn.
- Groundwater will discharge to and contribute baseflow to streams, rivers and lakes.

Attachments

Table 1 & Figure 1.

Instrumentation

- Stream gauges: None
- EPA Water Level Monitoring boreholes: None
- EPA Representative Monitoring points: None

Information Sources


Disclaimer

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

<table>
<thead>
<tr>
<th>StratCode</th>
<th>UnitName</th>
<th>Descrit</th>
<th>RockUnit</th>
<th>AquiferCat</th>
</tr>
</thead>
<tbody>
<tr>
<td>MN</td>
<td>Minnaun Sandstone Formation</td>
<td>X-bedded sandstone and siltstone.</td>
<td>Dinantian Sandstones</td>
<td>Lm</td>
</tr>
<tr>
<td>MU</td>
<td>Mullaghmore Sandstone Formation</td>
<td>Sandstone, siltstone &amp; shale</td>
<td>Dinantian Sandstones</td>
<td>Lm</td>
</tr>
</tbody>
</table>

Figure 1. Boundaries and Location of GWB