**Bellmullet Sand/Gravel GWB: Summary of Initial Characterisation.**

| Hydrometric Area<br>Local Authority | Associated surface water features | Associated terrestrial ecosystem(s) | Area ($km^2$) |
|---|---|---|---|
| 33<br>Mayo Co. Co. | **Rivers**: several unnamed streams issue from the GWB.<br>**Lakes**: Termoncarragh Lake is located at the northern end of the GWB. | Mullet/Blacksod Bay Complex (O Riain, 2004). | 6 |

| | | |
|---|---|---|
| **Topography** | | There is a sand/gravel aquifer composed of a circular sand/gravel deposit and wind blown sand, lying to the west of Bellmullet. It is located in a relatively low-lying flat area, situated between 0 and 50m OAD. Several small streams issue from either side of the deposit, flowing into the sea on both sides of the peninsula; west into the Atlantic and east into Trawmore Bay. The location of the GWB is shown in Figure 1. |
| **Geology and Aquifers** | **Aquifer categories** | A circular sand/gravel deposit is encompassed by a wind blown sand deposit. The sand/gravel portion of the aquifer is approximately 1 $km^2$, and combined with the windblown sand it is approximately 6 $km^2$. There are no data currently available on the thicknesses of the sand/gravel deposit. There are outcrops on the western edge of the deposit where it meets the sea and the central portion of the aquifer is approximately 50 m OAD. Therefore it is likely that a significant proportion of the deposit is greater than 10 m thick and possibly up to 50 m thick toward the centre of the deposit. There is a least one well which abstracts groundwater from the deposit for the Belmullet WS. The deposit is classified as **Locally Important Sand and Gravel Aquifer (Lg)** (DELG/EPA/GSI (1999). |
| | **Main aquifer lithologies** | Glaciofluvial sand/gravel deposits and alluvial sand/gravel deposits (Meehan, 2004). |
| | **Key structures** | N/A |
| | **Key properties** | There are no hydrogeological data available apart from abstraction data for the Belmullet WS. A well at Emlybeg provides 250 $m^3/d$ according to EPA data.<br>Sand/gravel aquifers generally consist of unconsolidated coarse grained material, usually containing less than 8% fines (O'Suilleabháin, 2000). Typically transmissivity is ranges from 200 – 1500 $m^2/d$. Storativity is expected to be high (10%).<br>Groundwater is likely to be unconfined as there are no overlying strata. The data are inadequate to calculate groundwater gradients, but these are expected to be greater than 0.001. |
| | **Thickness** | There are no data available however thicknesses are likely to be greater than 10 m over much of the aquifer. |
| **Overlying Strata** | **Lithologies** | There are no overlying strata. |
| | **Thickness** | N/A/ |
| | **% 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 unsaturated sand/gravel. Due to the high permeability of sand/gravel, a high proportion of the available recharge will percolate down to the water table. |
| | **Est. recharge rates** | *[Information to be added to and checked]* |
| **Discharge** | **Large springs and large known abstractions ($m^3/d$)** | Emlybeg 250 $m^3/d$ |
| | **Main discharge mechanisms** | Groundwater discharges to small streams that flow across low lying parts of the deposits. |
| | **Hydrochemical Signature** | There are no data available. |
| **Groundwater Flow Paths** | | The length of flow paths depend on the size of the sand/gravel deposit. In general, locally important sand/gravel aquifers are expected to have relatively short flow paths, i.e., up to several hundreds of metres. |
| **Groundwater & Surface water interactions** | | Groundwater is expected to discharge to the streams and to the sea. Hydraulic connection between the groundwater in the aquifer, the streams and the sea is expected to be high. Water levels close to the sea are expected to fluctuate in correspondence with the tide. There ecosystems that are locally dependent on groundwater (O'Riain, 2004). |

| | |
|---|---|
| **Conceptual model** | • The GWB consists of sand/gravel and wind blown sand.<br>• The deposits are located in a relatively low-lying flat area, situated between 0 and 50 m OAD. Several small streams issue from either side of the deposit, flowing into the sea on both sides of the peninsula; west into the Atlantic and east into Trawmore Bay.<br>• The aquifer comprises sand/gravel and wind blown sand.<br>• Transmissivity is expected to range from 200 to 1500 $m^2$/d.<br>• The sand/gravel aquifer is expected to be greater than 10 m thick.<br>• The data are inadequate to calculate groundwater gradients, but these are expected to be generally greater than 0.001.<br>• Diffuse recharge occurs via rainfall percolating through the unsaturated sand/gravel.<br>• Groundwater discharges to small streams.<br>• The length of the flow paths is in the order of several hundred metres. |
| **Attachments** | Figure 1. |
| **Instrumentation** | **Stream gauges:**<br>**EPA Water Level Monitoring boreholes:**<br>**EPA Representative Monitoring points:** |
| **Information Sources** | DELG/EPA/GSI (1999) *Groundwater Protection Schemes.* Department of the Environment and Local Government, Environmental Protection Agency and Geological Survey of Ireland.<br>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).<br>O'Suilleabháin, C., (2000). *Assessing the boundary between high and moderately permeable subsoils.* Unpublished MSc., University of Dublin. Department of Civil, Structural and Environmental Engineering, Trinity College Dublin.<br>Meehan, R.T., (2004) *Subsoils Map for county Mayo*. Map produced as part of EPA Soil and Subsoil Mapping Project (formerly FIPS-IFS). Teagasc, Kinsealy. |
| **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 Location and extent of Belmullet Sand/gravel GWB