

Customer Information Note: Aquifer Designation Dataset version 2 (England only)

What are the new aquifer designations?

The Environment Agency helps to protect groundwater by identifying different types of aquifer - underground layers of water-bearing permeable rock or drift deposits from which groundwater can be extracted.

From 1 April 2010 the Environment Agency's Groundwater Protection Policy will be using aquifer designations that are consistent with the Water Framework Directive. These designations reflect the importance of aquifers in terms of groundwater as a resource (drinking water supply) but also their role in supporting surface water flows and wetland ecosystems.

The aquifer designation data covers England and is based on 1:50 000 geological mapping provided by the British Geological Survey.

The aquifer designation dataset is available for licence from the British Geological Survey.

The maps are split into two different type of aquifer designation:

- Superficial (Drift) - permeable unconsolidated (loose) deposits. For example, sands and gravels.
- Bedrock -solid permeable formations e.g. sandstone, chalk and limestone.

The maps display the following aquifer designations:

Principal Aquifers

These are layers of rock or drift deposits that have high intergranular and/or fracture permeability - meaning they usually provide a high level of water storage. They may support water supply and/or river base flow on a strategic scale. In most cases, principal aquifers are aquifers previously designated as major aquifer.

Secondary Aquifers

These include a wide range of rock layers or drift deposits with an equally wide range of water permeability and storage. Secondary aquifers are subdivided into two types:

Secondary A - permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. These are generally aquifers formerly classified as minor aquifers;

Secondary B - predominantly lower permeability layers which may store and yield limited amounts of groundwater due to localised features such as fissures, thin permeable horizons and weathering. These are generally the water-bearing parts of the former non-aquifers.

Secondary Undifferentiated - has been assigned in cases where it has not been possible to attribute either category A or B to a rock type. In most cases, this means that the layer in question has previously been designated as both minor and non-aquifer in different locations due to the variable characteristics of the rock type.

Unproductive Strata

These are rock layers or drift deposits with low permeability that have negligible significance for water supply or river base flow.

Data and Environment Agency policy

If the new aquifer designations result in a different Groundwater Protection Policy applying to a particular location, the Environment Agency will continue working to any agreements previously made, provided there is clear evidence of those agreements.

For the purposes of the Groundwater Protection Policy the following default position applies, unless there is site specific information to the contrary:

- if no superficial (drift) aquifers are shown, use the bedrock designation;
- in areas where the bedrock designation shows unproductive strata (the uncoloured areas) use the superficial (drift) designation;
- in all other areas, use the more sensitive of the two designations (e.g. if secondary drift overlies principal bedrock, adopt an overall designation of principal)

What about the previous groundwater vulnerability maps?

If you have been used to using the older EA groundwater vulnerability maps, aquifers previously designated as major and minor now become principal and secondary respectively.

The groundwater vulnerability maps have not been completely withdrawn because the new maps do not provide information on surface soils. You will still need to refer to the groundwater vulnerability maps if you are assessing activities on undisturbed natural soils (e.g. agricultural land) and need the soil classes. In this case you should disregard the old geological classes and combine the soils information with the new aquifer designations. The older groundwater vulnerability maps are still available upon request from the Environment Agency's National Customer Contact Centre.

Attribution

The following table describes the attribution that is contained in the table associated with the aquifer designation data.

Field name:	Description:
ORIGINAL_V	Original vulnerability code
Typology	This is the primary field. Aquifer designation (as described above): • Principal • Secondary (undifferentiated) • Secondary A • Secondary B • Unproductive
Version	The version number of the underlying DiGMapGB-50 ¹ data

Limitations

- The aquifer designation dataset has been developed at 1:50 000 scale and should not be used at larger scales (e.g. 1:10 000). This equates to a 50m accuracy on the ground, so all spatial queries against the data should be done with a minimum 50m buffer.
- The aquifer designation dataset is created as vector polygons and is available in a range of GIS formats, including ArcGIS (.shp), ArcInfo Coverages and MapInfo (.tab). More specialised formats may be available but may incur additional processing costs.
- The aquifer designation dataset is based on, and limited to, an interpretation of the records in the possession of The British Geological Survey and Environment Agency at the time the data set was created.

Contact information

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¹ DiGMapGB-50: The BGS digital geological map at 1:50,000.
http://www.bgs.ac.uk/products/digitalmaps/DiGMapGB_50.html