

Implementation guidance on geological codification within AGS files submitted to National Highways

1 Introduction

The data transfer format of the Association of Geotechnical and Geoenvironmental Specialists (AGS) is a non-proprietary means of transferring ground investigation and monitoring data between parties involved in construction projects¹. The use of the AGS data transfer format is mandated for National Highways projects in CD 622, clause 2.29², which states that:

Factual ground investigation data in AGS format shall be supplied with the submission of the factual report.

In December 2020 the AGS data management working group released the latest version of the AGS data format (AGS 4.1)³. Within this version, and the previous versions, the concept of Abbreviations is used in many of the data groups (Headings within the groups that make use of an abbreviation are given a data type of “PA”). Where an abbreviation is used, it must be described in the ABBR group (according to Rule 16 of the AGS format).

This note gives guidance on the appropriate use of codes within AGS data supplied to National Highways. It assumes use of the latest AGS version (4.1). It describes the relevant fields that shall be populated, and the appropriate abbreviation codes to be used. It is recommended that this note is read alongside the AGS data format document.

The codes described within this guidance document relate to geological codification.

2 Benefits of a unified approach

There are benefits to the use of a unified approach to codification within AGS files submitted to National Highways, which are accrued to the supply chain creating the files and to future users of the files. Many of these are also of benefit to the wider industry. These are as follows:

- A requirement for consistent codification, e.g. for geological units, in ground investigation specifications for highways schemes should reduce the requirement for AGS data generators to maintain multiple code lists;
- The use of this approach will promote consistent codification within industry, potentially prompting other large organisations that procure ground investigations to follow suit;
- Consistent codification of geological units may allow the British Geological Survey (BGS) to more easily consume AGS data files, creating an efficiency of effort for wider industry benefit;
- AGS data on National Highways’ Geotechnical and Drainage Management Service (GDMS) is intended for re-use, e.g. should a scheme be undertaken in an area where previous work has

¹ <https://www.ags.org.uk/data-format/>

² CD 622 Managing Geotechnical Risk (formerly HD 22/08, BD 10/97, HA 120/08). Design Manual for Roads and Bridges <https://www.standardsforhighways.co.uk/dmrb/search/ff5ed991-71ed-4ff2-9800-094e18cd1c4c>

³ Association of Geotechnical and Geoenvironmental Specialists, December 2020. Electronic Transfer of Geotechnical and Geoenvironmental Data, AGS4, Edition 4.1.

been undertaken. Consistent codification will ensure that these files can more readily be re-used;

- AGS data on GDMS is also used for various research and development tasks, where again consistent codification will ensure easier use of the valuable data available.

3 Geological codification

Codification of the geological units encountered in a ground investigation are recorded in the GEOL group. This group name has been maintained through all version of the AGS data transfer format. In this guidance note, *geological unit* is used as terminology that includes non-natural materials (such as made ground). Within the latest AGS version (4.1), the following headings allow the use of abbreviation codes:

- GEOL_LEG (Legend code)
- GEOL_GEOL (Geology code)
- GEOL_GEO2 (Second geology code)
- GEOL_BGS (BGS Lexicon code)

AGS files submitted to National Highways shall include geological codification completed in the GEOL group as follows:

GEOL_LEG (Legend code)

This heading provides codes that are typically used by software to determine the hatch pattern for materials plotted on an exploratory hole log.

This heading shall be populated.

Legend codes shall be based on the values shown for this heading on the AGS website (www.ags.org.uk). The abbreviations lists can be found here: <https://www.ags.org.uk/data-format/ags4-data-format/ags-4-1-data-format/abbreviations-abbr-list/> (NOTE: a login is required to view this page, see details on the AGS website).

GEOL_GEOL (Geology code)

This heading is the primary means of codifying materials encountered in an exploratory hole and is typically used by software to filter the data during analysis (e.g. to produce parameter plots for each of the materials encountered).

This heading shall be populated.

Values may be decided by the creator of the data, in accordance with the specifications for the investigation(s) being undertaken, recognising that some ground investigation specifiers use their own standard code lists.

The GEOL_GEOL code may match the value in the GEOL_BGS heading if no alternative codification system is used.

GEOL_GEO2 (Second geology code)

This heading is a secondary means of codifying materials encountered in an exploratory hole and typically augments the GEOL_GEOL codes to allow further filtering of data during analysis.

This heading may be populated.

GEOL_BGS (BGS Lexicon code)

This heading allows codification of materials encountered in an exploratory hole using a standardised code list developed by the British Geological Survey (BGS).

This heading shall be populated.

This heading was introduced in AGS version 4 and is used in the latest version 4.1. This is the heading within which the codes populated will allow National Highways to gain many of the benefits outlined in Section 2, and therefore its accurate completion is essential.

The GEOL_BGS heading shall be populated using the LEX code for the materials encountered in the ground investigation. LEX (for Lexicon of Named Rock Units) is a codification methodology created by the British Geological Survey, details of which can be found as follows:

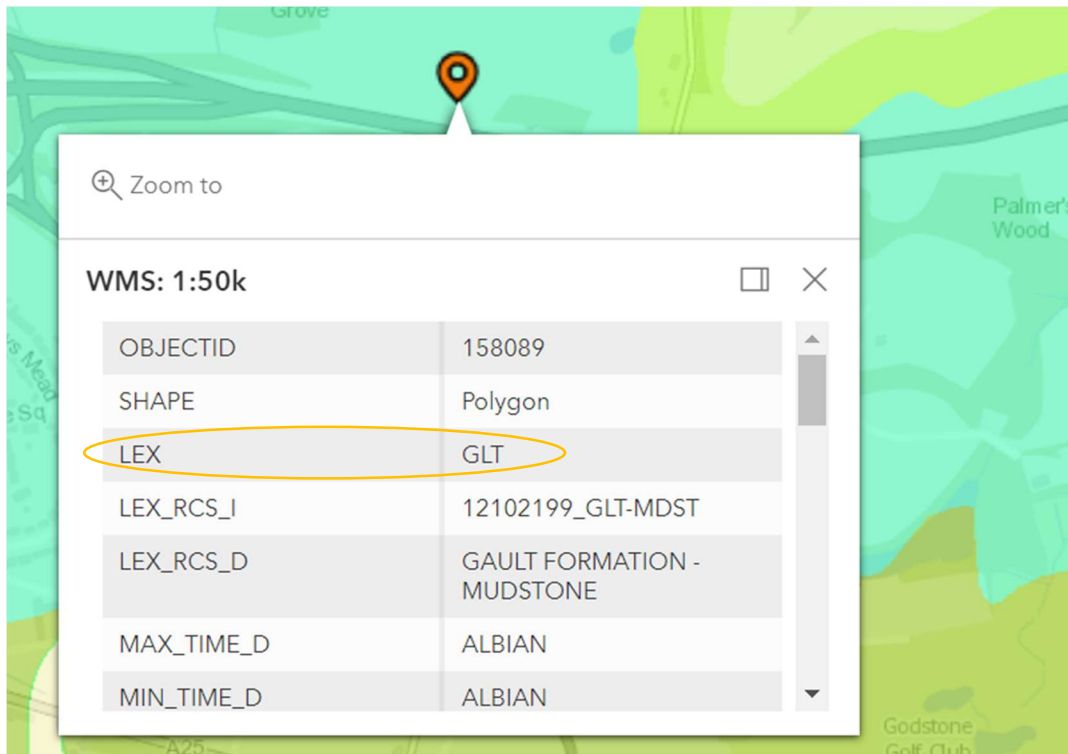
- The BGS Lexicon of Named Rock Units is described here:
<https://www.bgs.ac.uk/technologies/the-bgs-lexicon-of-named-rock-units/>
- At this location on the BGS website, lexicon codes can be searched, and details of the rock units viewed
- Lexicon codes exist for all levels of the stratigraphic hierarchy. For consistency, codes used shall be those that appear on the electronic version of the BGS 1:50,000 scale geological maps. Superficial and Bedrock geology maps are available National Highway's GDMS or on the BGS Geology of Britain viewer⁴. More detailed levels of the stratigraphic classification may be used, e.g. at levels below those used on the 1:50,000 scale maps. Lexicon codes relating to higher levels of the stratigraphic hierarchy should not be used,
- For made ground, the lexicon code 'FILLU' shall be used,
- For topsoil, the lexicon code 'SOIL' shall be used.

On GDMS, the 1:50,000 scale geological maps for superficial deposits and bedrock may be used to determine LEX codes for use in the GEOL_BGS heading. GDMS displays the uppermost superficial and bedrock units at a location, so the lexicon codes for deeper units may have to be determined from other outcrops on the map away from the exploratory hole location, or through use of the BGS lexicon.

Figure 1 shows an example where the bedrock geology map has been selected to display the associated metadata for the uppermost unit at the selected location. In this example, the LEX code of 'GLT' represents the Gault Formation from the Lexicon of Named Rock Units.

⁴ <https://mapapps.bgs.ac.uk/geologyofbritain/home.html>

Figure 1 – Determination of LEX code from the 1:50,000 scale bedrock geological map on GDMS



4 Help and feedback

Help on the application of this guidance can be obtained from the National Highways Safety, Engineering & Standards Geotechnical Team (geotechnicsteam@highwaysengland.co.uk) and the GDMS Support Team (support@hagdms.com).

Feedback and comments on this guidance would also be welcomed.