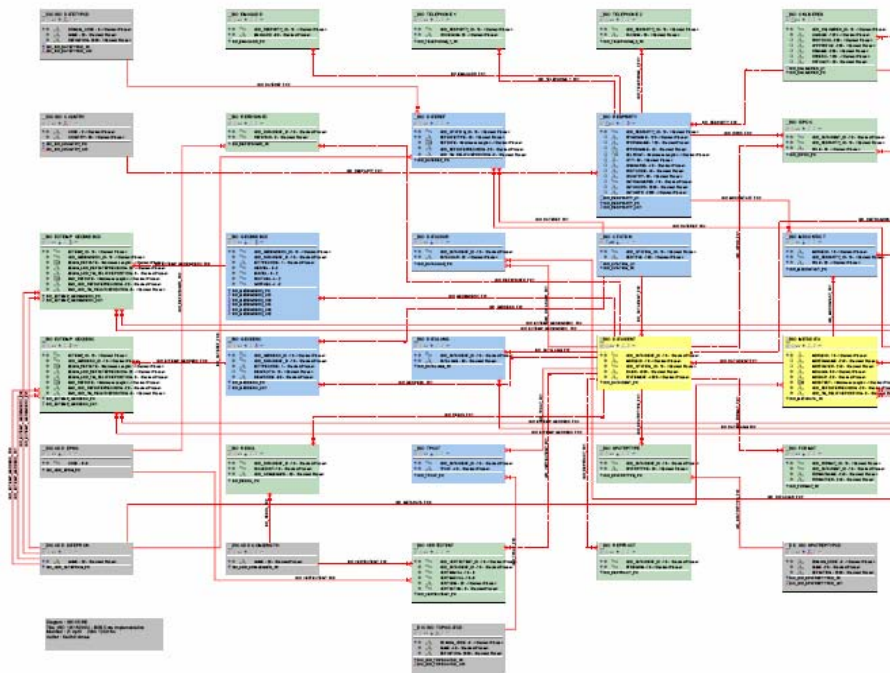




Corporate Metadata 2006 - 2007

Information Management Programme
Internal Report OR/07/13



BRITISH GEOLOGICAL SURVEY

INFORMATION MANAGEMENT PROGRAMME

INTERNAL REPORT OR/07/13

Corporate Metadata 2006 - 2007

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Contributor/editor

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Front cover

Cover picture shows the entity relationship diagram of the core metadata elements of the discovery metadata

Bibliographical reference

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Foreword

It is important that all activities that give rise to, or otherwise acquire, substantial datasets must create and maintain metadata records (in line with current BGS metadata standards) relating to those datasets. Without such records, data that could be used and potentially re-used by future researchers, and exploited commercially or educationally, may become obscure or lost. The UK government recognizes the importance of metadata as part of the e-Government Interoperability Framework (e-Gif) and has mandated that all government information systems create metadata.

This report describes the work on the acquisition, maintenance and development of systems to hold and deliver metadata records in the financial year April 2006 to March 2007.

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Ms E L Ball

Mr S R Burden

Mr K A Holmes

Contents

Foreword	i
Acknowledgements	i
Contents	i
Summary	iii
1 Introduction	1
2 Discovery Metadata	1
2.1 Facts and Figures	1
2.2 Internet pages.....	3
3 Technical Metadata	7
3.1 Technical Metadata Alerts	8
3.2 Objects in the BGS schema	9
4 Development Progress	12
4.1 Maps Metadata.....	12
4.2 ISO Metadata Database	12
4.3 GEMINI Metadata Standard.....	12

4.4	Distribution of metadata to portals	13
4.5	GIS Metadata	13
Appendix 1	Registered BGS Datasets as of 31st March 2007	14
Appendix 2	Technical Metadata Alerts.....	23
	Glossary.....	23
	References	24

FIGURES

Figure 1	Datasets by Business Recovery Classification	2
Figure 2	Activity Status of Registered Datasets	2
Figure 3	Datasets by Management Sector	3
Figure 4	Publicly Available Discovery Metadata – Home Page.on the BGS Web Site.	4
Figure 5	List of all datasets	4
Figure 6	Keyword A to Z	5
Figure 7	Keyword hierarchy	5
Figure 8	Browse by location	6
Figure 9	Metadata Summary	7
Figure 10	Typical Alert Chart	8
Figure 11	Progress on Alert 45, Documentation of Triggers	9
Figure 12	Technical Metadata on Objects in the BGS Schema	10
Figure 13	Described Objects in the BGS Schema	11
Figure 14	Unregistered Objects in the BGS Schema	11

Summary

This report describes the work taking place in BGS on metadata, its acquisition, maintenance and the systems used to hold and deliver it.

Facts and figures are given for the main metadata holdings, Discovery and Technical, together with an overview of recent developments in metadata applications.

1 Introduction

The project covers work in several areas, maintenance and update of Discovery and Technical Metadata together with enhancements to metadata structures and applications. In addition, work has begun on adding another metadata collection to the database; GIS metadata, metadata on shape files produced in ArcGIS.

2 Discovery Metadata

Metadata records are subject to continual maintenance and update. All records designated as “Vital” using the National Archives classification for Business Recovery have been verified as complying with the BGS implementation of British Standard BS ISO 19115:2003 with the abstracts verified against the guidelines for creating GIGateway Approved metadata. Records detailing datasets designated as “Important” are currently being updated. In parallel with this the records are being checked for their continuing relevance or the need for disposal.

2.1 FACTS AND FIGURES

Currently there are 454 discovery metadata records; records for an extra 46 datasets have been entered in the year 2006-2007.

2.1.1 Business Recovery

The National Archives uses the Business Recovery classifications:

Vital - Vital records are those records without which an organisation could not continue to operate. They are the records which contain information needed to re-establish the business of the organisation in the event of a disaster and which protect the assets and interests of the organisation. It is estimated that up to ten per cent of an organisation's records can be classified as vital.

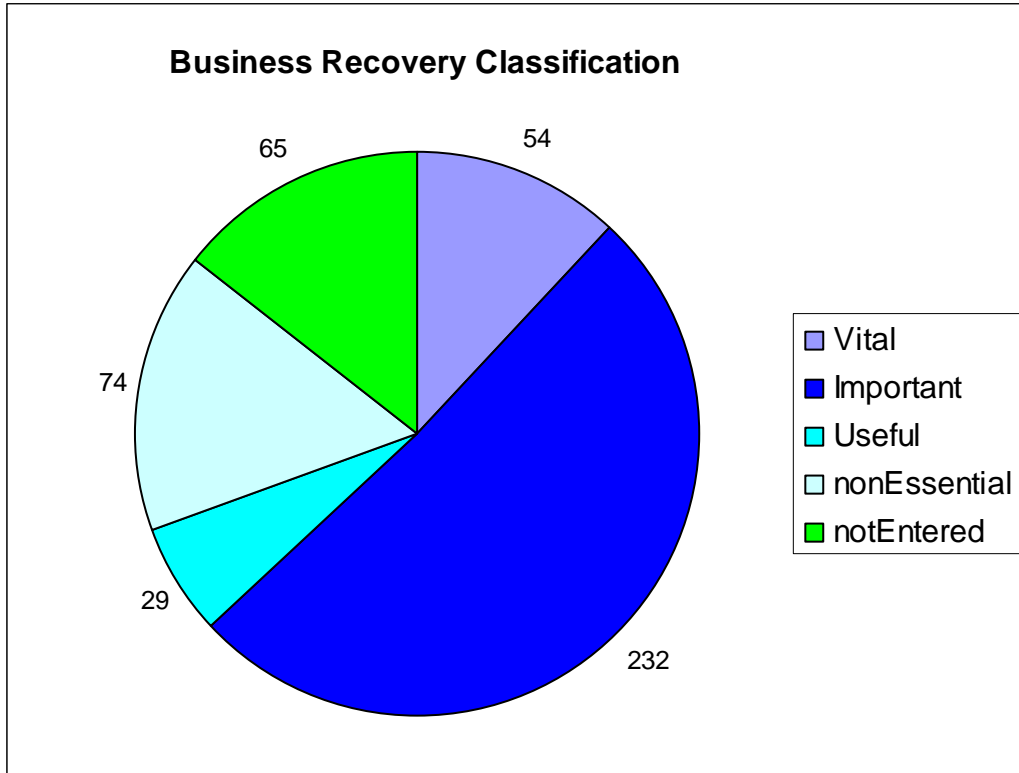
Important - can be reproduced from original sources but only at considerable expense

Useful - loss would cause temporary inconvenience

Non-essential - no value beyond immediate purpose

Figure 1 illustrates the numbers of BGS datasets which fall into the different Business Recovery classifications.

Figure 1 Datasets by Business Recovery Classification

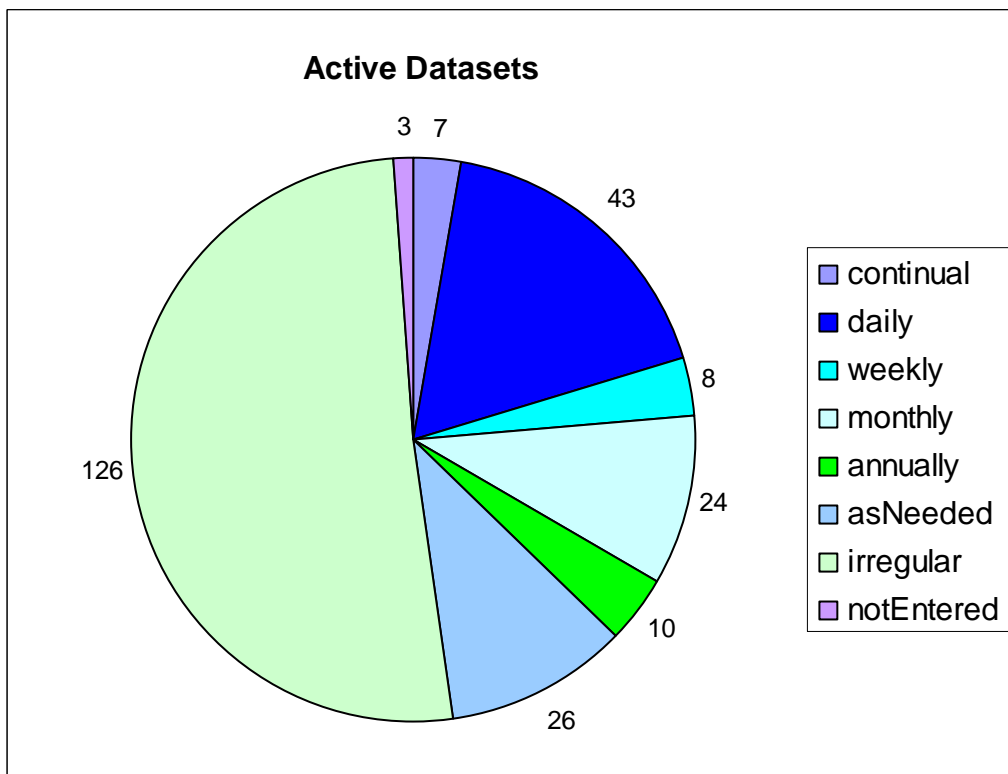


The value notEntered denotes datasets awaiting classification.

2.1.2 Active Datasets

Of the datasets listed, 247 are still active, i.e. data are being added on a regular or irregular basis. Figures for the status of all active datasets are given in figure 2.

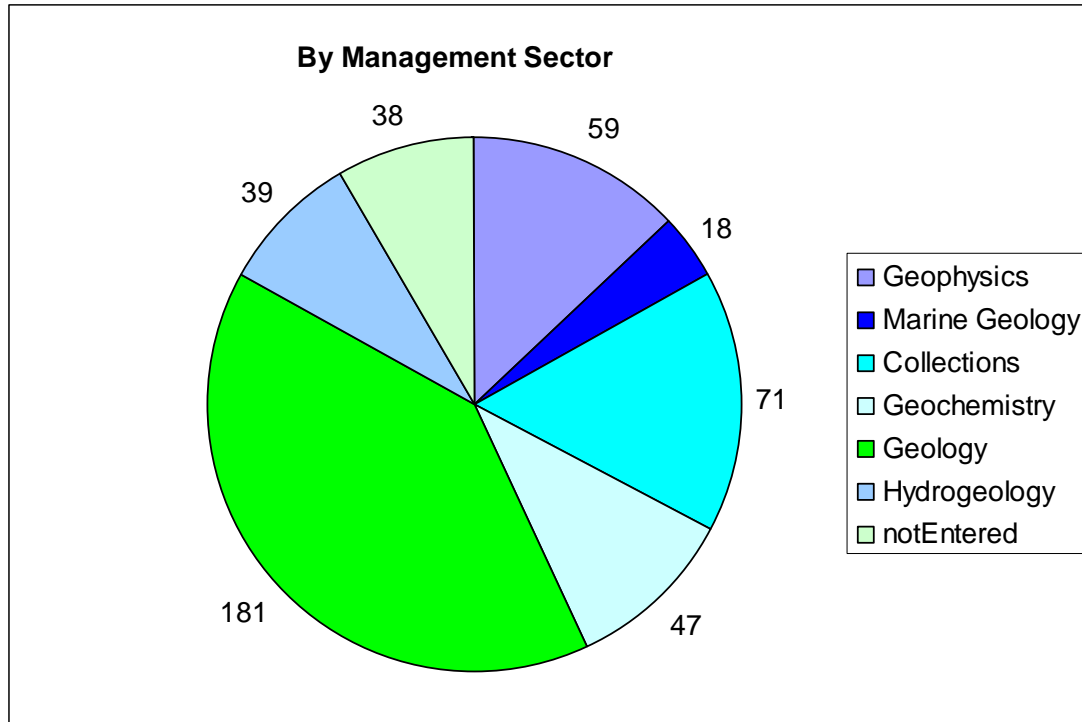
Figure 2 Activity Status of Registered Datasets



2.1.3 Management Sector

The metadata records are assigned to specific management sectors, each sector being overseen by the appropriate Information Management Programme senior data manager. Figure 3 shows the numbers of datasets for each sector.

Figure 3 Datasets by Management Sector



2.2 INTERNET PAGES

The Internet pages have been redesigned, extracting up to date information from the ISO compliant tables. This work was carried out in conjunction with staff working on the IS Maintenance project, most notably Simon Burden who was responsible for the design of the pages.

The pages can be accessed via the BGS pages on the Internet or via the “Public Discovery Metadata” button on the Geoscience home page of the Intranet.

These are static pages which are updated periodically from the database. There are fewer pages than records in the tables because publicly viewable records have to fulfil two further criteria than those records available to BGS personnel:

- 1) Records have been fully verified by the Metadata manager as compliant with applicable standards.
- 2) Records are non confidential.*


*This applies to the confidentiality of the metadata record not the data within the dataset itself. The default is “unclassified”, which indicates no viewing restrictions. The Freedom of Information Act means BGS must provide sufficient reason for information to be restricted to BGS staff only. If the presence of a dataset cannot be advertised on the Internet justification must be given.

Various searches of the metadata are available including a drill-down key phrase hierarchy page developed this year.

The home page for the metadata, figure 4, describes the four search options available.

Figure 4 Publicly Available Discovery Metadata – Home Page.on the BGS Web Site.

BGS discovery metadata




These pages describe the many datasets held by the British Geological Survey. These pages are derived from our discovery metadata database, which complies with ISO standard 19115:2003 for geographic information metadata. Each dataset page contains a description of the dataset and full details of the location and type of data held.

- ▶ **List of all datasets**
 This page has a list of all available Discovery Metadata datasets, sorted alphabetically by name with links to the full details for each dataset.
- ▶ **Keyword A to Z**
 This page has an A to Z list of all the keywords used to describe the Discovery Metadata datasets. Each keyword links to a list of matching datasets, or directly to the full details of single dataset matches.
- ▶ **Keyword hierarchy**
 This page displays a hierarchical list of the keywords used to describe the Discovery Metadata datasets. Each keyword is listed with all directly matching datasets and also to those keywords below it in the hierarchy.
- ▶ **Browse by location**
 This page has an A to Z list of all the areal extents (locations) used to locate the Discovery Metadata datasets. Each location links to a list of matching datasets, or directly to the full details of single dataset matches.

The list of all datasets is a scroll down alphabetical list as illustrated in figure 5.

Figure 5 List of all datasets



British Geological Survey
NATURAL ENVIRONMENT RESEARCH COUNCIL

BGS Discovery Metadata

A to Z list of all 202 BGS datasets

1" Miscellaneous Sheets Files South West England.
10k Sheet Data Files.
50k Sheet Data Files.
Aa Indices.
Acidity of stream water
Additional Information (AI): Scotland And Northern England.
Airborne Magnetic Survey Records For United Kingdom And Adjacent Areas.
All BGS Raw Biostratigraphy Collections And Data
Archival Card Index Of Quarries In England And Wales.
Arsenic in soil
Arup Review Of Mining Instability In Great Britain
BGS Chemistry Records Pre 2000
BGS Petrological Collection Database.
BGS Photograph Collection
BGS Reports Collection.
Biostratigraphical Interpretative Data Files
Biostratigraphical Masterpacks.
Biostratigraphy Reports - Onshore And Offshore, 1953-2000.
Borehole Notifications.

Home
Dataset A to Z
Keyword A to Z
Keyword heirarchy
Location A to Z

Keyword A to Z, figure 6, lists the datasets by keyword. Keywords are part of each metadata record and are taken from the BGS Geoscience Thesaurus, (a digital implementation and adaptation of the 4th edition of the Australian Geoscience, Minerals and Petroleum Thesaurus). The thesaurus has approximately 8000 terms with an inbuilt hierarchy allowing multiple broader terms and lists of related terms.

Figure 6 Keyword A to Z

Acidity (1)	Geological mapping (4)	Ores (5)
Aerial geophysical surveys (1)	Geological maps (13)	Ostracoda (1)
Aerial magnetic surveys (2)	Geological processes (1)	Palaeoenvironment (1)
Aerial photographs (1)	Geology (55)	Palaeontology (19)
Aerial photography (1)	Geomagnetic stations (1)	Palaeozoic (4)
Aggregates (2)	Geomagnetism (7)	Palynology (2)
Analysis (1)	Geophysical logs (2)	Pelite (1)
Analytical chemistry (1)	Geophysical surveys (13)	Permeability (4)
Aquifers (2)	Geophysics (33)	Petroleum exploration (1)
Archaeology (3)	Glacial sediments (1)	Petrology (3)
Archives (1)	Grain size analysis (1)	Photography (3)
Aromatic hydrocarbons (5)	Graphic logs (5)	Planning (3)
Arsenic (1)	Gravel (2)	Pollution (5)
Atlases (1)	Gravity surveys (2)	Porosity (2)
Barite (3)	Ground water (3)	Production (2)
Bed rock (1)	Ground water movement (4)	Quarrying (13)
Biostratigraphy (11)	Gypsum (1)	Quaternary (1)
Boreholes (38)	Hematite (1)	Radioactivity surveys (3)
Bulk sampling (1)	Historical geology (1)	Radon detection (1)
Carbon dioxide (1)	Hydrocarbons (8)	Radon gas (1)
Carbon isotopes (1)	Hydrogeology (8)	Refractory clays (1)

The datasets can be ordered via the keyword hierarchy which will show datasets which have been assigned a chosen keyword together with datasets assigned with narrower terms, figure 7.

Figure 7 Keyword hierarchy

- (+) Boreholes
- (+) Botany
- (+) Carbon
- (-) Chemistry
 - (-) 6 assigned datasets
 - BGS Chemistry Records Pre 2000
 - Data Held In The BGS Laboratory Information Management System
 - Polycyclic Aromatic Hydrocarbon (PAH) Concentrations In A Certified Reference Material
 - Polycyclic Aromatic Hydrocarbon (PAH) Concentrations In A Contaminated Soil (Bg Clr 17)
 - Stable Carbon Isotopic Signature Of Pahs (Polycyclic Aromatic Hydrocarbon) : Effect Of Clean-Up
 - Stable Carbon Isotopic Signature Of Pahs (Polycyclic Aromatic Hydrocarbon) In A Contaminated Soil
 - (-) 14 narrower terms
 - Analytical chemistry (One dataset)
 - BGS Chemistry Records Pre 2000
 - Chemical properties
 - Acidity (One dataset)
 - Acidity of stream water
 - Geochemistry (34 datasets)
 - Geochemical exploration (5 datasets)
 - Geochemical manning (2 datasets)

Note the keyword Chemistry has further keywords below it in the hierarchy; Analytical Chemistry, Chemical Properties and Geochemistry. Chemical properties has a further subset, Acidity, and Geochemistry has several subsets, Geochemical exploration and Geochemical mapping being the first two.

The final listing is by location, figure 8. This uses location names taken from a thesaurus of international geographic terms (the geographic hierarchy from Geosaurus, Templeman and GeoSystems, 1989) which for the UK provides detail down to the names of counties and some major towns. For UK locations this may be replaced in the future by more detailed places names provided by the Ordnance Survey (e.g. the 1:50K Gazetteer) and by geological feature names from a BGS in house gazetteer which is under development.

Figure 8 Browse by location

The screenshot shows the BGS Discovery Metadata interface. At the top, there is a green header with the BGS logo and the text "British Geological Survey" and "NATURAL ENVIRONMENT RESEARCH COUNCIL". To the right of the header, it says "BGS Discovery Metadata" and "Find BGS data sets by browsing an A to Z list of locations". Below the header, there is a text box explaining that the number in brackets shows how many datasets match each keyword. The main content is a list of locations, organized into several categories:

- International**
 - WORLD (28)
 - ARCTIC & SUBARCTIC (1)
 - BOLIVIA (1)
 - INDONESIA (1)
 - KENYA (1)
 - PERU (1)
 - SCANDINAVIA (1)
 - SOLOMON ISLAND GROUP (1)
 - SUMATRA (1)
- Offshore**
 - ATLANTIC OCEAN (10)
 - CANADA OFFSHORE (1)
 - IRISH SEA (6)
 - NORTH SEA (6)
 - PACIFIC OCEAN (1)
 - TIMOR SEA (1)
 - UK CONTINENTAL SHELF (18)
- UK countries**
 - UK (41)
- UK regions**
 - CORNWALL (11)
 - CUMBRIA (1)
 - DEVON (11)
 - EAST GRAMPPIANS, NORTH OF CAIRNGORMS (2)
 - DORSET (4)
 - SOUTHERN UPLANDS (1)
 - GREATER MANCHESTER (2)
 - HAMPSHIRE (1)
 - ISLE OF MAN (1)
 - MERSEYSIDE (1)
 - MIDLAND VALLEY REGION (2)
 - PENNINES & ADJACENT AREAS (1)
 - SOMERSET (4)
 - YORKSHIRE (1)
- UK Towns and cities**
 - CARDIFF (1)
 - CORBY (1)
 - DERBY (1)
 - DONCASTER (1)
 - DOWNREAY (4)
 - HULL (1)

At the bottom of the interface, there is a navigation bar with the following options: Home, Dataset A to Z, Keyword A to Z, Keyword hierarchy, and Location A to Z.

In any view clicking on any of the dataset titles will open an initial view providing a brief description of the dataset together with contact information, figure 9:

Figure 9 Metadata Summary

British Geological Survey
NATURAL ENVIRONMENT RESEARCH COUNCIL

BGS Discovery Metadata Dataset
Coal Resources Map of Britain

Dataset description
Coal resource maps for the whole of the UK have been produced by the British Geological Survey as a result of joint work with Department of Trade and Industry and the Coal Authority. The Coal Resources Map is a Map of Britain depicting the spatial extent of the principal coal resources. The map shows the areas where coal and lignite are present at the surface and also where coal is buried at depth beneath younger rocks. The maps are intended to be used for resource development, energy policy, strategic planning, land-use planning, the indication of hazard in mined areas, environment assessment and as a teaching aid. In addition to a general map of coal resources for Britain data also exists for the six inset maps: Scotland; North-East; North-West; East Pennines; Lancashire, North Wales and the West Midlands; South Wales, Forest of Dean and Bristol.

Constraints
There are no constraints on the access to the dataset and no constraints on the usage.

For more information please contact :
Enquiries
British Geological Survey
Keyworth
Nottingham
NG12 5GG

Tel : +44 (0)115 9363192
Fax : +44 (0)115 9363143
Email : enquiries@bgs.ac.uk

Location
W -8.65 60.84 N
S 49.77 2 E

Reviewed 15th November 2006

This view can be expanded to include further information including storage format, frequency of update, keywords, spatial details and dataset extents.

3 Technical Metadata

Technical metadata describe how the data are stored within database management systems. The specific Technical Metadata discussed here are those used to describe the objects in the BGS Oracle system. These Metadata are held in Oracle tables which can be searched via the links accessed via the Geoscience home page.

Objects stored in the corporate system (the BGS schema) are indexed in the Technical Metadata, assigned to databanks* allocated managers (and to a lesser degree application managers) and described.

Most of the work on technical metadata during 2006-2007 was concerned with obtaining descriptions for tables/views/triggers - the number remaining to be described by the end of February was 846, an increase from 754 at the end of October 2006. This is attributed to the fact that despite many descriptions being added, many more new tables etc. have been entered into the schema.

Obtaining descriptions relies on the knowing the identity of the table manager. There are at least 580 objects where no manager has been recorded. The task of allocating managers (and to a lesser degree application managers) is vital. In many cases this is not easy. Visiting people in person produces a much more positive and successful response than contact by email.

*A BGS definition; a discrete aggregate of Oracle tables which collectively comprise a meaningful data set such as Borehole data. This is a naming standard to impose meaning on what would otherwise be a large quantity of undifferentiated tables, and to assist in the allocation of management resources to that data.

3.1 TECHNICAL METADATA ALERTS

The technical metadata are effectively policed by a system of alerts. Queries are run overnight against the Technical Metadata records to check for issues such as the number of tables lacking a Database Administrator or the number of tables not assigned to a databank. These figures are plotted onto a series of charts so that changes can be monitored. Figure 10 shows the figures for the alerts:

- No. 4 Objects lacking a description.
- No. 5 Tables lacking a Database Administrator.
- No. 6 Tables lacking an Application Manager.
- No. 7 Tables not assigned to a databank.

Figure 10 Typical Alert Chart

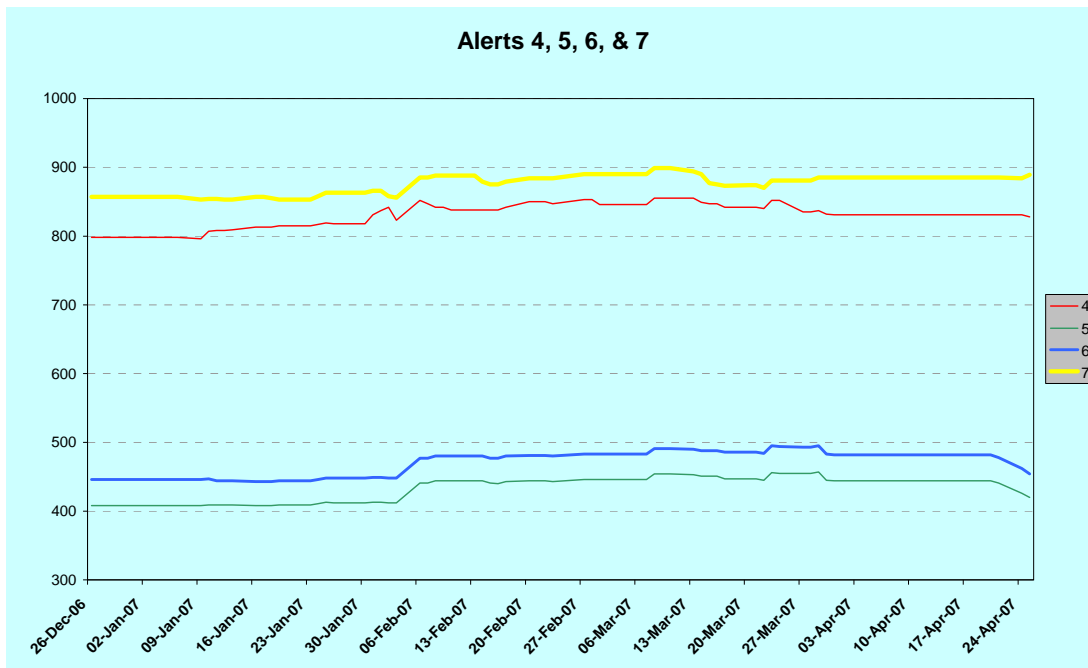
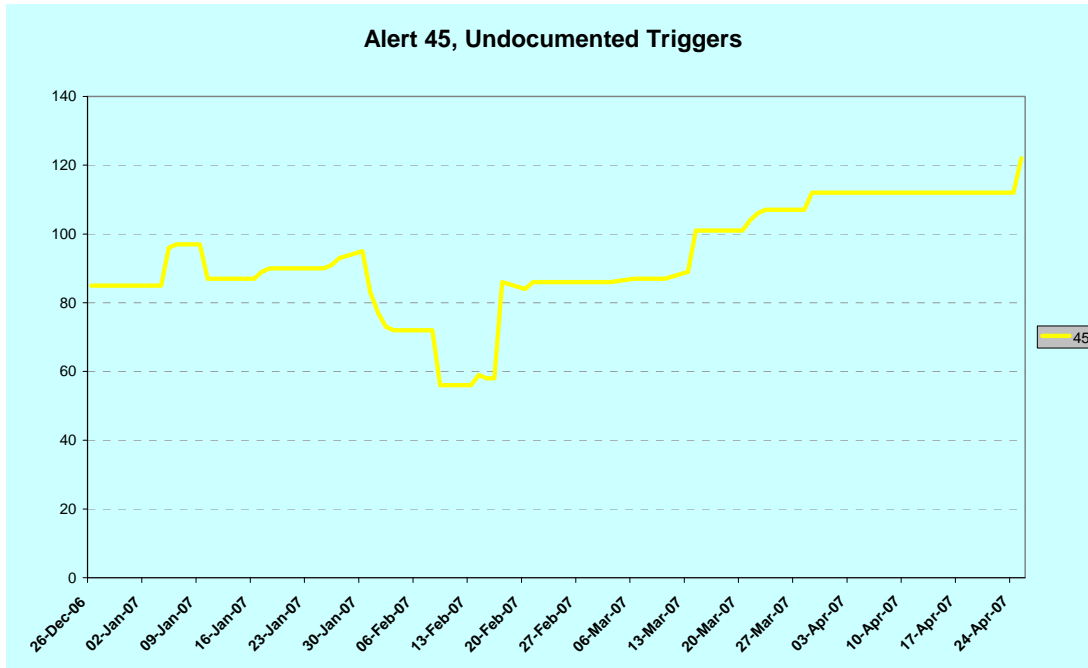


Chart 11 shows the progress on the documentation of triggers:

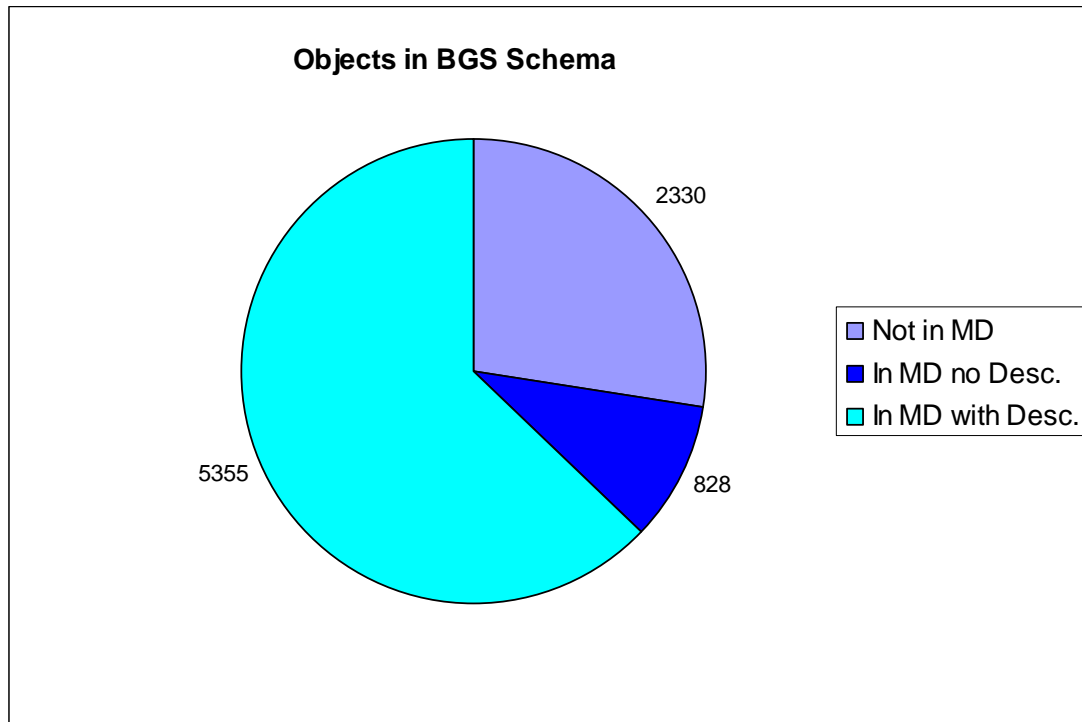
Figure 11 Progress on Alert 45, Documentation of Triggers



Alert 45 tracks the numbers of triggers on the Keyworth schema which have not been documented in the technical metadata (i.e. not entered into the META_OBJECTS table). On February 9th this total was 56, but between the 16th & 17th February the number rose from 58 to 86 when 28 triggers were entered into the schema in one day. The number climbed steadily until by the end of the year it had reached 112.

3.2 OBJECTS IN THE BGS SCHEMA

Figure 12 shows the breakdown of how many of the objects in the BGS schema are indexed in the technical metadata and of these, how many are adequately described.

Figure 12 Technical Metadata on Objects in the BGS Schema

Not in MD means these objects have not yet been registered into the Technical Metadata.

In MD no Desc. denotes objects have been registered into the Technical Metadata but have no descriptions as yet.

In MD with Desc. denotes objects have been registered into the Technical Metadata and a description has also been entered.

The number of objects registered into the Technical Metadata in the year 2006-7 is of the order of 286.

The number of object descriptions entered into the Technical Metadata in the year 2006-7 is of the order of one thousand.

3.2.1 Types of Objects

Figure 13 illustrates the types of objects in the BGS Schema that have been registered and described in the Technical Metadata:

Tables are where data is actually stored, grouped in rows and listed as columns, rather like a spreadsheet.

Views provide useful alternative ways to display one or more tables joined together, and indeed look like the underlying tables.

Triggers are procedures initiated by database operations, such as a table row insert, update or delete event.

Procedures are small computer programs or scripts, which can operate on more than one piece of data –a bit more complex than functions.

Functions perform a mathematical operation on a piece of data.

Figure 13 Described Objects in the BGS Schema

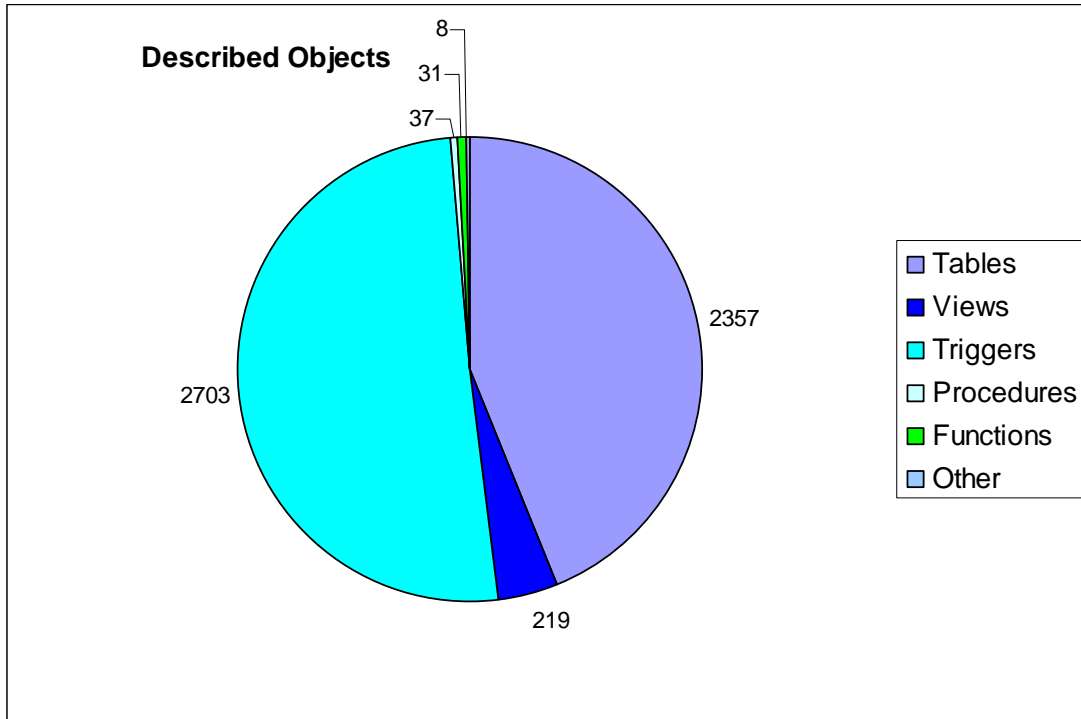
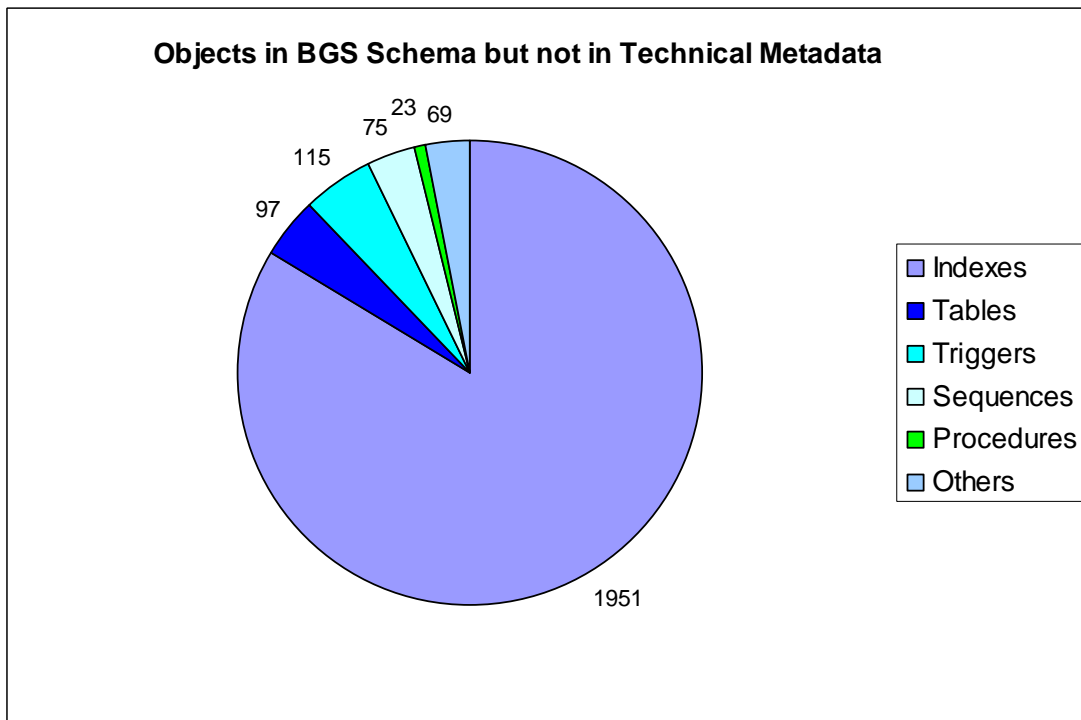


Figure 14 illustrates the numbers of objects, by category, in the BGS schema but not indexed in the Technical Metadata.

An **index** is a cross-referencing mechanism for one or more fields in a database, usually a database table. It can be used to provide faster access to specified data, as well as being used to control uniqueness.

Sequences are stored series of numbers, such as 100, 200, 300 etc., useful for delivering the next valid barcode number, perhaps.

Figure 14 Unregistered Objects in the BGS Schema



4 Development Progress

4.1 MAPS METADATA

A new database to hold map and field slip catalogue information has been designed and the new tables have been created in a development schema. The database design has been integrated with the design for the new map production database. A report describing the database is in final draft.

The new dictionaries and tables have been reviewed by the Data Architect and approved in principle so they will be accepted when transferred to the corporate Oracle schema.

The proposed contents of the new dictionaries have also been given to the data managers for review and comment.

Data transfer scripts have been written and reviewed by the data managers; these will be used to populate the new tables from the existing tables FINAL_MAP, FIELD_SLIP and the tables holding the names and locations of scan files.

In writing these data transfer scripts many errors and omissions were noted in the existing data. In several hundred cases these errors were critical in that mandatory information was missing or the data showed contradictory information about a map, which would make it impossible to transfer the data to a new database without introducing further errors and assumptions. A document listing all the critical data errors and missing data was compiled and sent to the database managers and work has started to gradually inspect and correct the records.

Work has started on specifications for the applications that will allow searching of and data entry to the new database. The application for data entry will be integrated with data entry to the map production tracking database. A first draft of the functional specification is expected in the first half of FY 2007/2008.

4.2 ISO METADATA DATABASE

A small amount of work has been done to further the creation of a new set of tables and views for ISO metadata intended for transfer to the corporate Oracle schema. These are nearly complete in a development schema.

New versions of ISO metadata dictionaries have been developed in a development schema to corporate dictionary standards. Several have been approved by the Data Architect and the Dictionary Management Group and have already been transferred. The remaining dictionaries are ready for approval and transfer. Existing BGS dictionaries that will be replaced by the ISO dictionaries have been identified.

The applications for editing the current ISO metadata tables have been modified slightly and then successfully migrated to the BGS intranet.

4.3 GEMINI METADATA STANDARD

BGS is participating in a working group to develop a new version (version 1.1) of the UK GEMINI Metadata standard, led by Rob Walker and Les Rackham of the AGI Standards Committee IST/36. A second meeting of the working group was held in December 2006 and comments have been submitted to the chairman of the group on proposed changes to the standard. The revised standard is being developed by Rob Walker and Les Rackham and was due to be released for public comment by 30-03-07, although no news has been received on this to date

4.4 DISTRIBUTION OF METADATA TO PORTALS

Discussions have started with Bryan Lawrence and his group from the Rutherford Appleton Laboratory (RUL) to set up procedures and agree the formats and standards for provision of BGS metadata to the NERC Data Grid. A meeting was held on 28 March at RUL where three possible options were put forward regarding the format in which BGS would supply its metadata: UK GEMINI xml schema, the ISO 19139 schema or the DIF xml schema (currently the standard format used for the NERC Data Grid, used as a temporary implementation while ISO 19139 was still under development). It was decided that BGS would provide RUL with xml files of metadata using the BGS profile of ISO 19139, as this was the original intention of the NERC Data Grid and the driving force behind BGS's adoption of the standard. The DIF format is also not a good representation of BGS's metadata, being best suited for oceanographic and atmospheric data. A sample file would be provided to them as soon as possible in order for them to develop systems at their end to receive such a format.

4.5 GIS METADATA

The project objective was to develop a customised metadata editor for ArcGIS so that ISO 19115 compliant metadata can easily be recorded for GIS datasets. ArcGIS comes with a built in ISO 19115 metadata editor which in the past BGS staff have attempted to use to record metadata. However this editor requires the entry of several metadata items which are not relevant to BGS datasets and also does not record some items of metadata which are required. Using the existing BGS Corporate Metadata Application to enter GIS metadata would result in the metadata being stored away from the GIS datasets they refer to. It was therefore decided to create a customised metadata editor in ArcGIS which replicates the Corporate Metadata Application, and stores the metadata alongside the GIS datasets to which they refer. The long-term goal is to convert the metadata created by the ArcGIS metadata editor into a format that can be used to populate the BGS Corporate metadata tables.

Appendix 1 Registered BGS Datasets as of 31st March 2007

DATASET TITLE	Business Recovery Classification
1" Miscellaneous Sheets Files South West England.	nonEssential
10k Sheet Data Files.	important
50k Sheet Data Files.	important
Aa Indices.	vital
Accelerated Evolution of Geoscience Informatics System (AEGIS) data	
Acidity of stream water	important
Additional Information (AI): Scotland And Northern England.	useful
Admiralty Charts	
Aeromagnetic Survey Of Great Britain And Northern Ireland (Geopairgsb)	
Aeromagnetic Survey Of Great Britain And Northern Ireland (Geopairgsbdig)	
Aeromagnetic Survey Of North Sea (Geopairnsea)	
Aeromagnetic Survey Of North Sea (Geopairnseadig)	
Airborne Imagery Of The UK (Digital)	important
Airborne Magnetic Survey Records For United Kingdom And Adjacent Areas.	important
All BGS Raw Biostratigraphy Collections And Data	vital
All BGS Value Added Biostratigraphy Collections And Data	important
Altnabreac Site Investigation.	nonEssential
Analogue And Digital Aeromagnetic Surveys Of (Offshore) UK Continental Shelf	
Analytical Geochemistry Laboratory Records	
Applied Geology Maps and Sections	important
Aquifer Properties, Database Of Physical Properties Of Aquifers In England And Wales.	important
Aquifer Vulnerability Maps	important
Archival Card Index Of Quarries In England And Wales.	nonEssential
Archive Photograph Collections	
Arsenic in soil	important
Arup Review Of Mining Instability In Great Britain	important
ASLIB Index To Theses Bibliographic Database	important
Bedrock aquifer productivity map of Scotland	
BGS Analogue Archives Index.	important
BGS Archives.	important
BGS Chemistry Records Pre 2000	nonEssential
BGS Digital Archives Index.	nonEssential
BGS Geoscience Imagebase	important
BGS Geoscience Thesaurus	
BGS International Minerals-Related Data Holdings Scoping Study Report	useful
BGS Landslide Database.	important
BGS Library.	important
BGS Marine Geophysical Surveys Of North West Europe Offshore Areas.	
BGS Mineral Index.	nonEssential
BGS Petrological Collection Database.	vital
BGS Petrological Rock Samples From Overseas Surveys And Projects.	important
BGS Photograph Collection	vital
BGS Published Inventories Of Wells And Springs, Dating From 1900, 1940'S And 1970'S	useful
BGS Reference Collection Of Mineral Samples.	important
BGS Reports Collection.	important
Biostratigraphical Interpretative Data Files	useful

DATASET TITLE	Business Recovery Classification
Biostratigraphical Masterpacks.	important
Biostratigraphy Reports - Onshore And Offshore, 1953-2000.	important
Bishket Borehole Data	nonEssential
Bishket Pollution Data	nonEssential
Bishket Spatial Data	nonEssential
Borehole Geology Database.	important
Borehole Notifications.	important
Borehole Records Collection.	vital
Borehole Sample Loans (Borrower And Borehole).	important
Borehole Sample Loans (Material).	important
British Association for the Advancement of Science (BASS) Geological Photographs Index.	nonEssential
C.R. Lindsey's Rock Sample Collection.	nonEssential
Calcareous Microfossil Registers.	nonEssential
Centre for Ecology and Hydrology (CEH) NextMAP Digital Terrain Model (DTM) Difference Model	important
Centre for Ecology and Hydrology (CEH) NextMAP Slope Difference Model	important
Chemical Analyses Of Various Limestone Samples From The UK.	nonEssential
Chromium Concentrations At Chromite Ore Processing Residue Contaminated Sites: Solid Phase	important
Chromium Concentrations At Chromite Ore Processing Residue Contaminated Sites: Solution Phase	important
Coal Authority Borehole Log Data.	important
Coal Authority Microfiche Statutory Mine Plans	
Coal Authority Seismic Survey Data.	important
Coal Resources Map of Britain	important
Coastal & Estuarine Evolution Database.	useful
Coastal Photographs Of The South West.	important
Coastal-Marine Geophysical Data	important
Coastal-Marine Geophysical Index	important
Coastal-Marine Geophysical Records	important
Coastal-Marine Map Index	important
Coastal-Marine Maps	important
Coastal-Marine Photographs	important
Coastal-Marine Reports	important
Coastal-Marine Sample Station and Borehole Analyses	important
Coastal-Marine Sample Station and Borehole Index	important
Coastal-Marine Sample Station and Borehole Records	important
Coastal-Marine Samples and Cores	important
Collections Of Aerial Photographs.	important
Company Reports.	important
Comparison Of Clean-Up Procedures: Isolation Of Polycyclic Aromatic Hydrocarbon (PAHs) From Soils	important
Compressible Deposits Layer Used In Residata: Subsidence (GHASP)	important
Confidential Microfossil Register	useful
Confidential Palynology Records.	nonEssential
Conodont Register.	nonEssential
Contaminated Land.	important
Copper in stream sediment.	important
Copy Borehole Logs.	vital
Copy Seismic Sections.	vital
Countryside Council For Wales Datasets	
Crushed Rock Inter-Regional Flows	important
Dalradian Carbonate Rock Geochemistry Database.	important

DATASET TITLE	Business Recovery Classification
Data From Various Aeromagnetic Surveys In Offshore Petroleum Areas.	vital
Data Held In The BGS Laboratory Information Management System	vital
Data Received From NERC Funded Research	important
Database Of Geological Sections From Field Work	important
Deep Mine Data	vital
Deep Seismic Survey Data.	important
Devon & Cornwall Mining Plans.	useful
Digital Energy Atlas and Library (DEAL)	
Digital Geochronological Index	important
Digital Geological Map Data of Great Britain - 10k (DiGMapGB-10)	vital
Digital Geological Map Data of Great Britain - 250k (DiGMapGB-250)	vital
Digital Geological Map Data of Great Britain - 25k (DiGMapGB-25)	vital
Digital Geological Map Data of Great Britain - 50k (DiGMapGB-50)	vital
Digital Geological Map Data of Great Britain - 625k (DiGMapGB-625)	vital
Digital High Resolution/ Local Airborne Surveys Of UK	
Digital Seismic Sections.	important
Digital Seismic Shotpoint Location Maps.	important
Digitised Bathymetry From Hydrographic Office Charts.	important
Digitised Mine Plan Data From The Midland Valley	important
Dines Metalliferous Mineral File.	important
Dissolution (Karst) Geohazards Information	important
Distribution Of UK North Sea Lithostratigraphic Units	
Downhole Geophysical Log Collection.	important
East Dorset, Shaftesbury And Hampshire Grain Size Database.	important
East Grampians Field Data.	useful
Eastern Bolivia Regional Geochemical Survey.	nonEssential
Engineering Geology Of Tropical Red Clay Soils.	nonEssential
Engineering Laboratory Reports	important
England & Wales "1-Inch" Geological Map Sheet Petrological Sample Archive.	nonEssential
Enquiry Records	important
Enquiry Records/Archives: Scotland And Northern England.	important
Environmental Radioactivity Database	useful
Environmental Sensitivity Vector 1 Hectare Grid - England	important
Ex-British Coal Interpretive Collection.	important
Exeter Office Library.	important
Field Notebooks South West England.	important
Final Map Files From Series Map Production	
Fluoride in stream water	important
Foreign Palaeontological Presentations And Donations.	nonEssential
Foreign Sliced Rock Collection.	important
General Bathymetric Chart of the Oceans (GEBCO)	
Geoarchive Bibliographic Database.	important
Geochemical Baseline Survey Of The Environment (G-BASE) For The UK.	vital
Geochemical Baseline Survey Of The Environment (G-BASE) For UK Soils In Urban Areas.	
Geohazard Assessment Of Collapsible Deposits	vital
Geohazard Assessment Of Compressible Deposits	important
Geohazard Assessment Of Potential For Slope Instability	important
Geohazard Assessment Of Running Sand Deposits	important
Geohazard Assessment Of Shrink Swell Behaviour Of Deposits	important
Geohazard Assessment Of Soluble Deposits	important
Geological Archives.	important
Geological Indicators of Flooding Great Britain	
Geological Map Collection South West England.	important

DATASET TITLE	Business Recovery Classification
Geological Memoirs Of England And Wales.	important
Geological Memoirs Of Northern Ireland.	important
Geological Memoirs Of Scotland.	important
Geological Radon Potential Data For England And Wales	important
Geomagnetic Observatory Annual Means.	vital
Geomagnetic Observatory Year Books.	useful
Geomagnetic Survey Data.	important
Geophysical Borehole Log Index	useful
Geophysical Borehole Logs	important
Geophysical Investigations.	nonEssential
Geophysical Properties Databank.	nonEssential
Geophysical Surveys In Africa	nonEssential
Geophysical Surveys In Latin America.	nonEssential
Geophysical Surveys In The Middle And Far East	nonEssential
GeoRef	important
Georeports	nonEssential
Geoscience Large Object Store	important
Geoscience Spatial Framework	important
GeoSure Collapsible Deposits	important
GeoSure Compressible Deposits	important
GeoSure Insurance Data	important
GeoSure Running Sand Deposits	important
GeoSure Shrink Swell Deposits	important
GeoSure Slope Instability	important
GeoSure Soluble Rocks	important
Geotechnical Data From Applied Geology Projects.	useful
Geotechnical Database	important
Geotechnical Database: Leeds/Stoke/Wrexham/Sw Essex.	useful
Gorst Road Petrographic Archival Rock Specimen Collection.	nonEssential
Ground Geophysical Surveys In The UK Done For Specific Projects.	useful
Ground Movements: Shrink/Swell Clays Project	important
Groundwater Flooding Susceptibility	
Groundwater Level Archive	important
Groundwater vulnerability map of Scotland	
Gullyng Layer Used In Residata: Subsidence (GHASP)	important
High Resolution/Local Airborne Surveys Of UK	
Historic Maps Collection	important
Historical And Current Photographs South West England.	important
Humber - Holocene Digital Elevation Model	
Hydro-Electric Records (He)	nonEssential
Hydrogeochemistry	important
Hydrogeological Bibliography	important
Hydrogeological Core Properties.	important
Hydrogeological Enquiries	important
Hydrogeological Maps Of The UK	important
Hydrogeology Data For Various Overseas Countries	important
Hydrogeology Overseas Reports	important
Hydrogeology Reports And Maps For Various Countries	important
Hydrogeothermal Project Reports	nonEssential
Hydrographic Office Geophysical Surveys Of North West Europe Offshore Areas.	
Hydrotesting In Boreholes.	nonEssential
Hydrothermal Geochemical Experimental Data.	important
Index Data From Field Note Record Sheets.	important
Index To Deep Mine Data	important

DATASET TITLE	Business Recovery Classification
Index To Enquiry Records	important
Index To Onshore Borehole Collection.	important
Index To Opencast Coal Data	important
Index To Registered Borehole Specimens (England And Wales).	important
Index To Site Investigation Reports Collection.	important
Index To Specimens Transferred From The John Smith Collection To The UK (North) Type and Stratigraphical Collection	important
Index To Statutory Borehole Notifications.	important
Index To The BGS Collection Of Archived Video Recordings.	important
Index To The BGS Collection Of Geologist's Field Notebooks And Section Books.	important
Index To The BGS Collection Of Large Scale Geological Field Maps.	important
Index To The BGS Collection Of Large Scale Mine Plans & Land Survey Plans.	important
Index To The BGS Collections Of Aerial Photographs	important
Index To The BGS Large Scale Geological Map Collection.	important
Index To The BGS Medium Scale Geological Map Collection.	important
Index To The BGS Technical Reports Collection.	important
Index To The National Geological Records Centre Accessions Collection.	important
Index To The National Geological Records Centre Collection Of Geological Archives.	important
Index To The UK (North) Survey Collection Of Fossils.	important
Index To The UK (North) Type And Stratigraphical Collection Of Fossils.	useful
Index to Waste Disposal Site Records	useful
Industrial minerals resources map of Britain	important
Integrated Hydrological Digital Terrain Model (IHDTM)	
Intermap NEXTMap	
International Regional Geochemistry	useful
Interpreted Seismic And Well Data.	vital
Interpreted Seismic Database	useful
ISI Web Of Science Bibliographic Databases	important
Jersey Hydrogeology Data Collection	important
Jersey Hydrogeology Data, Reports And Maps Collection	important
Karst Geohazard Database	important
Kenya Regional Geochemistry.	nonEssential
Land Survey Archives (LSA): Scotland & Northern England.	nonEssential
Land Survey Borehole Records South West.	vital
Land Survey Collection of Photographs	notEntered
Land Survey Plans (LSP)	vital
Land Survey Record Index Database (LSRI); Scotland And Northern England.	important
Land Survey Records (LSR): Scotland And Northern England.	important
Landfill And Mining Research Sites	important
Landfill Investigations.	important
Landslip Layer Used In Residata: Subsidence (GHASP)	important
Leeds Office Confidential Registers Of Microfossils.	important
Leeds Office Registers Of Palaeontological Thin Sections.	nonEssential
Lidar Dem Data For The UK	
Limestones And Algae.	nonEssential
List Of Specimens From The UK (North) Type And Stratigraphical Collection And Related Publications.	nonEssential
London Office Registers Of Macrofossils.	important
London Office Registers Of Palaeontological Thin Sections.	important
London Register Of Lower Palaeozoic Microfossils From The UK.	nonEssential
London Register Of Microfossils.	nonEssential
Macrofossil Registers Of The Boswell Collection.	nonEssential
Macrofossils And Microfossils In The Geological Museum (Edinburgh) Collection.	important

DATASET TITLE	Business Recovery Classification
Macrofossils And Microfossils In The Geological Museum (Leeds) Collection	important
Macrofossils And Microfossils In The Geological Museum (London) Collection	important
Macrofossils From Ireland.	important
Macrofossils From Northern Ireland.	important
Macrofossils From Southern Ireland.	nonEssential
Macrofossils Identified During The Hartfell Project-Scottish 1" Sheet 16	important
Macrofossils Illustrated In Quarterly Journal Of The Geological Society.	nonEssential
Macrofossils Of The Bomford Collection.	nonEssential
Marine Geophysical Surveys Of North West Europe Offshore Areas.	
Mersey - Holocene Surface Digital Elevation Model	
Metal Speciation And Bioavailability For Risk Assessment And Remediation.	important
Methane, carbon dioxide and oil seepages geohazard data for Great Britain	useful
Microbiology.	nonEssential
Microfossils - Raw Dataset	important
Microfossils - Value Added Dataset	important
Microfossils From The Continental Shelf - Raw Data	nonEssential
Microfossils From The Continental Shelf - Value Added Data	nonEssential
Microfossils From The UK.	nonEssential
Mine Water And Mine Subsidence.	useful
Mineral Occurrences Database	important
Mineral Planning Permissions For England And Wales	important
Mineral Resource Polygons	important
Mineral Resource Records (Mr); Scotland & Northern England.	useful
Mineral Resources Archive (Mra): Scotland & Northern England.	useful
Mineral Veins Of The Southern Pennine Orefield	important
Minerals Programme Geochemistry Database.	important
Mines And Quarries Database - BritPits.	important
Ministry of Housing and Local Government (MHLG) Mineral Planning Permission Polygons	notEntered
Ministry of Housing and Local Government (MHLG) Mineral Planning Permissions	
Miscellaneous Collections of Photographs	
Miscellaneous Rocks Collection (Former Museum Reserve Collection).	important
Murchison House Aerial Photograph And Satellite Image Inventory	
Narayangani Borehole Data	nonEssential
Narayangani Pollution Data	nonEssential
Narayangani Spatial Data	nonEssential
National Landslide Database Of Great Britain	
National Seismological Archive.	important
Natural Analogues	important
Nearshore Data Produced For Technical Report Wb/98/45	useful
NERC Isotope Geosciences Laboratories (NIGL) Laboratory Records (hardcopy)	vital
NERC Isotope Geosciences Laboratories (NIGL) Project Records	vital
NERC Isotope Geosciences Laboratories (NIGL) Projects	vital
NERC Isotope Geosciences Laboratories (NIGL) Publications	vital
New Accessions To National Geological Records Centre.	important
Nirex 3-D Modelling Data.	nonEssential
Nirex Analogue (Paper) Records	nonEssential
Nirex Digital Geoscience Database (NDGD)	vital
Nirex Magnetic Tape Archives - Processed Data	nonEssential
Nirex Magnetic Tape Archives - Raw Data	nonEssential
Nirex Petrological Samples And Records.	important
Nirex Reference Drawings.	nonEssential
Nirex Rock Cores And Core Samples From Deep Boreholes.	important

DATASET TITLE	Business Recovery Classification
Non-BGS Marine Geophysical Surveys Of North West Europe Offshore Areas.	nonEssential
Northern Peru Regional Geochemical Exploration Survey.	important
Nottingham's Caves - Archival Material For Digital Register.	important
Nottingham's Caves - Descriptive Register With Detailed Indexes.	important
Nottingham's Caves - Register.	important
Offshore Databank	useful
Onshore Borehole Collection.	vital
Opencast Coal Data	vital
Opencast Coal Records: Scotland & Northern England.	vital
Oracle Data Dictionaries	vital
Ordnance Survey 1:10 000 Scale Raster Map Data	
Ordnance Survey 1:25 000 Scale Colour Raster Map Data	
Ordnance Survey 1:250 000 Scale Colour Raster	
Ordnance Survey 1:50 000 Scale Colour Raster Map Data	
Ordnance Survey 1:50 000 Scale Gazetteer	
Ordnance Survey Address-Point	
Ordnance Survey Boundary-Line	
Ordnance Survey Code-Point	
Ordnance Survey Land-Form PROFILE	
Ordnance Survey Land-Line	
Ordnance Survey Meridian 2	
Ordnance Survey MiniScale	
Ordnance Survey OSCAR Asset-Manager	
Ordnance Survey OSCAR Traffic-Manager	
Ordnance Survey Strategi	
Original Seismic Sections.	important
Original Seismic Shotpoint Location Maps.	useful
Overseas Geophysical Surveys	nonEssential
Overseas Map Collection	important
Padamot Palaeohydrogeology Database	
Palaeontological Presentations And Donations.	important
Palaeontological Specimen/Sample Collecting Forms	important
Palaeontology & Petrology Loans Application	important
Palaeosaurus	vital
Palynology Records	important
Part of the International Magnetospheric Study (IMS). BGS ran a series of Rubidium Vapour magnetometer stations, mainly in the UK, but also overseas.	nonEssential
Pathway Project Data	nonEssential
Pelite Illite Crystallinity Database	important
Permeability Dataset for Great Britain (Artificial Deposits)	important
Permeability Dataset for Great Britain (Bedrock)	important
Permeability Dataset for Great Britain (Mass Movements)	important
Permeability Dataset for Great Britain (Superficial)	important
Petrobangla (Bangladesh) Seismic Survey Data	nonEssential
Petrological Rock Sample Collection Record Sheets.	important
Photogrammetric Data Of The UK And World	important
Plans Of Abandoned Mines (Coal & Oil Shale) For Scotland Held On Microfilm.	important
Plans Of Abandoned Mines (Other Than Coal & Shale): Scotland.	important
Plans Of Abandoned Mines (Other Than Coal): Cumbria.	nonEssential
Plant Registers Of The Kidston Collection.	important
Polycyclic Aromatic Hydrocarbon (PAH) Concentrations In A Certified Reference Material	important
Polycyclic Aromatic Hydrocarbon (PAH) Concentrations In A Contaminated Soil (Bg Clr 17)	important

DATASET TITLE	Business Recovery Classification
Potential For Mining Hazard.	important
Prints, Both Negatives And Positives Of Satellite Imagery Of The UK/World.	important
Quaternary Microfossils	nonEssential
Records Of Mineral Exploration.	useful
Reference Samples Of Building Stones.	important
Regional Gravity Survey Data Of Onshore And Nearshore United Kingdom	
Regional Gravity Survey Records Of Onshore And Nearshore United Kingdom	
Regional Gravity Surveys Of Onshore And Nearshore United Kingdom	
Registered Borehole Specimens Collection (England And Wales).	vital
Registers Of Macrofossils (Leeds System).	important
Registers Of Reference Set Of Microfossils.	nonEssential
Reports And Correspondence Of The Petrographic Department Of The Geological Survey Of Great Britain.	important
Reports On Water Resources	useful
Results From Geochemical Surveys In Urban Area	vital
Results From The Regional Geochemical Mapping Of Britain	vital
Rockall Databank	nonEssential
Royal Commission on the Ancient and Historical Monuments of Scotland - Aerial Photographs	notEntered
Sand And Gravel Resources Assessment Records: Scotland.	nonEssential
Satellite Imagery Of The UK (Digital)	important
Satellite Imagery Of The UK/World (Digital)	important
Scanned Borehole Records.	useful
Scanned Images of BGS Large Scale Geological Maps	important
Scanned Images of Deep Mine Data	important
Scanned images of the BGS Borehole Records Collection.	important
Scanned Images of the BGS Collection of Large Scale Geological Field Maps.	important
Scanned Images of the BGS Site Investigation Report Collection	important
Scottish Quarries Database	important
Scottish Samples Collected For Carboniferous Foraminifera.	nonEssential
Scottish Water Well Records.	vital
Seismic Hazard UK (475 Year Intensity) V2003	nonEssential
Seismic Line Index (SLI).	important
Seismic Locations And Sections Database	vital
Sellafield And Dounreay Geotechnical Database	nonEssential
Shallow Mining Layer Used In Residata: Subsidence (GHASP)	important
Shrink/Swell Clay Layer Used In Residata: Subsidence (GHASP)	important
Single Onshore Borehole Index	vital
Site Investigation Records: Scotland & Northern England.	vital
Site Investigation Reports Collection.	vital
Snowdonia Regional Geological Survey Database.	nonEssential
Soil And Rock Spectra From The UK And World Determined From Portable Infrared Mineral Analysis (PIMA).	important
Solomon Islands Regional Geochemistry.	nonEssential
Solution Layer Used In Residata: Subsidence (GHASP)	important
South Essex Geological And Geotechnical Survey.	nonEssential
South Wales Coalfield Landslip Survey.	important
South West England Field Slip Collection.	important
South West Geological Standards Collection.	important
Southampton Water - Holocene Digital Elevation Model	
Springs Database	important
Stable Carbon Isotopic Signature Of Pahs (Polycyclic Aromatic Hydrocarbon) : Effect Of Clean-Up	important

DATASET TITLE	Business Recovery Classification
Stable Carbon Isotopic Signature Of Pahs (Polycyclic Aromatic Hydrocarbon) In A Contaminated Soil	important
Stratigraphic Surfaces Database.	vital
Structural Geology Database	important
Structure Of The Bedrock	
Sumatra Regional Geochemistry	nonEssential
Superficial aquifer productivity map of Scotland	
Superficial Deposits Thickness Models, SDTM	important
Taxonomic Listing Of Quaternary, Upper Tertiary and Carboniferous Fossils Of UK (North).	nonEssential
The BGS Collection Of Archived Video Recordings.	important
The BGS Collection Of Geologist's Field Notebooks, Section Books and Field Record Cards.	vital
The BGS Collection Of Large Scale Geological Field Maps.	vital
The BGS Collection Of Mine Plans.	vital
The BGS Edinburgh Palaeontological Slides Collection.	important
The BGS Large Scale Geological Map Collection.	vital
The BGS Lexicon Of Named Rock Units.	vital
The BGS Rock Classification Scheme	important
The BGS UK (North) Biostratigraphical Collection Of Graphic Logs	important
Type And Figured Microfossils.	important
Uffington Lycimeter Data.	nonEssential
UK Coal Resource For New Exploitation Technologies	notEntered
UK Earthquake Catalogue.	important
UK Earthquake Seismogram Data.	vital
UK Geomagnetic Observatory Hourly Mean Values.	vital
UK Geomagnetic Observatory K-Indices.	vital
UK Geomagnetic Observatory One-Minute Mean Values.	vital
UK Information And Statistics.	important
UK Macroseismic Database.	important
UK Magnetic Observatory Magnetograms.	vital
UK Newspaper Reports Of Earthquakes.	important
UK Onshore Geophysical Library (UKOGL)	
UK Perspectives and GetMapping Imagery	
UK Sand And Gravel Database	important
Understanding The Micro-To Macro Behaviour Of Rock-Fluid Systems - M2M	important
United Arab Emirates project data	
United Kingdom Boundary Outline And Reference Database For Education And Research Study	important
Uranium Geology Programme Mineral Samples.	important
Uranium in stream sediment.	important
URGENT - Urban Regeneration And The Environment	important
Waste Disposal Site Records	vital
Water Abstraction Data	nonEssential
Water Well Archive	vital
Water Well Inventories	useful
Wellmaster Hydrogeological Database.	vital
Wells And Springs On Anglesey	nonEssential
World Mineral Statistics Dataset.	important
World Seismicity Database	vital
Zimbabwe Regional Geochemical Survey.	nonEssential

Appendix 2 Technical Metadata Alerts

CODE	DESCRIPTION
2	Databanks lacking a description
3	Databanks lacking a Manager
4	Objects lacking a description
5	Tables lacking a DB_ADMIN
6	Tables lacking an AP_MAN
7	Tables not assigned to a Databank
10	Users not assigned to a site
11	Users not assigned a status
19	Tables listed in META_OBJECTS not present on KWA
21	Views listed in META_OBJECTS not present on KWA
23	Triggers in BGS Key schema which are NOT assigned to a Databank
27	Views on BGS Keyworth which are incorrectly named
29	Keyworth triggers incorrectly named
33	Tables missing from Keyworth, but CPU=N
35	Tables in BGS schema on Keyworth, but not in Meta_Objects
39	History tables incorrectly named on Keyworth
43	HIST tables on Key without accompanying data table
45	Triggers on Key not documented in tech metadata
47	Views on Key not documented in tech metadata Meta_Objects
49	Views on Key not assigned to a Databank in tech metadata
56	Views lacking an AP_MAN
57	Views lacking a DB_ADMIN
58	Triggers lacking a AP_MAN
59	Triggers lacking a DB_ADMIN
112	DB_ADMIN no longer works for BGS
113	AP_MAN no longer works for BGS

DB_ADMIN is the person with thorough knowledge of the data contained in an individual object or dataset. Responsible for data curation.

AP_MAN is the Applications Manager for the dataset. A skilled SQL programmer who maintains the structure of the database tables and provides database application programs, usually for the DB_ADMIN.

META_OBJECTS is the Oracle table which records details of the objects in the BGS schema.

Glossary

AGI The Association for Geographic Information.

UK GEMINI A UK metadata standard and set of guidelines developed by the Association for Geographic Information (AGI) and the Cabinet Office e-Government Unit. The UK GEMINI standard is a national implementation of the international standard ISO 19115/19139.

DIF A metadata standard for describing scientific data sets developed by NASA, originally in 1987. Mandatory elements in the international standard ISO 19115/19139 were adopted in 2004 and included in DIF, making it ISO compliant.

ISO 19115/19139 The international standard for Geographic Information: Metadata. ISO 19115:2003 defines the standard in unified modelling language; ISO 19139:2007 defines the XML schema implementation of ISO 19115.

References

Most of the references listed below are held in the Library of the British Geological Survey at Keyworth, Nottingham. Copies of the references may be purchased from the Library subject to the current copyright legislation.

Australian Mineral Foundation, Australian Geoscience, Minerals and Petroleum Thesaurus / Australian Mineral Foundation. - 4th ed (Glenside, S.A. : Australian Mineral Foundation, 1996) ISBN 0908039514