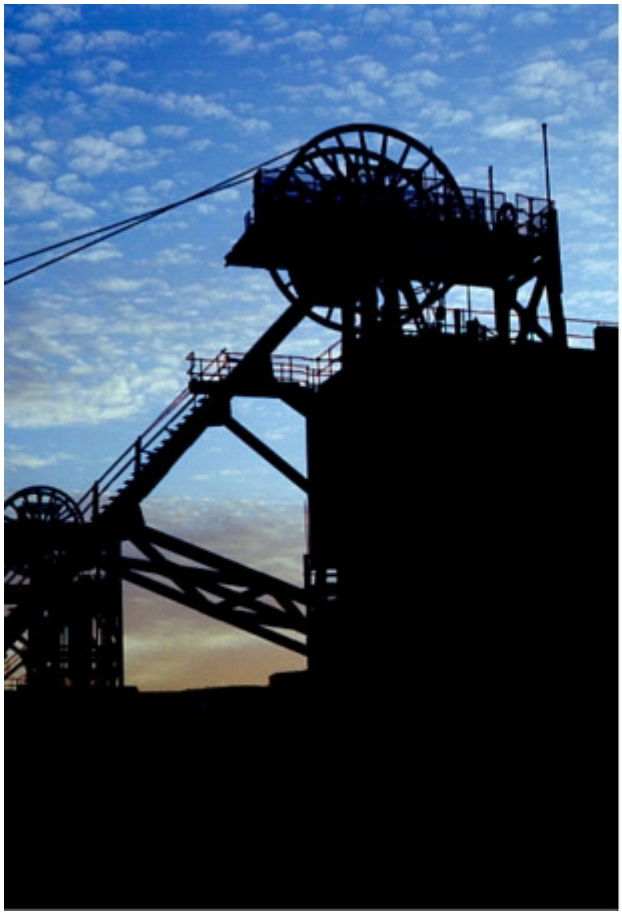
The Coal Authority

Resolving the impacts of mining

User Guide

For the Coal Authority Mine Entries Dataset



User Guide for the Coal Authority

Mine Entries Dataset

Contributor/editor – L J Tipper MRICS

Keywords
Mine Entry, Coal Mining, Shaft, Adit, Underground, Mining Report, Ground Stability

Front cover
Graphic bottom right represents examples of spatial data from The Coal Authority's National Coal Mining Database

Contents

1 Summary

This document provides information for users on the national Mine Entries dataset. It outlines why the dataset was created and its potential uses. Technical information regarding the GIS and how the data was created is described, and information on how to use the dataset is provided.

2 Introduction

The Coal Authority

The Coal Authority (the Authority) is a non-departmental public body sponsored by the Department of Energy and Climate Change, and was established by Parliament in 1994. Its statutory responsibilities include:

- Licensing coal mining operations in Britain
- Providing access to information on coal mining
- Dealing with property and historic liability issues
- Administering coal mining subsidence damage claims
- Providing a 24 hour call out service for public safety hazards.

Further information on all the digital data available from the Authority can be found on our website at **https://www.gov.uk/government/organisations/the-coal-authority** or by contacting:

The Coal Authority
200 Lichfield Lane
Mansfield
Nottinghamshire
NG18 4RG

Customer Services: 0345 762 6848

Email: datasolutions@coal.gov.uk

3 About the Mine Entries Dataset

3.1 Background

The Coal Mines Regulation Act (1872) and Metalliferous Mines Regulation Act (1872) require coal mine operators to deposit mine abandonment plans with the Secretary of State following the cessation of operations. Prior to this legislation mine plans were often destroyed or kept in private ownership due to competition between the mine operators.

The Authority's Mining Heritage Centre in Mansfield, Nottinghamshire, houses the collection of some 120,000 such coal abandonment plans, covering both opencast and deep mining operations, which depict areas of coal extraction and the points of entry into workings. These plans are held by the Authority on behalf of the Health & Safety Executive. The mining information contained on these plans has been captured in the Authority's National Coal Mining Database.

The Authority has records of over 172,000 mine entries within the UK captured in the National Coal Mining database, derived from sources including abandonment plans, geological and topographical plans. Coal mining activity is recorded as far back as the 13th century, but prior to 1872 there was no requirement to deposit abandonment plans. It is therefore believed there may be many unrecorded mine entries of which the Authority has no information or knowledge. These entries do not, therefore, appear within the Authority's national dataset as described here.

3.2 Dataset History

The Mine Entries spatial dataset was created during the early 1980s in readiness for the automated provision of coal mining reports that was introduced locally in 1985 and established nationally in 1989. A team of qualified National Coal Board (NCB) / British Coal Corporation (BCC) mining surveyors were engaged to rationalise the mining and other source plans, reference the same to Ordnance Survey National Grid or County Series and subsequently capture the data into the first computerised mining report system (MRS). The spatial datasets were subsequently migrated into the Authority's current ESRI based GIS in 2011.

3.3 Who might require this dataset?

This dataset is currently used by the Authority in the production of CON29M mining search reports. These provide property specific searches with regard to potential mining hazards in support of the conveyancing market.

This dataset is suitable for use by organisations wishing to identify possible ground instability and potential mining hazards. Users may include but are not limited to Local Authorities, infrastructure operators, land developers, home-owners, solicitors, loss adjusters, the insurance industry, architects and surveyors.

3.4 What the dataset shows

The layer shows the best-plot position for each mine entry from the information held by the Authority, and includes a number of attributes.

For some 70% of the recorded mine entries within the dataset the Authority holds no treatment details. This is largely because the Authority's records go back only as far as the nationalisation of the coal industry (1st January 1947). Before this date the treatment afforded to any mine entry was a matter between the Mineral owner and the Mineral Worker.

3.5 Coverage

The coverage of the Mine Entries dataset is the known extent of coal mining activity in Great Britain (see Figure 1 below). This area does not represent the full extent of geological coal reserves and resources.

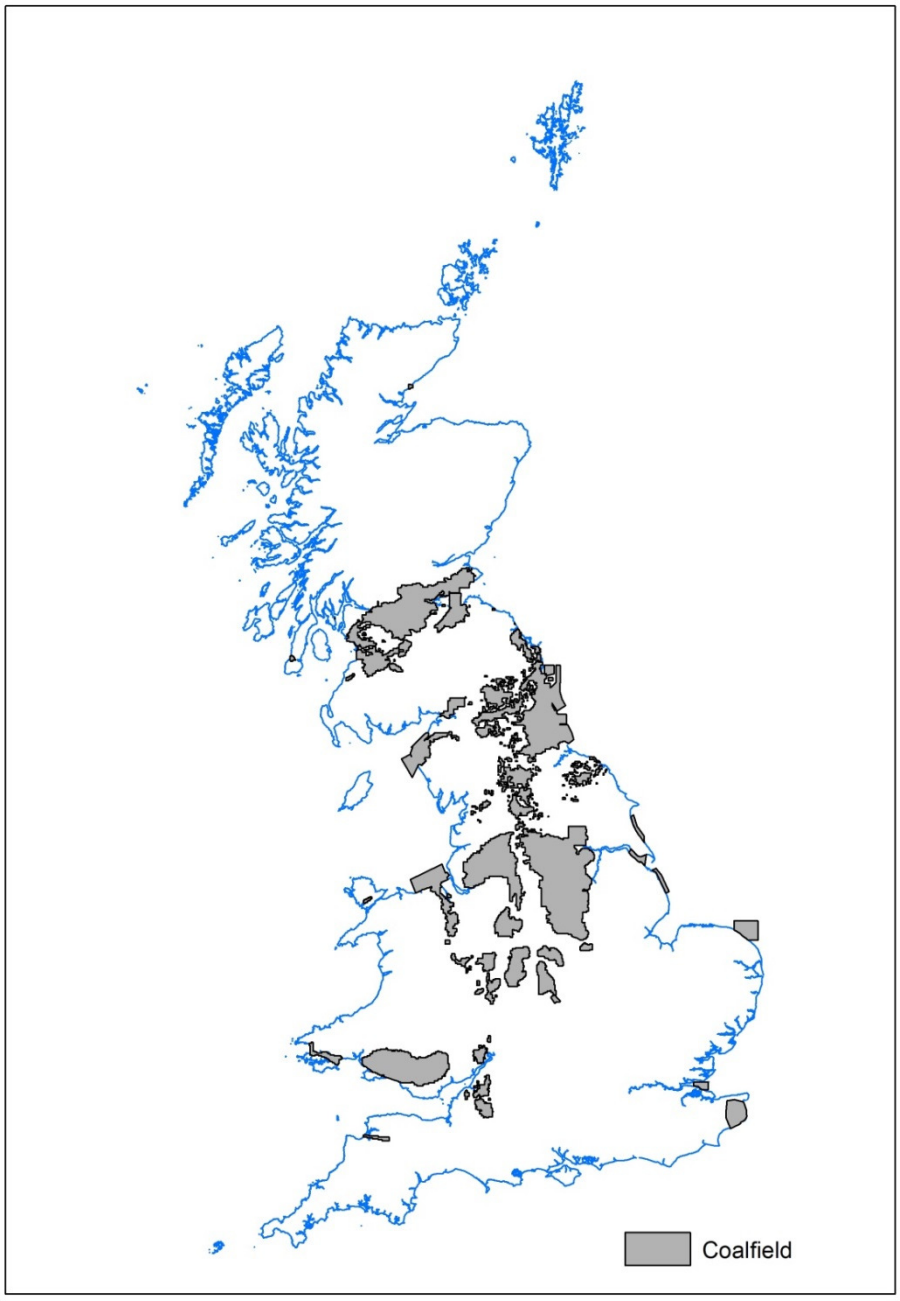


Figure 1: The coverage of the Mine Entries dataset

4 Technical Information

4.1 Definitions

Mine entry

Mine entries are entrances into mine workings of which there are two main types, shafts and adits. Mine shafts are vertical or near vertical entrances, whereas adits are horizontal or near-horizontal (walkable) entrances. Mine entrances provide points of access, ventilation, drainage and mineral extraction.

4.2 Accuracy

4.2.1 Departure

The location of a mine entry fixed by field survey is often different to the position of the same entry shown on the source plan, this difference being termed the 'departure'. Experience has shown that the positions shown on certain source plans carry more reliance than others and therefore the departure attributed by the Authority is dependent on the original source as follows:

Definitive position from field survey	- 0m departure
1:2500 Ordnance Survey Plan	- 5m departure
Abandonment plan	- 8m departure
All other plans & specific instances	- 10m departure

4.2.2 Transfer of information from source plans to the National Coal Mining Database

The Authority's primary source records are some 120,000 plans of abandoned coal mines for Scotland, England and Wales. These coal mine abandonment plans cover both opencast and deep mining operations, and depict areas of coal extraction and the points of entry into the same.

The exact position of the mine entries as depicted within the dataset is to an extent dependent on the accuracy and diligence of the surveying and recording undertaken at the time of abandonment.

In the late 1970s a national plan rationalisation project was initiated by the NCB. In this exercise the abandonment plans, and relevant geological and topographical plans were examined to identify unique mining information. Regional teams of qualified NCB and BCC mining surveyors were engaged to rationalise the mining and other source plans and reference the same to National Grid or County Series topographical mapping.

The mining information contained on these rationalised plans was subsequently digitised by a team of technicians and captured as polygon, point and line data in the Authority's National Coal Mining Database.

Most of the abandonment plans were drawn at scales no longer in use, and there is commonly limited control information in relation to current topographical data against which to accurately locate mine entries. Furthermore, the original position of the mine entries may not have been surveyed to a high degree of accuracy. The captured mine entry positions in this digital dataset are therefore the Authority's 'best fix' positions based on the source abandonment plans and modern topographical data.

4.2.3 Source Accuracy Limitations

All plans are representations and may contain inherent simplifications due to generalisation. When features are represented on plans, their scale often determines the level of detail shown. In addition to these simplifications, limitations may also be introduced through the drawing process.

4.2.4 Digitisation Process Accuracy Limitations

The digitisation process is likely to have introduced intrinsic limitations due to simplification requirements. As different mining surveyors produced plans with variable levels of detail the Authority's mining surveyors may have reduced the level of detail contained within the plans in order to produce the digital information.

4.2.5 Scale

The original plans were produced at varying scales, but were in general digitised to a scale of 1:2500.

4.2.6 Ordnance Survey Positional Accuracy (OSPA)

Approximately 60% of the Authority's mine entry locations were moved following the Ordnance Survey positional accuracy improvement programme (PAI). Expert Authority staff reviewed each mine entry and source records to assess if they needed to be moved in relation to PAI.

Where a mine entry was originally located by surveying surface features and those surface features were within a PAI area then the mine entry was flagged as needing to be repositioned accordingly. The repositioning work was an automated 'rubber sheet' process, implemented using PAI link files supplied by Ordnance Survey and was subject to quality control procedures carried out by expert Authority mining surveyors.

More information on PAI can be found at the link below:

http://www.ordnancesurvey.co.uk/business-and-government/help-and-support/navigation-technology/pai.html

4.3 Data Format

The Mine Entries dataset has been created as vector polygon data and is available in ESRI shapefile format. Other GIS formats, including ArcInfo Coverages and MapInfo (.tab) or more specialised formats can be supplied on request (but may incur additional processing costs).

4.4 Field Descriptions

Table 1: Attribute table field descriptions

Data Field	Explanation of Data Field
OBJECTID	**OBJECTID** File GeoDB ID number
ASUM_DMT	**ASSUMED SHAFT DIAMETER** Where information about the diameter of a shaft is not known it will be assumed. The assumption will be based upon comparison with other shafts in the vicinity, the likely date it was sunk and any other relevant information.
MI_CODE	**MINERAL** Mineral worked. Most are coal but we hold records for other minerals on the system in cases where they were worked with the coal or close to the coal seams.
SOLD_IND	**CONVEYED** Conveyed Indicator: - True/False. True = the mine entry has been conveyed.
ADT_ANGL	**ADIT ANGLE** Adit Direction – If the mine entry is an adit, then this is the recorded direction, in degrees from North, of the entrance roadway. If the mine entry is a Shaft then no direction is recorded and this field is populated by default with a '0'.
DPARTURE	**DEPARTURE** An assumed distance representing the potential difference between a mine entry's plotted position and its true position. This assumed distance will be between 0 to 10 metres and will depend, inter alia on age, scale, condition and status of the source plan from which the position is taken.
RFRNC	**REFERENCE**

	The reference number of the mine entry derived from the km square location.
TRMT_IN	**TREATED** Treated Indicator (True/False). True denotes we hold record of treatment details on our database. False denotes we hold no record of treatment details on our database. Treatment details are generally only known post coal industry nationalisation in 1947.
SHFT_DMT	**ACTUAL SHAFT DIAMETER** Diameter of mine entry in metres. Where a shaft is not circular the maximum diagonal dimension will be used.
DEPTH	**SHAFT DEPTH** Depth of mine entry in metres from surface. The Authority will only provide the depth of a mine entry where this is known.
SOLD_DT	**DATE OF CONVEYANCE** The date the mine entry was conveyed.
TRTMT_DT	**DATE OF TREATMENT** Date the mine entry was treated, if known.
TYPE	**MINE ENTRY TYPE** Denotes if mine entry is a Shaft or an Adit. Shaft being a vertical or near vertical entrance to an underground mine. Adit is an entrance to an underground mine which is horizontal or nearly horizontal.
DRIFT_DP	**DRIFT THICKNESS** Depth in metres of surface deposits at mine entry xy, where known.
NAME	**MINE ENTRY NAME** Local name of mine entry.
OPENCAST_ FLAG	**WITHIN OPENCAST AREA** Opencast Flag (True/False). True denotes we believe this mine entry to have been removed by subsequent surface mining activities.
COLLIERY_NAME	**COLLIERY** Name of colliery this mine entry is associated with. This attribute is rarely populated.
GLOBALID	**GlobalID**

	A Universal Unique Identifier automatically assigned by the geodatabase.
VERIFIED	**Verified** Verified indicator (True/False). An attribute that determines whether manual intervention is required. Where Verified indicator = False then further information should be sought from the Authority when used in the context of a mining search report e.g. CON29M

5 Licensing Information

The Authority does not sell its digital spatial data to external parties. Instead, it grants external parties a licence to use the data, subject to terms and conditions. In general, a licence fee will be payable based on the type of data, geographic area required, the number of simultaneous users, and the duration (years) of a licence.

All recipients of a licence are required to return a signed licence document to us before authorisation for release of digital data is given.

These are general comments for guidance only. Full details of the terms and conditions of supply are included within licences.

The Authority's Data Team will be happy to discuss your proposed use of data and can be contacted at datasolutions@coal.gov.uk . The Data Solutions Team will usually be able to provide reassurance that the licence will cover individual user requirements and/or to include additional 'special conditions' in the licence documentation, addressing specific requirements within the Authority's permitted usage.

6 Limitations and exclusion of liability

The Authority is committed to ensuring that the digital data it holds and releases to external parties under licence has been through a robust internal approval process to ensure that corporate quality assurance standards are maintained. This approval process is intended to ensure that all data

released: (i) is quality assured; (ii) meets agreed data management standards; (iii) is not in breach of any 3rd party intellectual property rights, or other contractual issues (such as confidentiality issues).

6.1 Limitations

- This dataset is based on, and limited to, an interpretation of the records in the possession of the Authority at the time the data set was created.
- The dataset does not categorise the risk of surface collapse and no account is taken of any past remediation that may have been undertaken.
- An indication of the presence of a mine entry does not necessarily mean that a location will be affected by ground movement or subsidence. Such an assessment can only be made by inspection of the area by a qualified professional.
- If customers are uncertain about the use of particular data they should seek professional advice. However, they may consult the Authority's Data Team datasolutions@coal.gov.uk on technical matters, licensing arrangements, or general aspects including the appropriateness and limitations of the data.

6.2 Exclusions

The databases comprising the subject matter of this report are made up of information supplied to the Authority by third parties under statutory obligation and of which the Authority has no direct knowledge and has not necessarily had the opportunity to verify. Accordingly, it can have no liability for the accuracy of the information comprising the databases or for any loss of whatever nature directly or indirectly caused which may result from any reliance placed upon it. The licensee takes the information as provided without any such express or implied warranty and must rely upon its own enquiries and where necessary obtain appropriate insurance against any loss arising.