Guidelines on Recording the Underground Archaeology of Mines

The landscape has been described as a “vast historical document” (Barker 1996 p.13). When dealing with the history and archaeology of mining there are two distinct but symbiotic landscapes to consider: the surface and the underground. Each of these landscapes contains information that can be read to provide insights into past site activities. Investigation of the surface remains of mining by both professional archaeologists and amateur enthusiast groups is now routine and the methodologies and techniques of recording surface landscapes are established, understood and generally undertaken within the framework set out by RCHM(E) in 1996 and 1999.

The recording of underground landscapes and sites is at present not subject to any agreed standards or guidelines and has been mainly left to the amateur enthusiast groups, with the result that there is no common approach to underground recording. In continental Europe this is not the case and underground investigations are an integral part of the investigation of mining sites. Given that 90% or more of mining activity takes place underground and that many such sites, particularly metalliferous mines, still retain accessible workings centuries after closure, it is clear that the underground mining landscape is a historical document that is currently being almost wholly ignored in the UK.

In order to address this important issue, this document proposes a series of guidelines and levels of survey appropriate to the recording of underground landscapes. Produced on the same lines and drawing heavily from the RCHME descriptive specifications for the survey of buildings and landscapes, these guidelines aim to focus the efforts of amateur enthusiast groups to allow the production of descriptive surveys which will sit comfortably in local and national Sites and Monument Records (SMRs and the NMR See appendix 2). This will help professional archaeologists, and others involved in the curation and management of mining landscapes to understand that the underground mining landscape has a vast potential to provide detailed information that can aid site interpretation and which is not available from the study of the surface landscape in isolation.

Note: This document is not a guide to underground surveying or archaeological recording. For an introduction to each of these subjects the following publications are suggested starting points;

- Ellis B 1988, *An Introduction to Cave Surveying*
- Barker P.1996, *Techniques of Archaeological Excavation*
- Hawker J.M. 1999, *A Manual of Archaeological Field Drawing*
- Barnatt J 2019, *The Archaeology of Underground Mines and Quarries in England*

Ellis (1988) can be considered a standard work on underground surveying and although written for cave surveying the techniques are just as applicable to mines. Barker (1996) and Hawker (1999) both deal with the recording of standing structures and excavation and many of the techniques discussed can be utilised underground and Howes 1987 provides a good starting point for underground photography. Barnatt follows on from the NAMHO *Research Framework for the Archaeology of the Extractive Industries in England* and brings the subject up-to-date.

Why record archaeology underground?

History is the study of the past through written records. Archaeology is the study of the past through its material remains. It is a popular misconception that archaeology is only valuable where written records are deficient or altogether absent, since although archaeological techniques can provide historical evidence in these circumstances, it can equally significantly enhance archival material or in some cases disprove it. It is important to remember that many details of past activities recoverable using archaeological techniques were never represented in written records. What remains to be recorded depends on a great number of factors but follow certain general principles. The first consideration on any site is to do with what was discarded or abandoned, where was it discarded, why was it discarded and how. Linked to this, however, are questions relating to what happened after that event, and whether this evidence chanced to survive or whether it was in some way damaged or destroyed, whether it was within an environment, which tends to preserve or to destroy that form of evidence. Underground the environment is generally quite stable, and in the absence of sunlight and strong air currents, the ambient temperature will remain around 8°C. Both dry and wet environments can preserve items like leather or wood, though percolation water making its way into the underground system from the surface can be either acid or alkali. Biological agents are commonly present and dry rot is not unusual. These environmental conditions can be specific and very localised - a variety of environments will certainly exist within a single mine. Given that such a wide range of environmental conditions can exist, an equally wide range of artefacts can be preserved within localised but stable environments. This can allow quite remarkable items to be preserved - the paper wrappers from explosives, miners' clog prints as fresh as the day they were made. Other features are more robust such as tooling marks and timber sockets cut into the rock or geological features (see fig.1). One very important difference between underground and surface archaeological sites

is that many finds will not be buried by later activity. As a result they are vulnerable to removal by visitors. Some find their way into museums but most do not. This is a major problem, which the National Association of Mining History Organisations (NAMHO), has tried to address by producing a code of practice (available at http://www.NAMHO.org). Sadly most people are unaware of this and the loss of archaeological information as a result of such unrecorded recovery of artefacts is immense. Because artefacts are generally not buried, the contextual provenance of any underground finds has to be treated with caution unless it can be shown that workings have not been disturbed by modern visitors. In cases where sealed contexts are encountered it is essential that contextual data be collected for use in interpretation, before or during the process of the removal of artefacts. Another important factor to be taken into account prior to artefact collection is the capability to conserve that evidence once it has been removed from its stable environment. If this is not likely to be the case, it should be certain that the survey will produce a sufficiently detailed archive document to ensure preservation in-situ always remembering that the quality of information collectable during survey relates directly to the ability of the surveyors to recognise and record the evidence.

Why are archaeological surveys undertaken?

Surveys are produced by interested amateurs, for academic study, or by professional archaeologists who undertake surveys for the purposes of curatorial management; i.e. to identify what is there and in what condition in order to manage landscapes or sites. In some cases surveys are carried out prior to and during development work, generally to record features before they are altered, destroyed or become inaccessible. The key reasons for survey can be expressed simply as

- Because the site is interesting.
- As part of a process of exploration and data gathering.
- Because it is threatened.

The process of survey has to be approached cautiously and it is important to understand that "archaeology is not all about finding things, it is about understanding what is found" (Bowden 1999 p.18). As will be seen from the levels of survey section, the aim is to produce a dispassionate, detached site record. There is a great danger that surveyors will approach a site with preconceptions that will colour their judgement - they will only see what they expect to see. It is therefore essential to remember that the primary role of survey is to record and understand rather than interpret, which comes at the report writing stage of the investigative process. The archaeological record produced from the survey is therefore more than just a plan. Interpretation examines not only what is there, but also how its component parts relate to one other and how they fit within wider contexts (local, regional, or national). This is often achieved by reference to previously recorded examples. The discovery, recording, and explanation of a single site is not sufficient and comparing a site to similar sites locally or regionally is preferable.

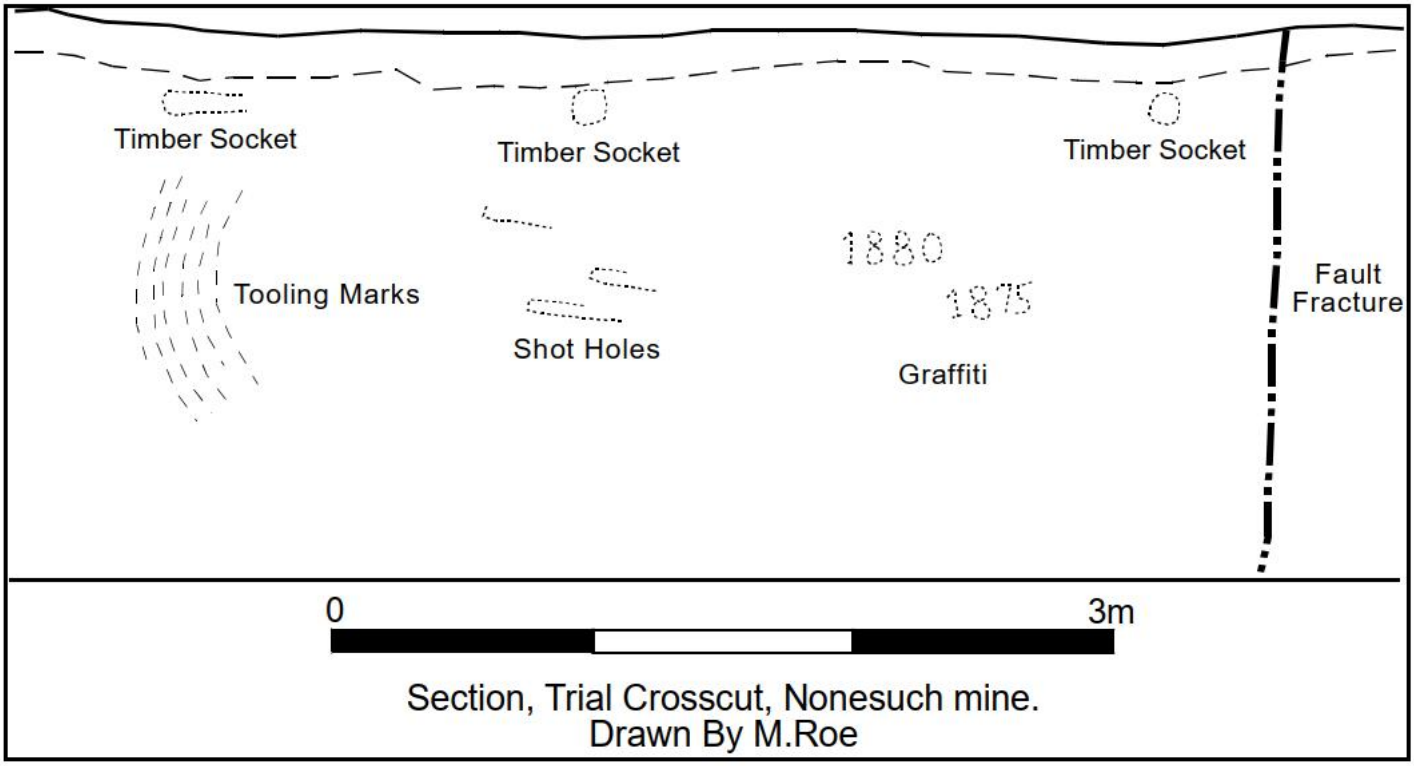

Fig 1

Archiving

Once an archaeological record is produced it is important to make it available and accessible. But what should available and accessible mean? At a minimum the record should be deposited in the relevant Sites and Monument Records. The Sites and Monument Records (or SMRs) are generally arranged on a county basis but can cover other administrative areas such as National Parks or regions. SMRs are consulted by a wide range of people including those who make decisions about the management of archaeological resources Therefore to ensure that the decision makers are fully informed this is where to deposit copies of surveys. Good practice as well as good manners would suggest that a copy of any report is sent to the landowner. Local mining history or caving groups who often have small archive and library collections may be interested in receiving a copy, as might local history or archaeological societies. Depending on the nature of the report the local museum or local study section of the local library may also be appropriate locations to deposit your report. Although full publication would be preferable, a short note in a relevant newsletter or journal identifying the existence and location of a survey would be useful. If a survey is produced and then it just sits on a shelf then its creation was pointless.

Levels of archaeological survey

This section begins with a description of each level of survey followed by more detailed notes on the written, drawn and photographic records suitable for each level of survey.

Level 1

The aim of a level 1 survey is to gather basic information about a site without any analysis of this information. This would identify where its, broadly what it is, and how old it is. Can include a sketch map of site location, photographic record and brief written description.

Level 2

This level is a basic descriptive and interpretive record and will contain more information that a level 1 survey. Should include a measured survey of the site, including a general location plan based on O.S. 1:10,000 scale mapping, an overall plan of the mine indicating the area investigated (which could be an existing mine plan), and a small scale plan of the survey area. This level of survey should contain details of the level of accuracy and level of investigation. Also recorded should be the date of the survey, who undertook the survey, survey conditions and other factors, which might have affected the quality, reliability or completeness of the survey.

Level 3

A level 3 survey is a detailed fully analytical survey with a detailed written account of the site setting out all the observed evidence. The aim is to produce an archive document, which contains enough information to allow a re-examination of the evidence without the need to regain access to the site. Interpretation can be assisted by printed secondary source material but access to primary sources may not necessarily be required for this level of survey.

Level 4

This would be the highest level of survey normally encountered and its primary aim is to produce an interpreted multidisciplinary record from both fieldwork and other activities such as archive research. This level of survey should place the finding into a wider context, making comparisons with other sites locally, regionally or even wider afield.

The written account

The written record should always include items 1-3 listed below. Item 4 may prove adequate for the description at Level 1, and item 5 for Level 2. In Levels 3 and 4, Item 6 is mandatory. Exactly how the information is given may vary depending on the nature of the site. Where complex relationships exist, the use of interpretative drawings is to be encouraged.

1 The type / classification and period of the monument. For surface surveys it is suggested that The Thesaurus of Monument Types (RCHME) EH 1998) should be used (though note that specialised terms not in the Thesaurus can be submitted for addition to it). This contains very general classifications of site types but contains no descriptions for underground features and so a broad classification should be applied (see appendix 1). This is not the stage to make an interpretation. If it is unclear exactly what is being recorded terms such as “possible” can be added.

2 The exact location; National Grid Reference (up to 8 figures, 10 figures if possible); local authority details (e.g. Parish, District, County). Any identifying references if the site has already been recorded (e.g. NMR, SMR).

3 The name of the report writer, date of investigation and reason(s) for survey, with details of site ownership and current land use.

4 The key source.

5 A summary description of the main features; this is particularly important for monuments with lengthy and complex reports.

6 A *concise* description of the site, including information on plan, form, area, location of artefacts, function, age, development sequence and past use.

7 A *detailed* description of the site, including the same information as in Item 6, plus a full analysis and interpretation with the supporting evidence presented.

8 Consideration of the topographical setting of the monument and its relationship to other sites within the underground and surface landscapes if applicable.

9 The potential for further investigation and other forms of survey should be assessed and recommendations made. Any finds made during investigation should be noted.

10 Relevant information from other sources, including published or unpublished accounts and oral

information; the location of unpublished records must always be given. Relevant bibliographical references must be included, but an inclusive bibliography need not be assembled.

11 A brief assessment of the local, regional and national significance of the site with regard to its origin, purpose, and form.

12 A brief description of the activities that were necessary for the compilation of the monument record, which may be linked to the information provided in Item 3.

13 Any threats to the site.

14 The potential for further research.

Survey drawings

The scale of a survey drawing must be appropriate to the level of recording, the nature and extent of the site, the amount of detail that exists and the use which will be made of the survey. A level 1 survey will require only a locating symbol on a map (1:10,000) or a line indicating the extent of the site. Level 2 surveys should include a small-scale plan of the mine at 1:2500 to 1:500 to provide the general underground context for any detailed survey.

Complex relationships within a site or landscape may need to be drawn at a larger scale and Levels 3 and 4 are likely to include detailed surveys between 1:200 to 1:10 for very fine-detail; this can be done as an inset or separate figure. Profiles should be drawn, where it is necessary or helpful to do so. For insets and profiles, the scale, position and orientation of the supplementary drawing must be clearly shown. All drawings must include a metric scale-bar and north arrow (clearly stating if this is magnetic, grid, or true north) and be clearly labelled with the site name, surveyor(s) and date of survey. Drawings in a set must be clearly cross-referenced to each other. A set of drawings may contain:

1 A diagrammatic plan showing the location or extent of the monument or landscape; i.e. a sketch map, annotated OS extract at an appropriate scale.

2 A metrically accurate site plan at 1:2500 to1:500, showing the form of the site or landscape. The plan should be related to topographical features and to modern detail. The use of larger scales (e.g. 1:500 or 1:250) may be justified, to show intricate detail or where a site is of limited extent.

3 Profiles or cross-sections illustrating significant vertical and horizontal differences in level. Their position must be marked on the plan and their orientation distinguished by means of reference letters and arrows at each end.

4 Interpretative diagrams showing successive phases must be accompanied by a copy of the survey from which the interpretation has been derived or should be cross-linked to these drawings.

5 Reconstruction drawings which may be included, where there is a fair degree of certainty; such drawings must be accompanied by copies of the surveys from which they are derived, or should be cross-linked to them.

6 Copies of earlier plans which throw light on the history and interpretation of the monument. This would include any original mine plans or similar plans which contribute to an understanding of the visible remains.

Photography

Photography can play an important role in underground archaeology producing a record of the general setting of a site, and specific detail. It can be a useful tool for rapid site assessment and can add significant value to a level 1 or 2 survey. Photographs should always have a scale included and an indication of the orientation would be useful (north arrow) and a colour wheel. Black-and-white photography is preferred for archive purposes and each print should be clearly labelled with the subject, orientation and date and cross-referenced to its negative or digital original. The quality and usefulness of underground photographs depends to a great extent on the position of light sources. A flashgun fixed to a camera can produce a flat evenly lit picture where some detail may not stand out from the background. Placing a flashgun to one side will enhance any relief and therefore bring out detail but will also increase shadows which may mask some detail. To produce the most useful record it may be better to take the same picture lit from several directions (see Howes 1987).

Summary of key stages

1. Identify a reason / need for a survey.
2. Survey – Primary collection of data.
3. Documentary research - Optional depending on the level of survey.
4. Data collation - Bringing together all survey and archive research.
5. Report writing.
6. Archive submission.
7. Publication

Appendix 1 – Descriptive Terminology

The RCHME Thesaurus of Monument Types (EH 1998) includes no terms for underground mining features. Mining terminology is riddled with regional and period specific terms which can lead to confusion. These local terms are an important aspect of mining history and their use should not be discouraged, however where possible terms should be qualified with widely used generic mining terms. It is important to remember that there is also a great difference between terms used for features in different branches of the mining industry, particularly in the cases of coal and metal mining. The following are some examples of regional and historic terms and more generic alternatives.

Generic term	Regional or historic term
Level	*Haulage level*
	Horse level
	Adit
	Sough
Sub Level	*Cartgate*
	Rullyway
	Durk drift
	Drift
	Gunnies
Vein	*Lode*
	String
	Stringer
	Rake

Table 1

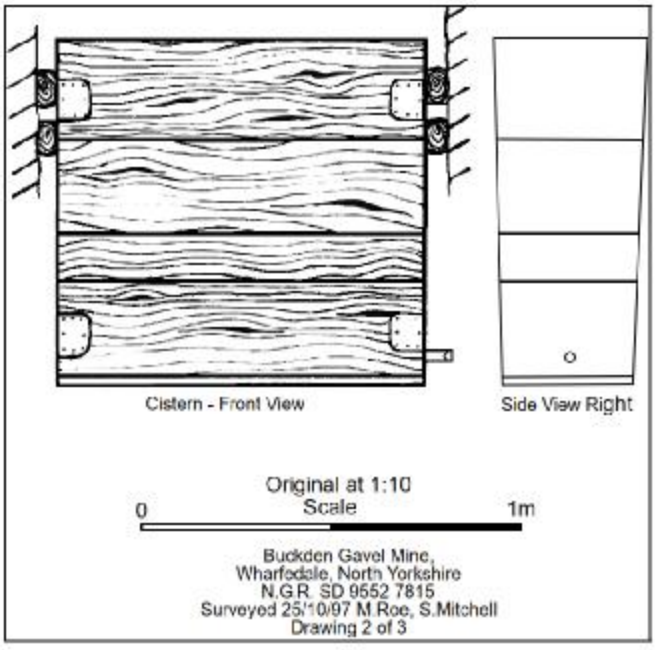

Figure 2

Appendix 2 – National bodies

(with a brief outline of their responsibilities)

England

Historic England – Maintaining the National Monuments Record (NMR), scheduling of nationally important sites. https://www.historicengland.org

Scotland

Historic Scotland – scheduling of nationally important sites. http://www.historicscotland.gov.uk

Royal Commission on the Ancient and Historic Monuments of Scotland (RCAHMS) – Maintaining the National Monuments Record Scotland (NMRS). http://www.rcahms.gov.uk

Wales

Cadw – Welsh Historic Monuments - Scheduling of nationally important sites. http://www.cadw.wales.gov.uk

Royal Commission on the Ancient and Historic Monuments of Wales (RCAHMW) – Maintaining the National Monuments Record Wales (NMRW). http://www.rcahmw.org.uk

Northern Ireland

Environment and Heritage Services, Northern Ireland – Scheduling, maintaining the NI Monuments Record. http://www.ehsni.gov.uk

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Howes C. 1987, *Cave Photography A Practical Guide*. Caving Supplies, Buxton.

RCHME 1996, *Recording Historic Buildings a descriptive specification* (3 edn). RCHME.Swindon.

RCHME 1999, *Recording Archaeological Field Monuments a descriptive specification*. RCHME. Swindon.

(Note that with RCHME becoming Historic England, some of these documents may no longer be available)

NAMHO Web site https://www.NAMHO.org

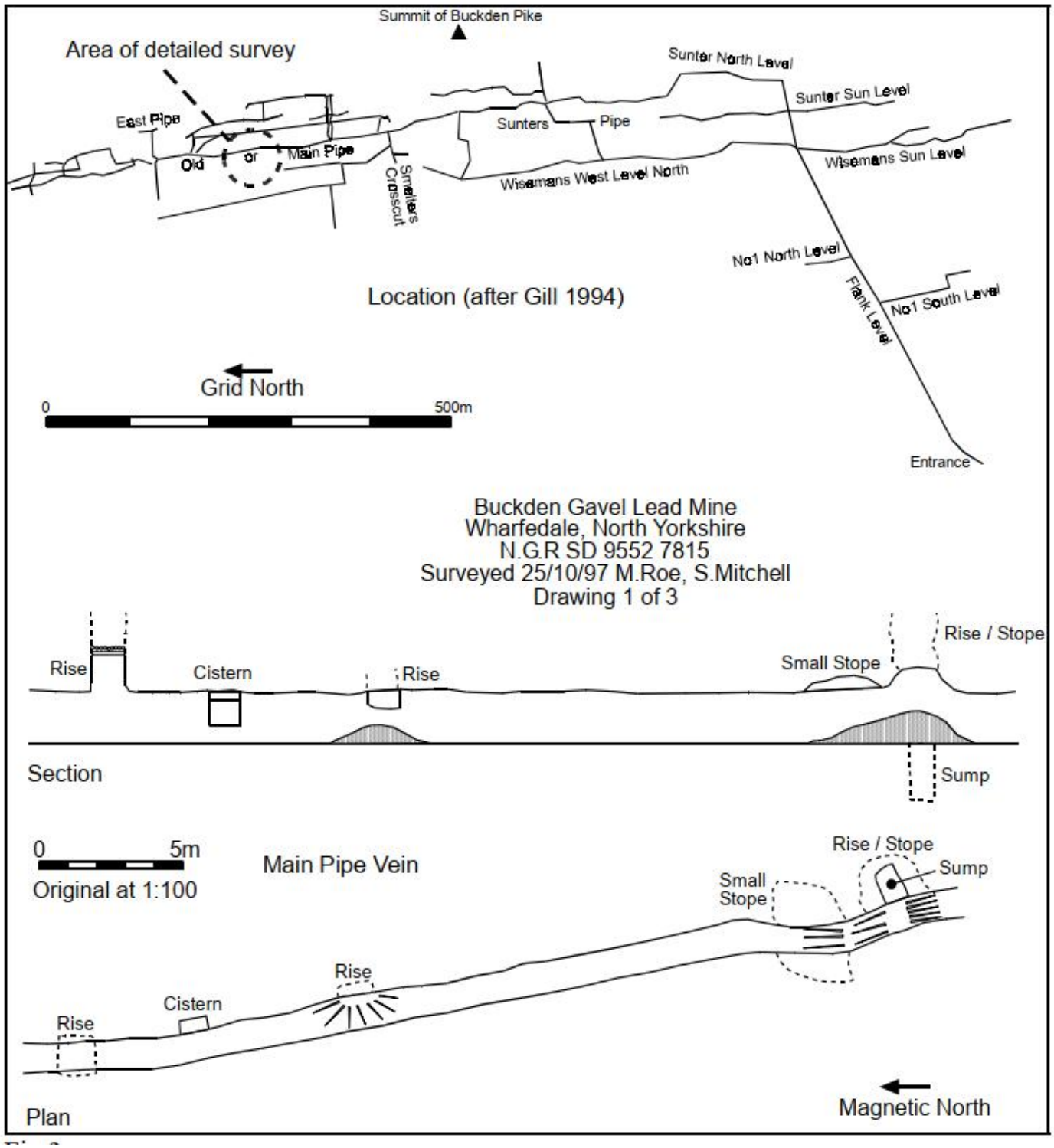

Figure 3

Acknowledgements

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