

NYMNPA

24/09/2019

From: Victoria Hill
Sent: 24 September 2019 10:49
To: Rob Smith
Cc: Robert Staniland; Angela Samuels
Subject: External Transmittal No : SMP-NPA-TR-0015

Good morning Rob,

Please find attached an updated Archaeological Written Scheme of Investigation that addresses the comments raised by the Authority, particularly with regard to Works that are due to be carried out within Haxby Plantation.

We trust this document is acceptable to the Authority.

Kind regards,

Victoria Hill
Environmental Management Officer

Sirius Minerals Plc

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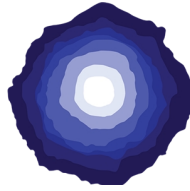
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NYMNPA

24/09/2019

SIRIUS
MINERALS PLC



Project Title / Facility Name:
North Yorkshire Polyhalite Project

Document Title:
**WRITTEN SCHEME OF INVESTIGATION FOR AN ARCHAEOLOGICAL
WATCHING BRIEF - PHASE 11**

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A	12-Sep-2019	Review	IFR		

Document ID:

40-COT-WS-70-EN-PL-0011



NYMNPA

24/09/2019

Cotswold
Archaeology

Woodsmith Mine Sneaton North Yorkshire Phase 11

Written Scheme of Investigation for an Archaeological Watching Brief



for
Sirius Minerals PLC

CA Project: 660829

Document number: 40-COT-WS-70-EN-PL-0011 – Rev 0

September 2019



Woodsmith Mine Sneaton North Yorkshire Phase 11

Written Scheme of Investigation for an Archaeological Watching Brief

CA Project: 660829

Document number: 40-COT-WS-70-EN-PL-0011

Rev 0



DOCUMENT CONTROL GRID						
REVISION	DATE	AUTHOR	CHECKED BY	STATUS	REASONS FOR REVISION	APPROVED BY
A	12/09/2019	PG	SRJ	INTERNAL REVIEW	QUALITY ASSURANCE	SRJ
B	20/09/2019	PG	RS	EXTERNAL REVIEW	CLIENT COMMENTS	SRJ
0	24/09/2019	PG	RS	FINAL	FINAL	SRJ

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1. INTRODUCTION

- 1.1 This document sets out details of a *Written Scheme of Investigation* (WSI) by Cotswold Archaeology (CA) for an archaeological watching brief at Woodsmith Mine, Sneaton, North Yorkshire (centred at NGR: 489370 505378) at the request of Sirius Minerals PLC (Sirius Minerals).
- 1.2 Planning permission for the development of a mining complex and associated infrastructures work was granted by North York Moors National Park Authority (NYMNPA), conditional on a programme of archaeological work. This WSI and has been written to satisfy the requirements of condition 95 of planning permission NYM/2014/0676/MEIA.
- 1.3 The WSI has been guided in its composition by *Standard and guidance: Archaeological watching brief* (ClfA 2014), and any other relevant standards or guidance contained within Appendix B.

The site

- 1.4 The consented site is situated approximately 5km to the south of Whitby and 20km to the north-west of Scarborough. The site encompasses an area of approximately 50ha; the north-western part of which comprises a series of rectilinear fields, with an associated farmhouse and ancillary farm buildings. The south-eastern part of the site is occupied by a combination of Whinny Wood and the Haxby and Belt Plantations.
- 1.5 The underlying geology comprises sandstone of the Moor Grit Member (BGS 2013).

2. ARCHAEOLOGICAL BACKGROUND

- 2.1 The site has been the previous subject of desk-based assessments (CA 2012a, 2012b and 2014a), and an Environmental Statement (Royal HaskoningDHV 2014). A geophysical survey has also been undertaken (GSP Prospection 2012) as well as watching briefs (CA 2014b). The following section is summarised from these sources.

Prehistoric (pre-43 AD)

- 2.3 A prehistoric findspot has been recorded beyond the immediate south-western boundary of the site within the Haxby Plantation. This comprised an unstratified assemblage of Mesolithic and later material, including Bronze Age arrowheads, scrapers and knives (Fig. 2, 16; HER 10409, now amended). Within the wider landscape, Ugglebarnby Moor, located to the immediate west of the site, contains a dense concentration of recorded prehistoric sites.
- 2.4 Moorland within this part of the North York Moors National Park contains extensive examples of Late Neolithic rock art. Moorland within the Park is also typically rich in well preserved prehistoric funerary and settlement remains. This includes cairns, barrows, and numerous other features, particularly of Bronze Age and Iron Age date (2400 BC to AD 43).

Roman (AD 43) to modern

- 2.5 There are no recorded heritage assets of Roman or early medieval date within the site. However, the parish boundary between Sneaton and Eskdaleside-cum- Ugglebarnby may have its origins the medieval period (Fig. 2, 20). By the middle of the 11th century the village of Sneaton, in the Hundred (Saxon administrative division) of Langbaugh, had a population of 40 villagers, three smallholders and eight freemen (Domesday Book). It is not known when the area of Dove's Nest Farm was first enclosed from the surrounding moorland for cultivation.
- 2.6 The site is likely to have continued in agricultural use throughout the medieval period, with areas of ridge and furrow agriculture and medieval settlements such as Sneatonthorpe, known locally.
- 2.7 An embanked boundary survives as an overgrown earthen bank c. 1m in height (Fig. 2, 28). It forms the boundary between Haxby Plantation and the Belt Plantations to the south.
- 2.8 Ordnance Survey mapping shows little change within the site from the middle of the 19th century to the present day. The road defining the western boundary of the site was in existence from this time, as was Dove's Nest Farm (Fig. 2, 24), its associated fields and Haxby Plantation.

Undated

- 2.9 Several undated features have been identified, including a cluster of five circular earthworks located within Haxby Plantation, within the south-east of the site. These earthworks comprise depressions defined by low earthen banks, comparable to Bronze Age ring cairns observed elsewhere within the National Park. An earthwork platform was also identified in association with one of these possible ring cairns. A further earthwork was identified c. 100m to the east of these features. A pond, of uncertain origin, was identified to the north-east, also within Haxby Plantation.
- 2.10 A possible low, earthen mound was identified in the north-east of the proposed development site during Lidar survey, and this was confirmed during a follow-up field survey. The possible mound is oval in plan, and measures c.17m by c. 15m. Field assessment found it to be no greater than c. 0.3m-0.5m in height.
- 2.11 An oval-shaped enclosure is in the north-east of the site. The north/south oriented enclosure measures c. 30m by c. 20m, and comprises a semi-oval, water-filled ditch (c. 2m wide), partially enclosing a central island. The ditch is broken to the north by a causeway, allowing access to the interior. It is uncertain what function this enclosure serves, though it is associated with a modern drain and probably relates to water management. A small enclosure has been identified on aerial photographs, on the northern boundary of the site. A second enclosure has also been identified on Ugglebarnby Moor, c. 600m west of the site (CA 2012a; Fig. 2, 7), and a linear feature, probably a modern service, has been recorded to the north-west of site (ibid; Fig. 2, 6).
- 2.12 Geophysical survey of much of the minehead area has been undertaken (GSP Prospection 2012); a few anomalies of potential archaeological significance were identified, which were further investigated during limited trial pitting.
- 2.13 Archaeological watching briefs were undertaken by CA prior to the construction of temporary drilling rig platforms at Doves Nest Farm (CA 2013). No significant archaeological features, finds or deposits were identified during these works. Further watching briefs were conducted during the excavation of 48 trial pits. These revealed undated features, comprising three ditches, a probable pit and two postholes. Two of the ditches are on a similar alignment, and in a similar location, to an anomaly identified during the geophysical survey. A mound identified from the Lidar survey was found to be of probable geological origin (CA 2014b).

2.2 A small number of non-designated heritage assets have been identified within the minehead development area.

3. AIMS AND OBJECTIVES

3.1 The objectives of the archaeological works are:

- to monitor groundworks, and to identify, investigate and record all significant buried archaeological deposits revealed on the site during the course of the development groundworks;
- at the conclusion of the project, to produce an integrated archive for the project work and a report setting out the results of the project and the archaeological conclusions that can be drawn from the recorded data.

3.2 The specific aims of the work are to:

- Research the development of prehistoric monument complexes;
- Investigate the development of funerary monuments and changing burial and memorial practices;
- Prospect for Iron Age settlement in upland areas;
- Study the production, distribution and use of artefacts and support the dissemination and synthesis of information on Iron Age and Roman finds;
- record any evidence of past settlement or other land use;
- recover artefactual evidence to date any evidence of past settlement that may be identified;
- sample and analyse environmental remains to create a better understanding of past land use and economy.
- Identify any potential for Mesolithic archaeology in the Haxby Plantation area.
- Identification and recording of features previously identified by CA in field survey of the area (see background above) and depicted on the LiDAR survey.

3.3 If significant archaeological remains are identified, reference will be made to the Yorkshire Archaeological Research Framework (Roskams and Whyman 2007), so that the remains can, if possible, be placed within their local and regional context.

4. METHODOLOGY

Excavation and recording

4.1 The watching brief comprises the observation by a competent archaeologist of all intrusive groundworks, including the excavation of foundations and service trenches. Non-archaeologically significant deposits will be removed by the contractors under archaeological supervision. Where mechanical excavators are used, these will be equipped with a toothless bucket. During tree clearance, especially in the Haxby plantation, the methodology outlined within the Arboricultural Method Statement (Andrew Belson Arboricultural Consultant 2017) will be used. However, grubbing trees and roots where there are identified archaeological features would be unacceptable due to the damage caused and alternative methodologies would need to be discussed.

4.2 If archaeological deposits are encountered they will be planned and recorded in accordance with Technical Manual 1 *Fieldwork Recording Manual*. Each context will be recorded on a pro-forma context sheet by written and measured description; principal deposits will be recorded by drawn plans (scale 1:20 or 1:50, or electronically using Leica GPS as appropriate) and drawn sections (scale 1:10 or 1:20 as appropriate). Should detailed feature planning be undertaken using GPS this will be carried out in accordance with Technical Manual 4 *Survey Manual*. Photographs (digital colour) will be taken as appropriate. All finds and samples will be bagged separately and related to the context record. All artefacts will be recovered and retained for processing and analysis in accordance with Technical Manual 3

Treatment of Finds Immediately after Excavation.

4.3 In the event of archaeological deposits being found for which the resources allocated are not sufficient to support treatment to a satisfactory and proper standard or which are of sufficient significance to merit an alternative approach such as contingency excavation or physical preservation, the client and the NYMNPA will be contacted immediately. Destructive work in that area will cease until agreement has been reached on an appropriate archaeological response.

- 4.4 Specific interest for this phase of the programme is raised by the potential remains of Mesolithic and later Prehistoric date in the Haxby Plantation. NYMNPA HER 10409 records the recovery of a significant unstratified assemblage of Mesolithic and later material, including Bronze Age arrowheads, scrapers and knives. Also, particular attention will be paid to all the earthworks identified by previous surveys of the site which are detailed above, in the archaeological background (sections 2.9 to 2.13).

Artefact retention and discard

- 4.5 Artefacts from topsoil and subsoil and un-stratified contexts will normally be noted but not retained unless they are of intrinsic interest (e.g. worked flint or flint debitage, featured pottery sherds, and other potential 'registered artefacts'). All artefacts will be collected from stratified excavated contexts except for large assemblages of post-medieval or modern material. Such material may be noted and not retained.

Human remains

- 4.6 In the case of the discovery of human remains (skeletal or cremated), at all times they should be treated with due decency and respect. Where human remains are encountered, these will not be excavated unless their disturbance by the development is unavoidable. In cases where exhumation of human remains is deemed unavoidable/necessary, this will be conducted following the provisions of the Coroners Unit in the Ministry of Justice. All excavation and post-excavation processes will be in accordance with the standards set out in *ClfA Technical Paper No 7 Guidelines to the Standards for recording Human Remains* (ClfA 2004).

Environmental remains

- 4.7 Due care will be taken to identify deposits which may have environmental potential, and where appropriate, a programme of environmental sampling will be initiated. This will follow the Historic England environmental sampling guidelines outlined in *Environmental Archaeology, A guide to the Theory and Practice of Methods, from Sampling and Recovery to Post-excavation* (English Heritage 2011), and *CA Technical Manual 2: The Taking and Processing of Environmental and Other Samples from Archaeological Sites*. The sampling strategy will be adapted for the specific circumstances of the site, in close consultation with the CA Environmental Officer.

- 4.8 The processing of the samples will be done in conjunction with the relevant specialist following the Historic England general environmental processing guidelines (English Heritage 2011). Flotation or wet sieve samples will be processed to 0.25mm. Other more specialist samples such as those for pollen will be prepared by the relevant specialist. Further details of the general sampling policy and the methods of taking and processing specific sample types are contained within *CA Technical Manual 2: The Taking and Processing of Environmental and Other Samples from Archaeological Sites*.

Treasure

- 4.9 Upon discovery of Treasure CA will notify the client and the curator immediately. CA will comply fully with the provisions of the Treasure Act 1996 and the Code of Practice referred to therein. Findings will be reported to the coroner within 14 days.

5. STAFF AND TIMETABLE

- 5.1 This project will be under the management of Stuart Joyce, Principal Project Manager, CA.
- 5.2 The staffing structure will be organised thus: the Project Manager will direct the overall conduct of the watching brief as required during the period of fieldwork. Day to day responsibility however will rest with the Project Leader who will be on-site throughout the project.
- 5.3 The field team will consist of a Project Leader, supplemented by additional Archaeologists as required.
- 5.4 The duration of the fieldwork will be dependent upon the contractor's programme.
- 5.5 Specialists who will be invited to advise and report on specific aspects of the project as necessary are:

Ceramics	Ed McSloy MCIfA (CA) Peter Banks (CA)
Metalwork	Ed McSloy MCIfA (CA)
Flint	Jacky Sommerville PCIfA (CA)

Animal Bone	Andy Clarke (CA)/ Matty Holmes BSc MSc ACIfA (freelance)
Human Bone	Sharon Clough MCIfA (CA)
Environmental Remains	Sarah Wyles PCIfA (CA) Emma Aitkin (CA)
Conservation	Pieta Greeves BSc MSc ACR (Drakon Heritage and Conservation)
Geoarchaeology	Dr Keith Wilkinson (ARCA)
Building Recording	Peter Davenport MCIfA, FSA (CA)

5.6 Depending upon the nature of the deposits and artefacts encountered it may be necessary to consult other specialists not listed here. A full list of specialists currently used by Cotswold Archaeology is contained within Appendix A.

6. POST-EXCAVATION, ARCHIVING AND REPORTING

6.1 Following completion of fieldwork, all artefacts and environmental samples will be processed, assessed, conserved and packaged in accordance with CA Technical Manuals and Scarborough Museum's guidelines. A recommendation will be made regarding material deemed suitable for disposal/dispersal in line with the relevant recipient Museums' collection policy.

6.2 An illustrated report will be compiled on the results of the fieldwork and assessment of the artefacts, palaeoenvironmental samples etc. The report will include:

- i. an abstract containing the essential elements of the results preceding the main body of the report, and a summary of the project's background;
- ii. description and illustration of the site location;
- iii. a methodology of the works undertaken;
- iv. integration of, or cross-reference to, appropriate cartographic and documentary evidence and the results of other research undertaken, where relevant to the interpretation of the watching brief results;
- v. a description of the project's results;
- vi. an interpretation of the results in the appropriate context;
- vii. a summary of the contents of the project archive and its location (including summary catalogues of finds and samples);

- viii. a site location plan at an appropriate scale on an Ordnance Survey, or equivalent, base-map;
- ix. a plan showing the location of the areas observed and exposed archaeological features and deposits in relation to the site boundaries;
- x. plans of each area in which archaeological features are recognised. These will be at an appropriate scale to allow the nature of the features exposed to be shown and understood. Plans will show the orientation of features recorded in relation to north. Section drawing locations will be shown on these plans. Archaeologically sterile areas will not be illustrated unless this can provide information on the development of the site stratigraphy or show palaeoenvironmental deposits that have influenced the site stratigraphy;
- xi. section drawings of areas/trenches and features will be included where appropriate, with OD heights and at scales appropriate to the stratigraphic detail being represented. These will show the orientation of the drawing in relation to north/south/east/west. Archaeologically sterile trenches will not be illustrated unless they provide significant information on the development of the site stratigraphy or show palaeoenvironmental deposits that have influenced the site stratigraphy;
- xii. photographs showing significant features and deposits that are referred to in the text. All photographs will contain appropriate scales, the size of which will be noted in the illustration's caption;
- xiii. a consideration of evidence within its wider local/regional context;
- xiv. a summary table and descriptive text showing the features, classes and numbers of artefacts recovered and soil profiles with interpretation;
- xv. specialist assessment or analysis reports where undertaken.

6.3 Specialist artefact and palaeoenvironmental assessment will take into account the wider local/regional context of the archaeology and will include:

- i. specialist aims and objectives
- ii. processing methodologies (where relevant)
- iii. any known biases in recovery, or problems of contamination/residuality
- iv. quantity of material; types of material present; distribution of material
- v. for environmental material, a statement on abundance, diversity and preservation
- vi. summary and discussion of the results to include significance in a local and regional context

6.4 Copies of the draft report will be distributed to the Client or their Representative and to the LPA's Archaeological Advisor thereafter for verification and approval. Thereafter, copies of the approved report will be issued to the Client, LPA's Archaeological Advisor and the local Historic Environment Record (HER). Reports will be issued in digital format (PDF/PDFA as appropriate) except where hard copies have been specifically requested, and will be supplied to the HER along with shapefiles containing location data for the areas investigated, if required.

6.5 Should no further work be required, an ordered, indexed, and internally consistent site archive will be prepared and deposited in accordance with *Archaeological Archives: A Guide to Best Practice in Creation, Compilation, Transfer and Curation* (Archaeological Archives Forum 2007) and the relevant museum guidelines.

Academic dissemination

6.6 As the limited scope of this work is likely to restrict its publication value, it is anticipated that a short publication note only will be produced, suitable for inclusion within an appropriate local archaeological journal. Subject to any contractual constraints, a summary of information from the project will also be entered onto the OASIS online database of archaeological projects in Britain, including the upload of a digital (PDF) copy of the final report, which will appear on the Archaeology Data Service (ADS) website once the OASIS record has been verified.

Public dissemination

6.7 In addition to the ADS website, a digital (PDF) copy of the final report will also be made available for public viewing via Cotswold Archaeology's *Archaeological Reports Online* web page, generally within 12 months of completion of the project (<http://reports.cotswoldarchaeology.co.uk/>).

Archive deposition

6.8 CA will make arrangements with the Scarborough Museum for the deposition of the site archive and, subject to agreement with the legal landowner(s), the artefact collection. Scarborough Museum will be consulted at this stage concerning their requirements and notified in advance of the expected time limits for deposition of the archive.

7. HEALTH AND SAFETY

- 7.1 CA will conduct all works in accordance with the Health and Safety at Work Act 1974 and all subsequent Health and Safety legislation, CA Health and Safety and Environmental policies and the CA Safety, Health and Environmental Management System (SHE), as well as any Principal Contractor's policies or procedures. A site-specific Construction Phase Plan (form SHE 017) will be formulated prior to commencement of fieldwork.

8. INSURANCES

- 8.1 CA holds Public Liability Insurance to a limit of £10,000,000 and Professional Indemnity Insurance to a limit of £10,000,000.

9. MONITORING

- 9.1 Notification of the start of site works will be made to NYMNPA so that there will be opportunities to visit the site and check on the quality and progress of the work.

10. QUALITY ASSURANCE

- 10.1 CA is a Registered Organisation (RO) with the Chartered Institute for Archaeologists (RO Ref. No. 8). As a RO, CA endorses the *Code of Conduct* (CIfA 2014) and the *Code of Approved Practice for the Regulation of Contractual Arrangements in Field Archaeology* (CIfA 2014). All CA Project Managers and Project Officers hold either full Member or Associate status within the CIfA.
- 10.2 CA operates an internal quality assurance system in the following manner. Projects are overseen by a Project Manager who is responsible for the quality of the project. The Project Manager reports to the Chief Executive who bears ultimate responsibility for the conduct of all CA operations. Matters of policy and corporate strategy are determined by the Board of Directors, and in cases of dispute recourse may be made to the Chairman of the Board.

11. PUBLIC ENGAGEMENT, PARTICIPATION AND BENEFIT

11.1 This project will not afford opportunities for public engagement or participation during the course of the fieldwork. However, the results will be made publicly available on the ADS and Cotswold Archaeology websites, as set out in Section 6 above, in due course.

12. STAFF TRAINING AND CPD

12.1 CA has a fully documented mandatory Performance Management system for all staff which reviews personal performance, identifies areas for improvement, sets targets and ensures the provision of appropriate training within CA's adopted training policy. In addition, CA has developed an award-winning Career Development Programme for its staff, which ensures a consistent and high quality approach to the development of appropriate skills.

12.2 As part of the company's requirement for Continuing Professional Development, all members of staff are also required to maintain a Personal Development Plan and an associated log which is reviewed within the Performance Management system. All staff are subject to probationary periods on appointment, with monthly review; for site-based staff additional monthly Employee Performance Evaluations measure and record skills and identify training needs.

13. REFERENCES

BGS (British Geological Survey) 2013. Online resource at http://maps.bgs.ac.uk/geologyviewer_google/googleviewer.html accessed 20 June 2013

CA (Cotswold Archaeology) 2012a *Doves Nest North, North York Moors: Heritage Desk-Based Assessment*. **CA Report No. 12385**

CA (Cotswold Archaeology) 2012b *Potash Exploration, Dove's Nest, Sneaton, North York Moors: Heritage Desk-Based Assessment*. **CA Report No. 12108**

CA (Cotswold Archaeology) 2013 *Potash Exploration, North Yorkshire: Programme of Archaeological Works (Phase 2; November 2012 to March 2013)*

CA (Cotswold Archaeology) 2014a *Minehead at Land at Doves Nest Farm, Sneaton, North Yorkshire, Archaeological Watching Brief (Phase 4; June to July 2014)*. CA typescript report no **14309**

CA (Cotswold Archaeology) 2014b *Potash Minehead, Doves Nest Farm, North York Moors: Heritage Desk-Based Assessment*. **CA Report No. 14146**

GSB Prospection 2012 *Potash Minehead Site, North York Moors: Geophysical Survey*
GSB Prospection typescript report **2012/63**

RHDHV (Royal HaskoningDHV) 2014 *York Potash Project Mine, MTS and MHF Environmental Statement: Part 2, Chapter 13 Cultural Heritage* Ref: **PB1110/303688/Lond**

Roskams, S. and Whyman, M. 2007 *Yorkshire Archaeological Research Framework: research agenda*; online resource at: <https://content.historicengland.org.uk/imagesbooks/publications/yorks-arch-res-framework-agenda/yorkshire-researchagenda.pdf>, accessed 17/07/2015



- site boundary
- current SMS area
- previous SMS area
- field drain



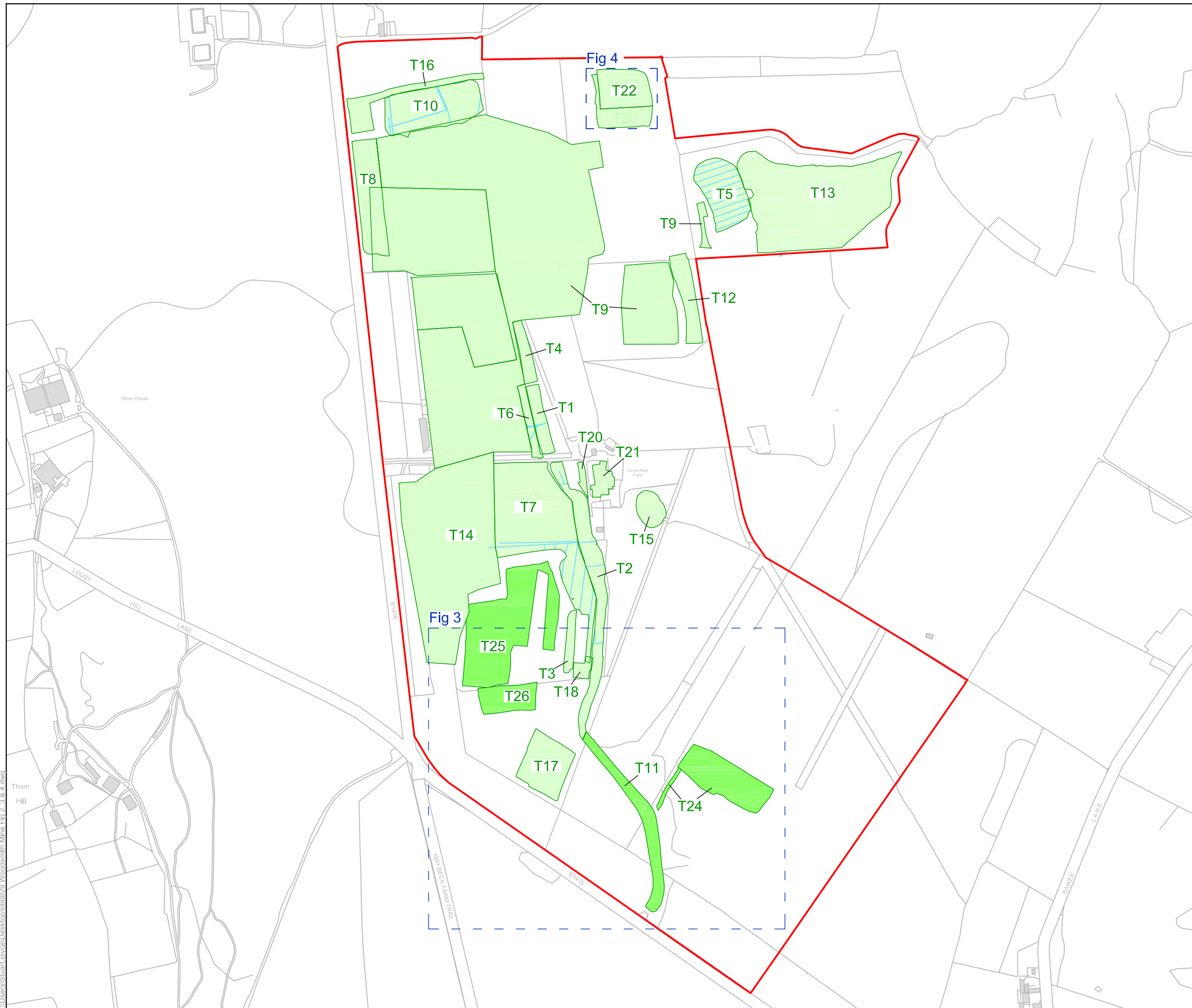
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PROJECT TITLE
Woodsmith Mine, Sneaton, North Yorkshire

FIGURE TITLE
Site location plan, showing area of observed groundworks

<small>DRAWN BY</small> TB	<small>PROJECT NO.</small> 660829	<small>FIGURE NO.</small>
<small>CHECKED BY</small> DJB	<small>DATE</small> 21.11.18	2
<small>APPROVED BY</small> SJ	<small>SCALE@A3</small> 1:5000	



C:\Users\Stuart.loyce\Desktop\660829 Woodsmith Mine Fig 2, 3 & 4.dwg

APPENDIX A: COTSWOLD ARCHAEOLOGY SPECIALISTS***Ceramics***

Neolithic/Bronze Age	Ed McSloy BA MCIFA (CA) Emily Edwards (freelance) Dr Elaine Morris BA PhD FSA MCIFA (University of Southampton)
Iron Age/Roman (Samian) (Amphorae stamps)	Ed McSloy BA MCIFA (CA) Kayt Marter Brown BA MSc MCIFA (freelance) Gwladys Montell MA PhD (freelance) Dr David Williams PhD FSA (freelance)
Anglo-Saxon	Paul Blinkhorn BTech (freelance) Dr Jane Timby BA PhD FSA MCIFA (freelance)
Medieval/post-medieval	Ed McSloy BA MCIFA (CA) Kayt Marter Brown BA MSc MCIFA (freelance) Stephanie Ratkai BA (freelance) Paul Blinkhorn BTech (freelance) John Allan BA MPhil FSA (freelance)
South West	Henrietta Quinnell BA FSA MCIFA (University of Exeter)
Clay tobacco pipe	Reg Jackson MLitt MCIFA (freelance) Marek Lewcun (freelance)
Ceramic Building Material	Ed McSloy MCIFA (CA) Dr Peter Warry PhD (freelance)

Other Finds

Small Finds	Ed McSloy BA MCIFA (CA)
Metal Artefacts	Katie Marsden BSc (CA) Dr Jörn Schuster MA DPhil FSA MCIFA (freelance) Dr Hilary Cool BA PhD FSA (freelance)
Lithics (Palaeolithic)	Ed McSloy BA MCIFA (CA) Jacky Sommerville BSc MA PCIFA (CA) Dr Francis Wenban-Smith BA MA PhD (University of Southampton)
Worked Stone	Dr Ruth Shaffrey BA PhD MCIFA (freelance) Dr Kevin Hayward FSA BSc MSc PhD PCIFA (freelance)
Inscriptions	Dr Roger Tomlin MA DPhil, FSA (Oxford)
Glass	Ed McSloy MCIFA (CA) Dr Hilary Cool BA PhD FSA (freelance) Dr David Dungworth BA PhD (freelance; English Heritage)
Coins	Ed McSloy BA MCIFA (CA) Dr Peter Guest BA PhD FSA (Cardiff University) Dr Richard Reece BSc PhD FSA (freelance)
Leather	Quita Mould MA FSA (freelance)
Textiles	Penelope Walton Rogers FSA Dip Acc. (freelance)
Iron slag/metal technology	Dr Tim Young MA PhD (Cardiff University) Dr David Starley BSc PhD
Worked wood	Michael Bamforth BSc MCIFA (freelance)

Biological Remains

Animal bone	Dr Philip Armitage MSc PhD MCIFA (freelance) Dr Matilda Holmes BSc MSc ACIFA (freelance)
Human Bone	Sharon Clough BA MSc MCIFA (CA)
Environmental sampling	Sarah Wyles BA PCIFA (CA) Sarah Cobain BSc MSc ACIFA (CA) Dr Keith Wilkinson BSc PhD MCIFA (ARCA)
Pollen	Dr Michael Grant BSc MSc PhD (University of Southampton) Dr Rob Batchelor BSc MSc PhD MCIFA (QUEST, University of Reading)
Diatoms	Dr Tom Hill BSc PhD CPLHE (Natural History Museum) Dr Nigel Cameron BSc MSc PhD (University College London)
Charred Plant Remains	Sarah Wyles BA PCIFA (CA) Sarah Cobain BSc MSc ACIFA (CA)
Wood/Charcoal	Sarah Cobain BSc MSc ACIFA(CA) Dana Challinor MA (freelance)
Insects	Enid Allison BSc D.Phil (Canterbury Archaeological Trust) Dr David Smith MA PhD (University of Birmingham)
Mollusca	Sarah Wyles BA PCIFA (CA) Dr Keith Wilkinson BSc PhD MCIFA (ARCA)
Ostracods and Foraminifera	Dr John Whittaker BSc PhD (freelance)
Fish bones	Dr Philip Armitage MSc PhD MCIFA (freelance)
Geoarchaeology	Dr Keith Wilkinson BSc PhD MCIFA (ARCA)
Soil micromorphology	Dr Richard Macphail BSc MSc PhD (University College London)
Scientific Dating	
Dendrochronology	Robert Howard BA (NTRDL Nottingham)
Radiocarbon dating	SUERC (East Kilbride, Scotland) Beta Analytic (Florida, USA)
Archaeomagnetic dating	Dr Cathy Batt BSc PhD (University of Bradford)
TL/OSL Dating	Dr Phil Toms BSc PhD (University of Gloucestershire)
Conservation	Karen Barker BSc (freelance) Pieta Greaves BSc MSc ACR (Drakon Heritage and Conservation)

APPENDIX B: ARCHAEOLOGICAL STANDARDS AND GUIDELINES

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APPENDIX C: ARBORICULTURAL METHOD STATEMENT

Arboricultural Method Statement

Phase Three works: Woodsmith Mine Site, Whitby

Client: Sirius Minerals Plc
c/o Royal Haskoning DHV
Rightwell House
Bretton
Peterborough
PE3 8DW

Planning Condition Ref: 40-RHD-WS-70-EN-MS-0002

NYMNPA-70 Rev 0 FINAL

Prepared by: Andrew Belson
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Date of report: 30th March 2017

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Plan Ref: Tree Protection Plan: 2556.Ph3.WM.YPL.TPP

DOCUMENT HISTORY

Revision	Purpose of issue	Originated	Reviewed	Approved	Date
Rev 0 (draft)	Discharge of Condition NYMNPA-70	AMB	TC	AMB	14/03/17
Rev 1	Discharge of Condition NYMNPA-70	AMB	TC	AMB	27/03/17
Rev 0 (final)	Discharge of Condition NYMNPA-70	AMB	TC	AMB	30/03/17

I hope you find this report satisfactory. If you need any more information regarding this assessment, please contact the office below.

Signed:



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Date: 30th March 2017

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1 INTRODUCTION

- 1.1 In 2014 a planning application (reference NYM/2014/0676/MEIA) was submitted to North York Moors National Park Authority (NYMNPA) for permission to develop a polyhalite mine and underground Mineral Transport System (MTS). Planning consent was subsequently granted in 2015 subject to conditions.
- 1.2 This document has been prepared on behalf of Sirius Minerals plc and details the requirements with respect to the management of trees affected by the Phase 3 Works at the Woodsmith Mine Site.
- 1.3 This document is required to partially discharge condition 70 of the NYMNPA planning permission NYM/2014/0676/MEIA (see Table 1 overleaf).
- 1.4 This document, read in conjunction with drawing 2556.Ph3.WM.YPL.TPP describes a suitable methodology for the protection of the trees on site during construction.
- 1.5 Protective measures have been developed and specified in accordance with the recommendations of BS5837: 2012, including relevant terms, definitions and Root Protection Area (RPA) calculations.

Table 1: Condition NYMNPA-70 Arboricultural Method Statement and Tree Protection Plan

Condition requirements	Compliance
<p>Prior to site preparatory works commencing at DNF or Lady Cross a scheme shall be submitted to and approved by the MPA showing:</p>	<p>This document prepared prior to work commencing. It considers works at Woodsmith Mine (previously Dove’s Nest Farm). Works at Lady Cross Plantation have been deferred.</p>
<ul style="list-style-type: none"> • any existing trees, hedges and other vegetation to be retained; together with • any measures for the protection and management/ reinforcement of these areas; and also • indicating trees, hedges and other vegetation to be removed. 	<ul style="list-style-type: none"> • Tree, hedges and other vegetation to be retained are indicated on drawing 2556.Ph3.WM.YPL.TPP (those NOT marked in red dashed lines and circles). • Protection measures are described in this document in sections 6-10. • Tree works to be carried out before work begins are described in this document in section 5, with trees to be removed listed in section 5.4 and indicated on drawing 2556.Ph3.WM.YPL.TPP by red dashed lines and circles.
<p>This shall include Arboricultural method statement and tree protection plans.</p>	<p>This document comprises an Arboricultural Method Statement for Phase 3 at the Woodsmith Mine Site. Drawing 2556.Ph3.WM.YPL.TPP comprises the Tree Protection Plan for the Phase 3 works at the Woodsmith Mine Site.</p>
<p>These measures shall be implemented ahead of site preparatory works and retained during construction period.</p>	<p>This instruction is made explicitly in this document, for example in sections 4, 5.1, 7.6, and 9.7.</p>

2 DEVELOPMENT DETAILS

2.1 The works required for the Phase 3 works at the Woodsmith Mine Site associated with the York Potash Project comprise:

- General site clearance including demolition of all farm buildings and sheds, and localised tree and scrub clearance, as shown on drawing 40-ARI-WS-71-CI-DR-1051.
- Excavation and construction of the south western extension of the upper tiered working platform at around 203m AOD, as shown on drawing 40-ARI-WS-71-CI-DR-1053.
- Excavation and construction of the Platform for the Construction Welfare Facility, Parking Area and Concrete Batching Plant, as shown on drawing 40-ARI-WS-71-CI-DR-1053.
- Construction of temporary and permanent soil mounds, including the basal liner for a future storage facility in the northeast corner of the site for non-hazardous non-inert spoil and three topsoil, subsoil and inert material storage bunds in the southwestern area of the site, as shown on drawings 40-ARI-WS-71-CI-DR-1053 and 40-ARI-WS-71-CI-DR-1055, with earthworks volumes presented in 40-ARI-WS-71-CI-DR-1054.
- Construction of surface water drainage, a temporary surface water attenuation pond and temporary wetland in the southern area, and two permanent attenuation ponds and two wetland areas in the north eastern area, as shown on Arup drawing YP-P10-WS-CD-050 (NMC).
- Construction of a spring and groundwater drainage layer in the north eastern area, discharging into a wetland area, as shown in drawing 40-ARI-WS-71-CI-DR-1080.
- Installation and commissioning of temporary dewatering as shown in drawing 40-ARI-WS-71-CI-DR-1058.
- Erection on site of the Concrete Batching Plant as shown in drawing 40-ARI-WS-71-CI-DR-1050, complete with reticulated water supplies and tanks.
- Construction of the drilling platform and temporary saline lagoon area for the groundwater reinjection well as shown in drawing 40-ARI-WS-71-CI-DR-1057.
- Establishment of construction welfare and security facilities - complete with hook-up of power, communications & water supplies and new waste water collection facilities as shown on drawing 40-ARI-WS-71-CI-DR-1050.

3 SITE DESCRIPTION

- 3.1 The site consists of existing farm tracks with highway access off B1416 (as improved in the Phase 1 highway works, see 2556.Ph1.Highways.YPL.AMS), coniferous and hardwood plantation and woodland; and small ditches and bodies of water.

4 SUPERVISION AND MONITORING

- 4.1 It is important that the tree protection measures are understood and adopted at all levels from client to project manager and any sub-contractors in order that the measures can be successful.
- 4.2 Communication between the Client, Principal Contractors (and their sub-contractors), the Project Manager and the Arboriculturalist are of high importance.
- 4.3 A pre-commencement meeting will be held on site between the Site Manager and any deputies; the Project Arboriculturalist; Contractors' forepersons and the Project Ecologist.
- 4.4 The Local Planning Authority Arboricultural Officer; the Landscape Officer and The Planning Officer will be notified of the meeting and invited to attend as appropriate.
- 4.5 The Site Manager will approve the protective barriers (comprising Site Security Fence; Temporary Fence or BS 59837 Barriers as appropriate) before any work commences, and monitor the physical and managed protective tree measures continually.

5 CARRY OUT ARBORICULTURAL WORKS

- 5.1 The area of the plantation for removal will be identified with tape in a manner agreed with the treework contractor.
- 5.2 A number of trees in woodland plantation 041 W2 will be removed (as denoted by the dashed red lines on the drawing 2556.Ph3.WM.YPL.TPP)

6 TREWORK GENERAL NOTES

- 6.1 Before the commencement of any tree works, the Project Ecologist or similar will carry out the necessary inspections for bats and nesting birds as specified in the Woodsmith Mine Phase 3 Construction Environmental Management Plan (CEMP) and associated Protected Species Management Plans (PSMPs).
- 6.2 The start date for tree work will be agreed following the advice of the Project Ecologist.
- 6.3 Tree work is skilled and potentially dangerous work. It will be carried out by trained and certificated staff working to BS3998: 2010 and working in accordance with the various Regulations of the Health and Safety at Work Act 1974.
- 6.4 Contractors will have Public Liability Insurance and Employer's Liability Insurance to a level appropriate to the nature of the Works.
- 6.5 Machinery and equipment will be maintained, inspected and operated in accordance with the various Regulations within the Health and Safety at Work Act.
- 6.6 The Contractor will be responsible for producing their own Method Statement for the works that will include Risk Assessments, staff profiles and certification, machinery and equipment inspection records and certificates.
- 6.7 The Contractor will be responsible for the treatment of coniferous stumps, according to an assessment of species, soil and climate by the Project's Arboriculturalist.
- 6.8 Stump removal may be required and will be agreed with the Client, including the disposal of arisings.
- 6.9 Disposal of timber, brash and other arising is specified in the Contractor's Project Management Plan (PMP).

7 ERECT PROTECTIVE BARRIERS

7.1 Once the treeworks are complete, the retained Plantation will be protected as follows:

- Where the site security fence is positioned in the same place as the recommended barrier on drawing 2556.Ph3.WM.YPL.TPP, it will provide adequate tree protection if:
 - a) the fence is beyond the radial extent of the RPA or is beyond the drip line of the trees' crown; and
 - b) the fence is able to resist lateral forces.
- A barrier to Fig 2 BS5837 will be erected in place of proposed security or temporary fence where works are required ahead of their installation, with the line of the barrier being on the same line as the proposed fence. See Appendix B for Fig 2 BS5837 barrier illustration.

7.2 In low activity zones, (as defined by Sirius Minerals plc) the existing stock fence and ditches are considered to provide adequate tree protection.

7.3 Weather-proof notices stating: 'PROTECTED AREA – DO NOT ENTER' will be erected on the security fencing, existing fencing or the protective barriers not less than 5m apart.

7.4 Temporary access to the protected area will be by permission of the Site Manager who will consult the Project Arboriculturalist if required.

7.5 The Site Manager will assess the integrity of the protective fencing protection measures regularly. Any shortcomings must be rectified to the original specifications immediately.

7.6 Barriers will remain in place until the end of Phase 3 where they may be retained for future use or removed according to requirements.

8 CARRY OUT OTHER PRE-COMMENCEMENT WORKS

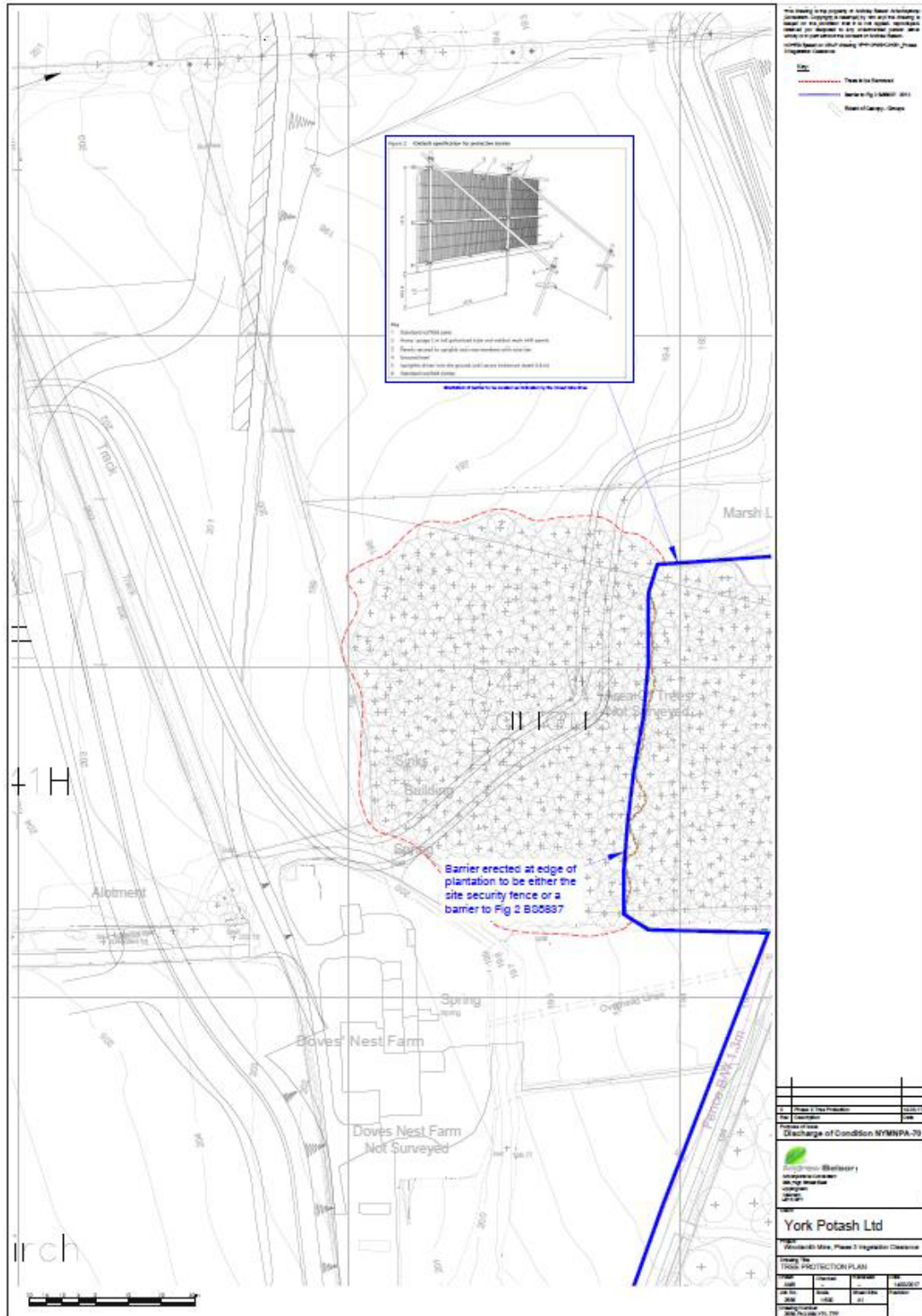
- 8.1 The works will be planned in such a way as to minimise the pressure on the trees through careful planning and management, particularly in excavations and the storage of materials.

9 OTHER PROTECTION MEASURES REQUIRED BY BS5837

- 9.1 No fires to be lit on site where flames can reach within 5m of a tree's crown, taking the size of the fire, wind speed and direction into account.
- 9.2 No storage or discharge of materials within 5 metres of a tree bole.
- 9.3 No mixing of cement or dispensing of fuel or chemicals within 5 metres of a tree bole.
- 9.4 No stripping of topsoil, excavation or changing of levels to occur within the RPA.
- 9.5 Any damage that occurs to the trees during construction must be rectified to the British Standard BS 3998: 2010 (Tree Work – Recommendations).
- 9.6 Trees must not be used as anchor points for winching or for supporting wires/cables.

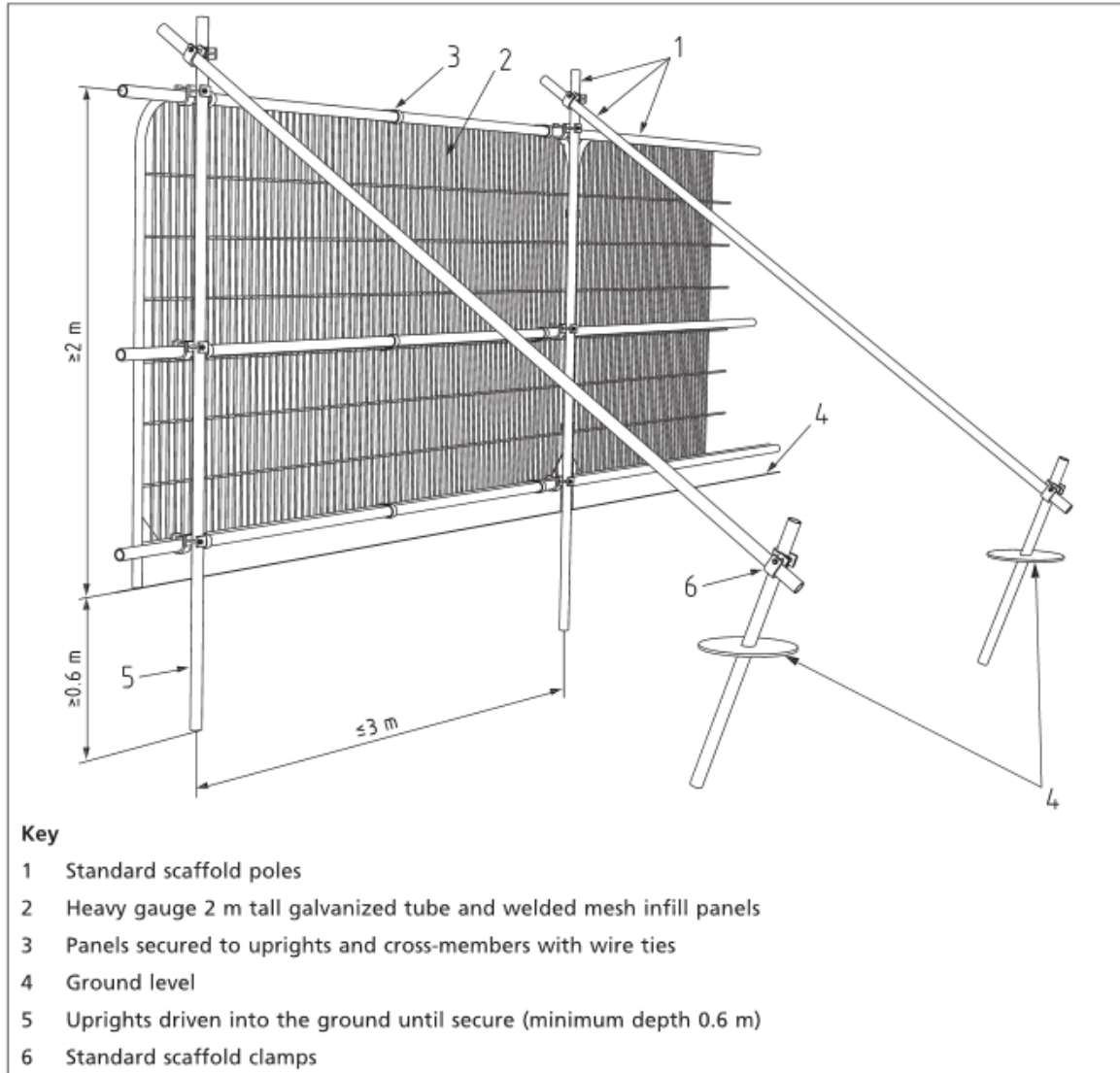
APPENDIX A – TREE PROTECTION PLAN

The Tree Protection Plan is pictured below. A full-sized version of the plan has been provided with this file (Filename: 2556.Ph3.WM.YPL.TPP).



APPENDIX B – BARRIERS TO BS5837-2012

Figure 2 Default specification for protective barrier



APPENDIX C – POSTER TO BE FIXED TO BARRIERS AND FENCES

PROTECTED
AREA

DO NOT ENTER


(WITHOUT PERMISSION)

This barrier is designed to protect these
trees.

PLEASE REPORT ANY BREACH IN
THE BARRIER TO THE SITE
MANAGER


Andover Office

Stanley House
Walworth Road
Andover
Hampshire
SP10 5LH



Cirencester Office

Building 11
Kemble Enterprise Park
Cirencester
Gloucestershire
GL7 6BQ



Exeter Office

Unit 1, Clyst Units
Cofton Road
Marsh Barton
Exeter
EX2 8QW



Milton Keynes Office

Unit 8 - The IO Centre
Fingle Drive, Stonebridge
Milton Keynes
Buckinghamshire
MK13 0AT



Suffolk Office

Unit 5, Plot 11, Maitland Road
Lion Barn Industrial Estate
Needham Market
Suffolk
IP6 8NZ

