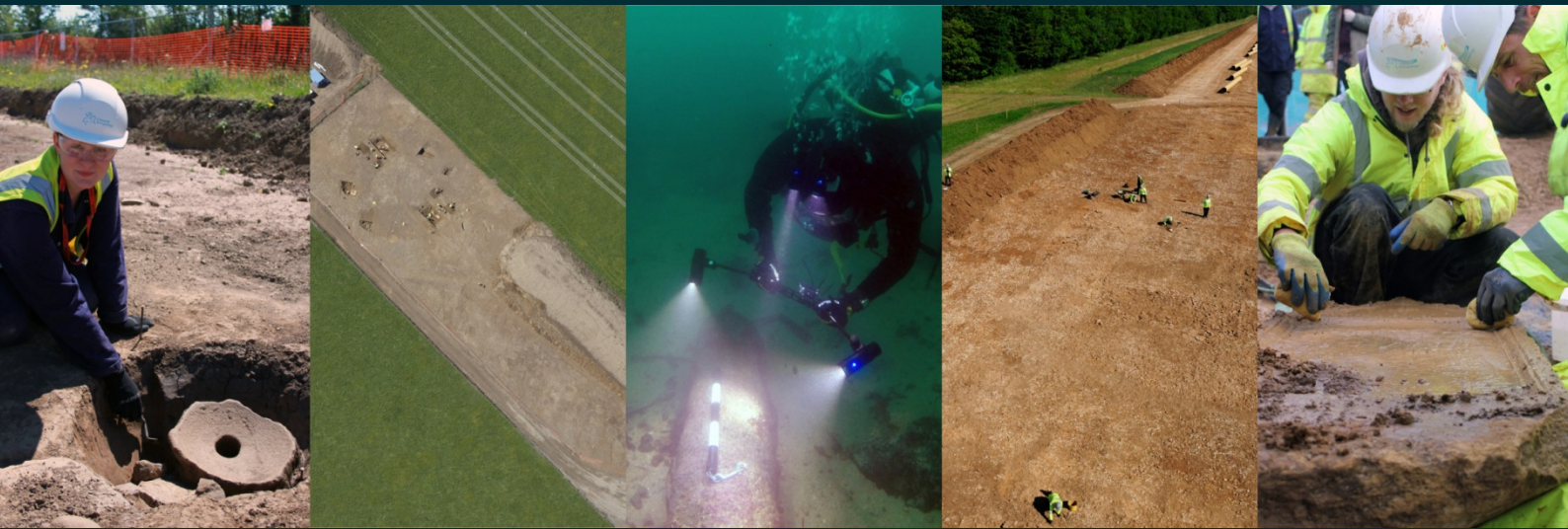


Woodsmith Mine Sneaton North Yorkshire Phase 3

Written Scheme of Investigation for an Archaeological Watching Brief



for
Sirius Minerals PLC

CA Project: 660829

Document number: 40-COT-WS-70-EN-PL-0003

March 2017



Woodsmith Mine
Sneaton
North Yorkshire Phase 3

Written Scheme of Investigation for *Programme of
Archaeological Works*

CA Project: 660829
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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 a programme of archaeological works at the minehead at Woodsmith Mine, Sneaton, North Yorkshire (centred at NGR: NZ 8938 0538). This work has been commissioned by Sirius Minerals PLC (Sirius Minerals) and has been written to satisfy the requirements of condition 95 of planning permission NYM/2014/0676/MEIA.

1.2 The WSI has been developed for the scope of the Phase 3 Site Works, as defined in section 1.3. The WSI will be updated and re-submitted in advance of all subsequent development phases.

Summary of Phase 3 Works

1.3 A summary description of the principal construction elements of the Phase 3 Works is presented below:

- General site clearance including demolition of all farm buildings and sheds, and localised tree and scrub clearance, as shown on Arup 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 Drawing 40-ARI-WS-71-CI-DR-1050;
- 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.

1.4 The Phase 3 Works are scheduled to commence June 2017.

1.5 This WSI has been guided in its composition by the *Standard and guidance: Archaeological excavation* (ClfA 2014), *Standard and guidance: Archaeological watching brief* (ClfA 2014), the *Management of Research Projects in the Historic Environment (MORPHE): Project Manager's Guide* and the accompanying *PPN 3: Archaeological Excavation* (Historic England 2015) and any other relevant standards or guidance contained within Appendix A.

The site

1.6 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. 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.

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

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 (Fig. 2, 33). 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 (Fig. 2, 10). A pond, of uncertain origin, was identified to the north-east, also within Haxby Plantation (Fig. 2, 27).
- 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 (Fig. 2, 19). 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 (Fig 2, 13) is located 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 (Fig. 2, 14). 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).

3. AIMS AND OBJECTIVES

3.1 The objectives of the archaeological works are:

- record the nature of the main stratigraphic units encountered;
- assess the overall presence, survival and potential of structural and industrial remains;
- assess the overall presence, survival, condition, and potential of artefactual and ecofactual remains.

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.

3.3 If significant archaeological remains are identified, reference will be made to 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

Strip, map and sample excavation

- 4.1 The archaeological strip, map and sample excavation (SMS) will be undertaken throughout the areas shown on the attached plan (Drawing No. YP-P10-WS-CX-053; Areas 9, 10, 11, 12, 15 & 17), any work undertaken outside of these areas and not stated within the areas of watching brief (below; paragraph 4.8) will need to be covered by a separate WSI/addendum WSI or the written approval of Graham Lee, Senior Archaeological Conservation Officer (SACO). Excavation areas will be set out on OS National Grid (NGR) co-ordinates using a Leica GPS, and scanned for live services by trained staff using CAT and Genny equipment in accordance with the Cotswold Archaeology *Safe System of Work for avoiding underground services*. The position and size of excavation areas may be adjusted on site to account for services and other constraints, with the approval of Graham Lee, SACO. The final 'as dug' areas will be recorded with GPS. Archaeological works will not be required in the areas which have already been subject to archaeological monitoring, notably the Phase 2 areas (Drawing YP-P10-WS-CX-053). A system for regularly signing-off areas devoid of archaeological features will be established with Graham Lee, SACO once site works commence.
- 4.2 Initially works will comprise the mechanical removal of non-archaeologically significant soils, under constant archaeological supervision, using a toothless ditching bucket. Deposits will be removed in separate layers according to type, e.g. topsoil will be removed as a layer, followed by the subsoil. The generated spoil will be monitored in order to recover artefacts. Hand-cleaning of the stripped surface, to better define any identified archaeological deposits/features, will be undertaken where necessary. All machining will be conducted under archaeological supervision and will cease when the first archaeological horizon or natural substrate is revealed (whichever is encountered first). All archaeological features will be recorded in plan using Leica GPS.
- 4.3 Examination of features will concentrate on recovering the plan and any structural sequences. Particular emphasis will be placed upon retrieving a stratigraphic sequence and upon obtaining details of the phasing of the site. All funerary/ritual activity and domestic/industrial deposits will be **100%** excavated. All discrete features (post holes, pits) will be sampled by hand excavation (average sample unlikely to exceed **50%**) unless their common/repetitious nature suggests they are unlikely to yield

significant new information. All linear features (ditches, pathways etc) will be sampled to a maximum of **10%**. Bulk horizontal deposits will as a minimum be **10% by area** hand excavated, after which a decision may be taken (in conjunction with Graham Lee, SACO) to remove the remainder with machinery. Priority will be attached to features which yield sealed assemblages which can be related to the chronological sequence of the site. Percentages of contexts excavated (where less than 100% of the context is excavated) will be reviewed, and following discussion with Graham Lee, SACO, increased if completion of the sample indicates that further information is likely to be revealed from the feature in question which could enhance our understanding both of that feature and of the archaeology of the site as a whole.

- 4.4 All archaeological features revealed will be planned and recorded in accordance with CA 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 or Total Station (TST) as appropriate) and drawn sections (scale 1:10 or 1:20 as appropriate). Where detailed feature planning is undertaken using GPS/TST this will be carried out in accordance with CA 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 CA Technical Manual 3 *Treatment of Finds Immediately after Excavation*.
- 4.5 Due care will be taken to identify deposits which may have environmental potential, and where appropriate, a programme of environmental sampling will be initiated. Samples will be taken, processed and assessed for potential in accordance with CA Technical Manual 2 *The Taking and Processing of Environmental and Other Samples from Archaeological Sites*.
- 4.6 If human remains are encountered, the client and Graham Lee, SACO will be informed immediately. Where excavation of human remains is undertaken, this will be conducted following the provisions of the Coroners Unit in the Ministry of Justice.
- 4.7 CA will comply fully with the provisions of the Treasure Act 1996 and the Code of Practice referred to therein.

Watching brief

- 4.8 The watching brief will comprise the observation by a competent archaeologist of all remaining intrusive groundworks, including the excavation of drainage and cable trenches and fencing (Drawing YP-P10-WS-CX-053).
- 4.9 In addition archaeological monitoring will be maintained during the demolition of Dove's Nest farmhouse (Fig. 2, 24) and the removal of the building's foundations, to allow for the recording of any additional information. Dove's Nest farmhouse is of modern date and is not listed. The farmhouse has previously undergone a Level 2 buildings recording survey, carried out by a qualified buildings archaeologist in accordance with the Historic England guidance document *Understanding Historic Buildings: a guide to good recording practice* (2006).
- 4.10 Investigation and recording of any archaeological features that may be encountered during the watching briefs will follow the methodology outlined in paragraphs 4.3 to 4.7 above.

5. STAFF AND TIMETABLE

- 5.1 This project will be under the management of Stuart Joyce, MCI(A), Project Manager, CA and the fieldwork will be directed by an experienced Project Leader, who will be assisted in the field by experienced Archaeologists drawn from CA's fieldwork team.
- 5.2 The staffing structure will be organised thus: the Project Manager will direct the overall conduct of the evaluation 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 duration of the fieldwork will be dependent upon the contractor's programme.
- 5.4 Specialists who will be invited to advise and report on specific aspects of the project as necessary are:

Ceramics	Ed McSloy MCI(A) (CA)
Metalwork	Ed McSloy MCI(A) (CA)
Flint	Jacky Sommerville PCI(A) (CA)

Animal Bone	Andy Clarke (CA)/ Matty Holmes BSc MSc ACIfA (freelance)
Human Bone	Sharon Clough MCIfA (CA)
Environmental Remains	Sarah Wyles PCIfA (CA)

5.5 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 the archaeological contractors agreed standards and Scarborough Museum's guidelines.

6.2 Should limited remains be encountered an illustrated report will be compiled on the results of the fieldwork. Copies of the report will be distributed to the relevant parties (Sirius Minerals and Mr Graham Lee, SACO). This will be followed by a short publication note only, suitable for inclusion within an appropriate local archaeological journal. A summary of information from the project will also be entered onto the OASIS online database of archaeological projects in Britain.

6.3 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).

6.4 Should the fieldwork reveal significant archaeological findings a post-excavation assessment report will be prepared following completion of all site works, subject to discussions between the client and Mr Graham Lee, SACO. This assessment will be prepared in accordance with the specification given in Appendices 4 and 5 of *Management of Archaeological Projects 2* (English Heritage 1991).

6.5 Should the post-excavation assessment identify the potential for further analysis, an updated project design will be prepared for agreement by Mr Graham Lee, SACO, prior to the commencement of the detailed analysis and reporting. Arrangements will

be made for an appropriate level of academic publication of the results of the excavations. A summary report will also be published in an appropriate local archaeological journal.

- 6.6 CA will make arrangements with Scarborough Museum for the deposition of the site archive and, subject to agreement with the legal landowner(s), the artefact collection.

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 Graham Lee, SACO, so that there will be opportunities to visit the excavation 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

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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

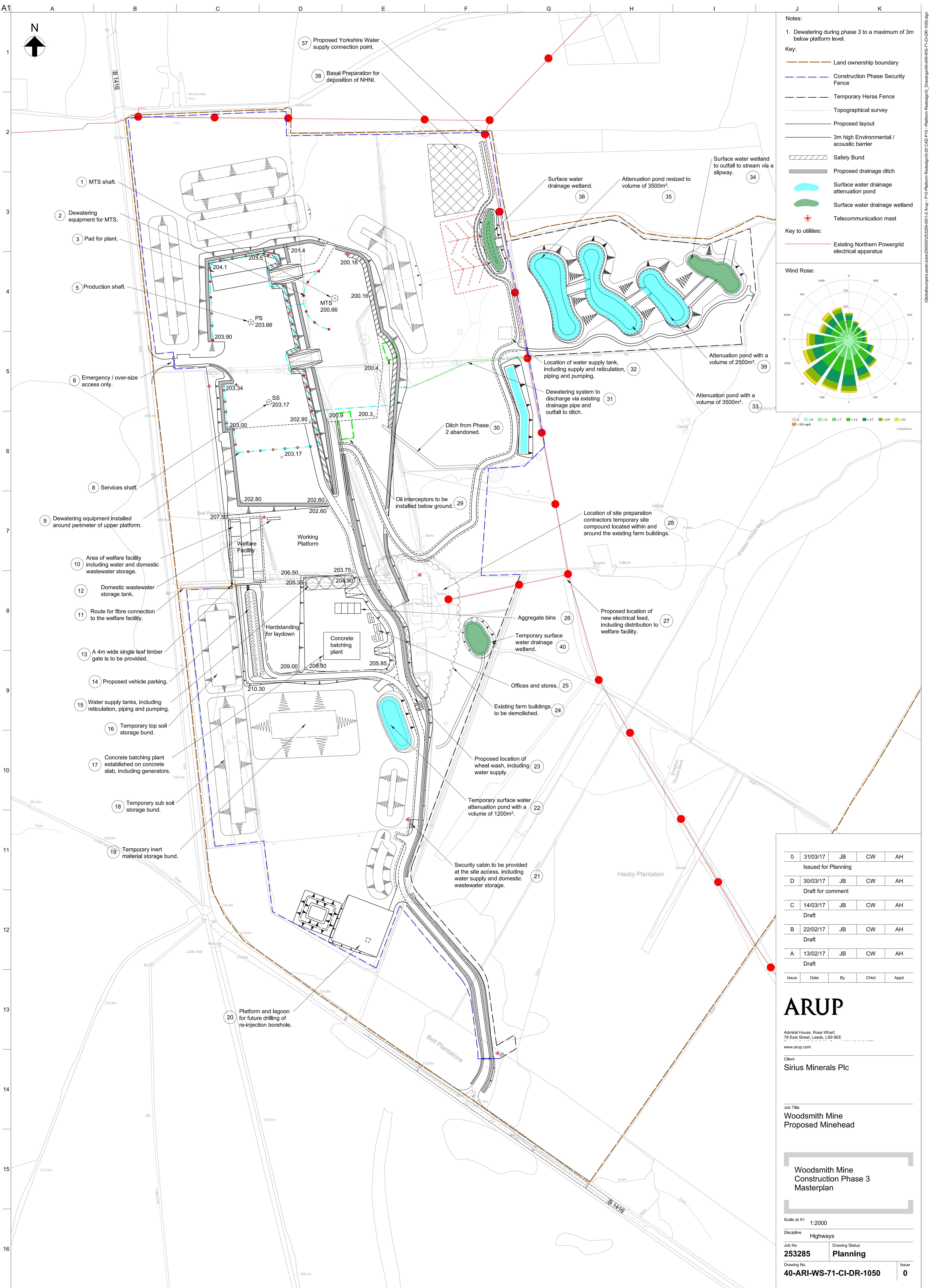
Animal bone	Dr Philip Armitage MSc PhD MCIFA (freelance) Dr Matilda Holmes BSc MSc ACIFA (freelance)
Human Bone	Sharon Clough BA MSc MCIFA (CA)
Environmental sampling	Sarah Wyles BA PCIFA (CA) Sarah Cobain BSc MSc ACIFA (CA) Dr Keith Wilkinson BSc PhD MCIFA (ARCA)
Pollen	Dr Michael Grant BSc MSc PhD (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

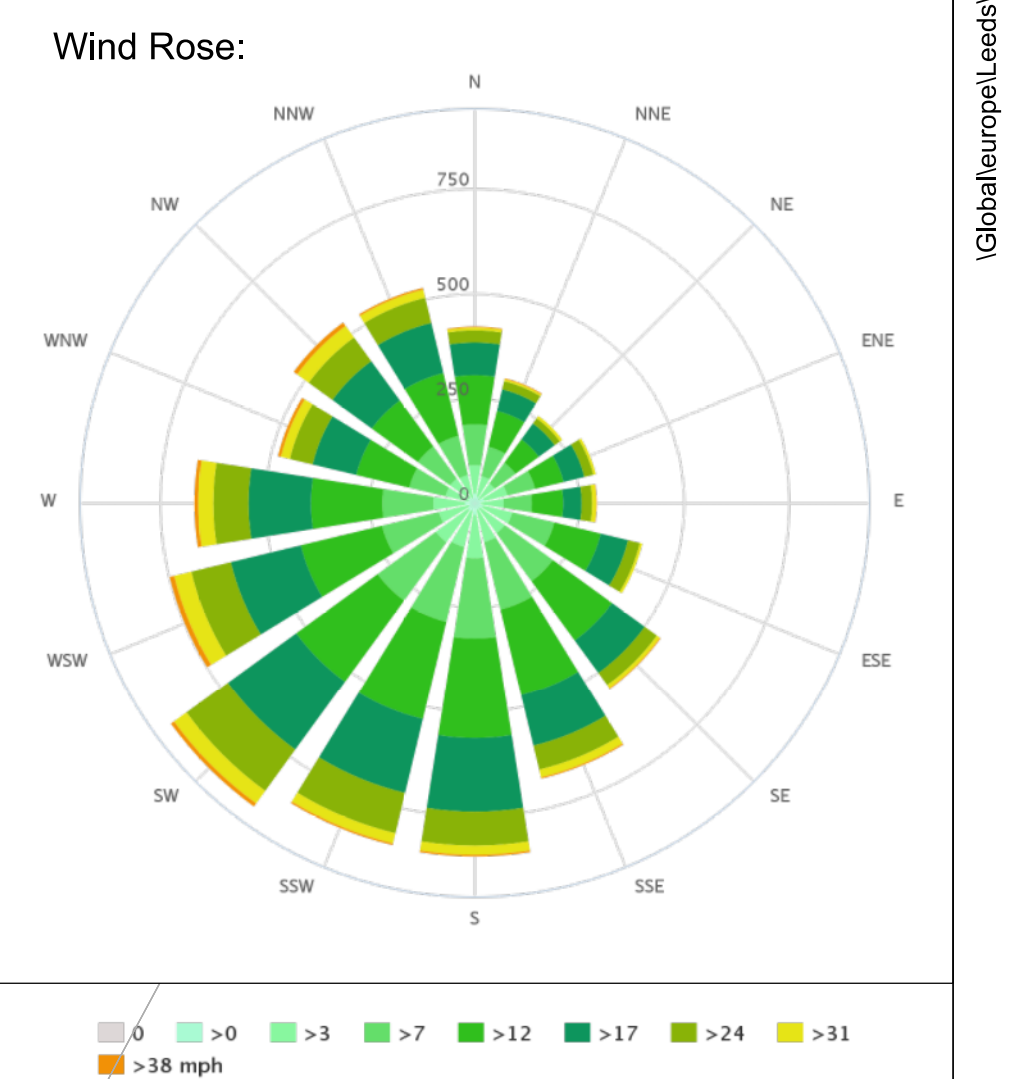
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- Notes:
- Dewatering during phase 3 to a maximum of 3m below platform level.
- Key:
- Land ownership boundary
 - Construction Phase Security Fence
 - Temporary Heras Fence
 - Topographical survey
 - Proposed layout
 - 3m high Environmental / acoustic barrier
 - Safety Bund
 - Proposed drainage ditch
 - Surface water drainage attenuation pond
 - Surface water drainage wetland
 - Telecommunication mast
- Key to utilities:
- Existing Northern Powergrid electrical apparatus



0	31/03/17	JB	CW	AH
Issued for Planning				
D	30/03/17	JB	CW	AH
Draft for comment				
C	14/03/17	JB	CW	AH
Draft				
B	22/02/17	JB	CW	AH
Draft				
A	13/02/17	JB	CW	AH
Draft				
Issue	Date	By	Chkd	Appd

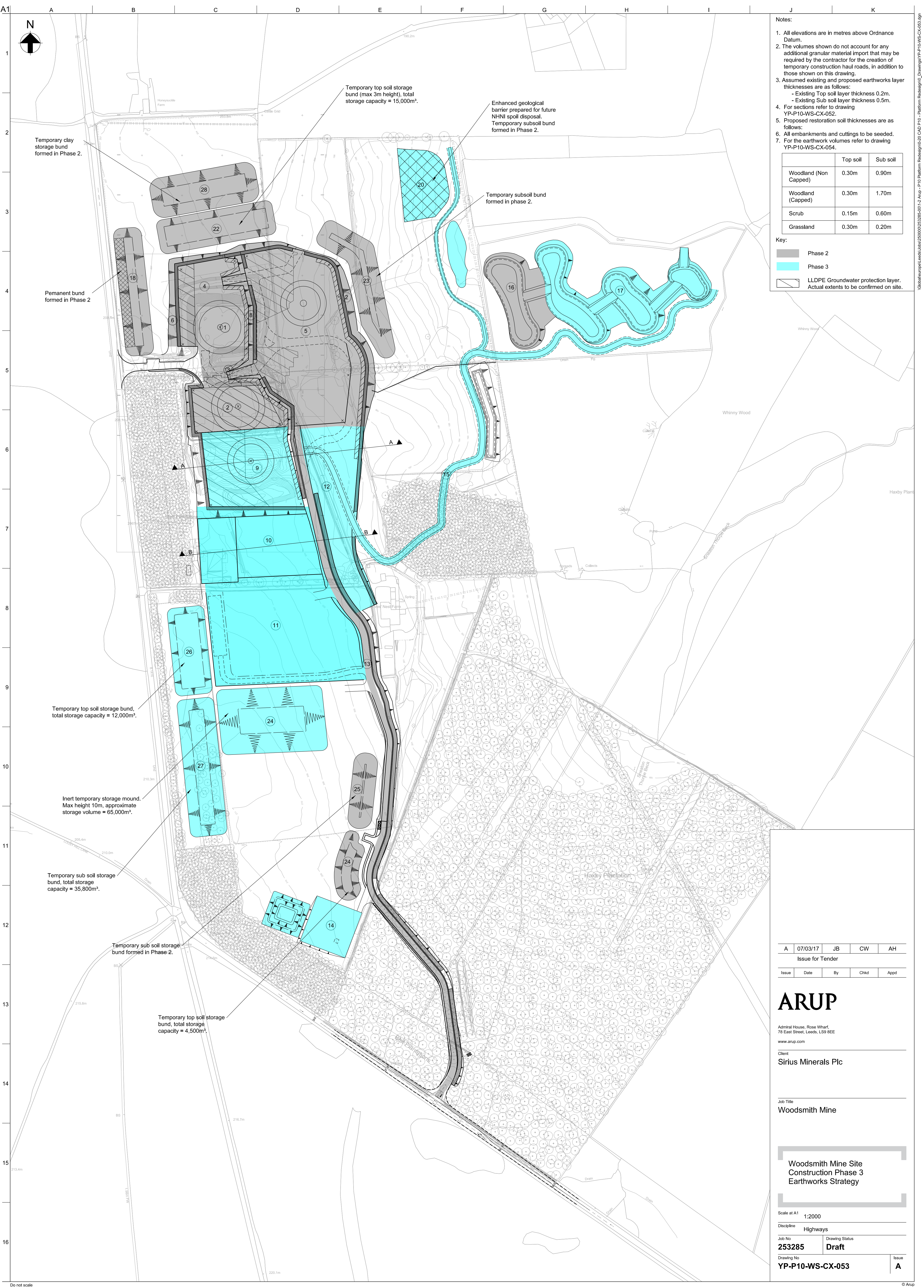
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Client
Sirius Minerals Plc

Job Title
**Woodsmith Mine
 Proposed Minehead**

**Woodsmith Mine
 Construction Phase 3
 Masterplan**

Scale at A1 1:2000
 Discipline Highways
 Job No 253285
 Drawing Status Planning
 Drawing No 40-ARI-WS-71-CI-DR-1050
 Issue 0



- Notes:
- All elevations are in metres above Ordnance Datum.
 - The volumes shown do not account for any additional granular material import that may be required by the contractor for the creation of temporary construction haul roads, in addition to those shown on this drawing.
 - Assumed existing and proposed earthworks layer thicknesses are as follows:
 - Existing Top soil layer thickness 0.2m.
 - Existing Sub soil layer thickness 0.5m.
 - For sections refer to drawing YP-P10-WS-CX-052.
 - Proposed restoration soil thicknesses are as follows:
 - All embankments and cuttings to be seeded.
 - For the earthwork volumes refer to drawing YP-P10-WS-CX-054.

	Top soil	Sub soil
Woodland (Non Capped)	0.30m	0.90m
Woodland (Capped)	0.30m	1.70m
Scrub	0.15m	0.60m
Grassland	0.30m	0.20m

- Key:
- Phase 2
 - Phase 3
 - LLDPE Groundwater protection layer. Actual extents to be confirmed on site.

A	07/03/17	JB	CW	AH
Issue for Tender				
Issue	Date	By	Chkd	Appd

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Client
Sirius Minerals Plc

Job Title
Woodsmith Mine

**Woodsmith Mine Site
Construction Phase 3
Earthworks Strategy**

Scale at A1 1:2000

Discipline **Highways**

Job No **253285** Drawing Status **Draft**

Drawing No **YP-P10-WS-CX-053** Issue **A**

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