

**Technical
Note**

To: Sirius Minerals PLC
From: Royal HaskoningDHV
Date: 26 May 2017
Copy:
Our reference: 40-RHD-WS-70-EN-NT-0002 REV 0
Classification: Open

Subject: Phase 4 Woodsmith Mine Temporary Structures

1 Introduction

- 1.1 This document should be read in conjunction with the Temporary Structures Plan (40-ARI-WS-71-CI-DR-1087) (**Annex 1**)
- 1.2 The temporary structures identified in the Temporary Structures Appendix (Appendix 7) of the **Phase 3 CEMP** (40-RHD-WS-70-EN-PL-0014) will remain on site during Phase 4.

2 Workshop

- 2.1 A workshop is required so that diaphragm wall equipment and plant can be repaired on site rather than being taken off site for repair (**Photographs 1 and 2**). To reduce the risk of delays to the programme, spare parts and consumables will be stored on site. The workshop will have openings to the sides (approximately 7 No.). The approximate dimensions of the workshop are 25m x 15m and 9m (**L x W x H**).

3 Welding Shelter / Tent

- 3.1 A welding tent/shelter will be erected where hot works, in order to repair any damaged equipment can be carried out safely. The tent/shelter will be erected between two store containers (**Photograph 3**).

4 Welfare

- 4.1 A welfare and office structure (**Photograph 4**) will be setup for all staff working on the diaphragm wall works including management. Approximate dimensions of the structure will be 35m x 15m x 6m (**L x W x H**). It will be on two levels. An indicative layout is provided in **Figure 1** below.

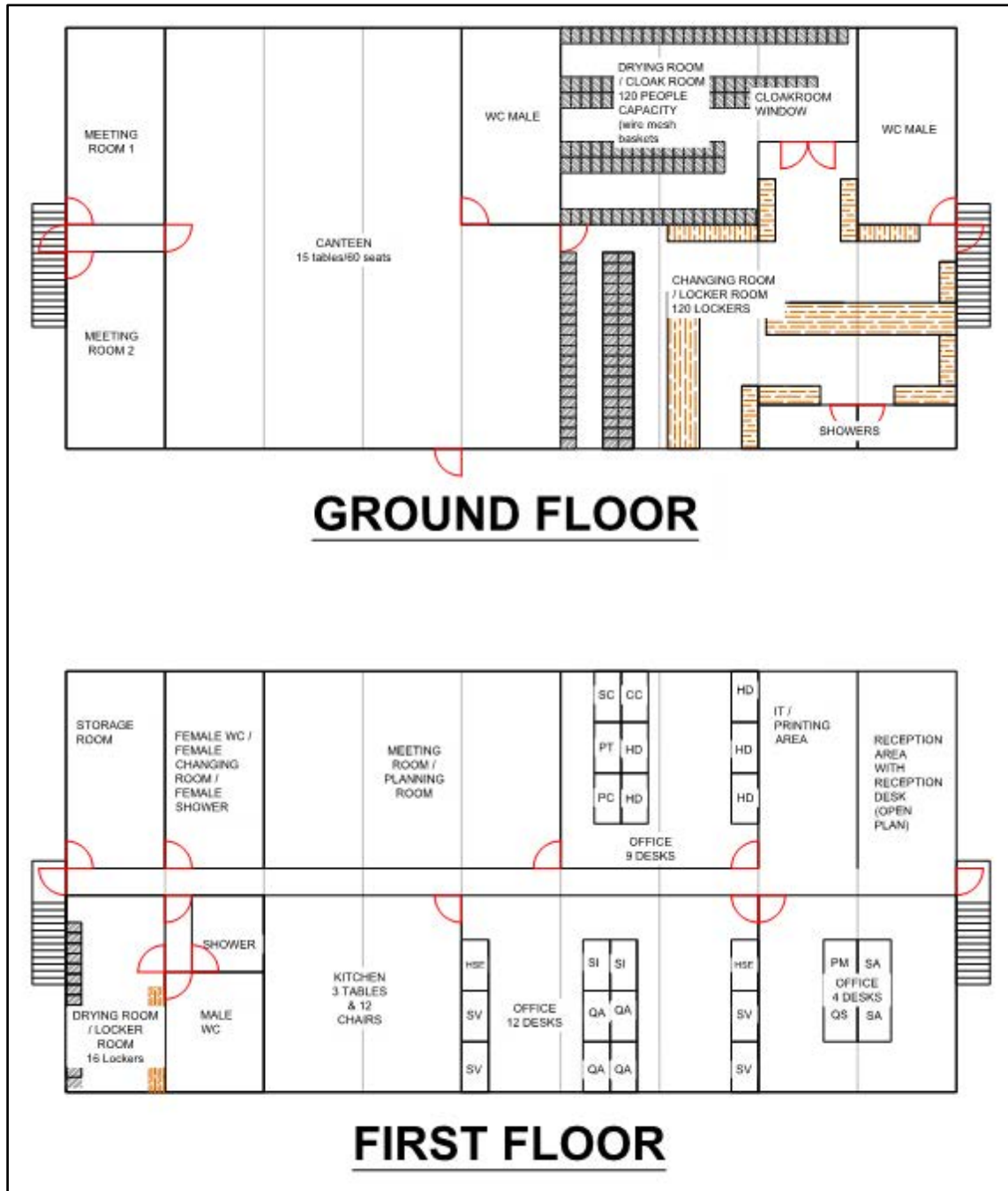


Figure 1: Proposed layout of the Welfare Facilities

5 Slurry Batch Plant (Bentonite)

- 5.1 A support slurry based on bentonite will be used for the construction of the Woodsmith Mine diaphragm wall shafts. The slurry (**Photograph 5**) will be manufactured in the bentonite / slurry plant where the raw materials for the slurry – bentonite powder and additives will be stored. The bentonite powder will be stored in silos (**Photograph 6**) while the additives will be stored in tanks and bags depending in their nature. The layout of the slurry / bentonite plant is shown in **Annex 2** Masterplan (40-ARI-WS-71-CI-DR-1081).
- 5.2 The Bentonite plant comprises:
- 4 No. 22m³ storage silos for dry bentonite, 2.5m diameter and 7.15m in height.
 - 7 No 500m³ storage tanks for mixed slurry each 12m diameter and 6m in height.
 - 1 No 500m³ storage tank for waste slurry, 12m diameter and 6m in height.
 - 1 No agitation tank, 2.2m x 1.65m x 2.5m (L x W x H).
 - 1 No Mixer dimensions, 1.8m x 1.2m x 1.75m (L x W x H).
 - 3 No desanders (**Photograph 7**), each 7.5m x 8.1m x 7.5m (L x W x H) dimensions.
 - 3 No. flocculant and decanter stations (**Photograph 8**), each 6.1m x 2.5m x 2.6m (L x W X H) and 6.1m x 2.5m x 2.6m (L x W X H). Note: the flocculent station is setup underneath the decanter therefore the overall height of this setup is 5.2m.

6 Materials and Colour

- 6.1 The workshop will be of steel construction, galvanised and will come in white colour.
- 6.2 The welding tent / shelter will be constructed of a white canvas roof with containers forming the two sites. One end of the shelter will be open.
- 6.3 The welfare facility will be of steel construction, galvanised and will come in RAL7035 colour.
- 6.4 All bentonite tanks will be of steel construction, galvanised and will come in RAL12B29.
- 6.5 All dry silos will be of steel construction, galvanised and will come in white.
- 6.6 The agitation tank will be of steel construction, galvanised and will come in yellow colour.
- 6.7 The mixer will be of steel construction, galvanised and will come in yellow colour.
- 6.8 All desanders will be of steel construction, galvanised and will come in yellow colour.
- 6.9 All flocculant and decanter stations will be of steel construction, galvanised and will come in yellow colour.

7 Timescales

7.1.1 It is anticipated that the Phase 4 Works will be undertaken from July 2017 to March 2018.

8 Photographs

8.1.1 The following show representative photographs of the temporary works described in **Sections 2 - 6** inclusive above.



Photograph 1: Example of workshop with store containers installed to the sides



Photograph 2: Example of internal setup of workshop



Photograph 3: Example of welding tent/shelter



Photograph 4: Typical Welfare Facility



Photograph 5: Example Slurry Tanks



Photograph 6: Typical mixer set up

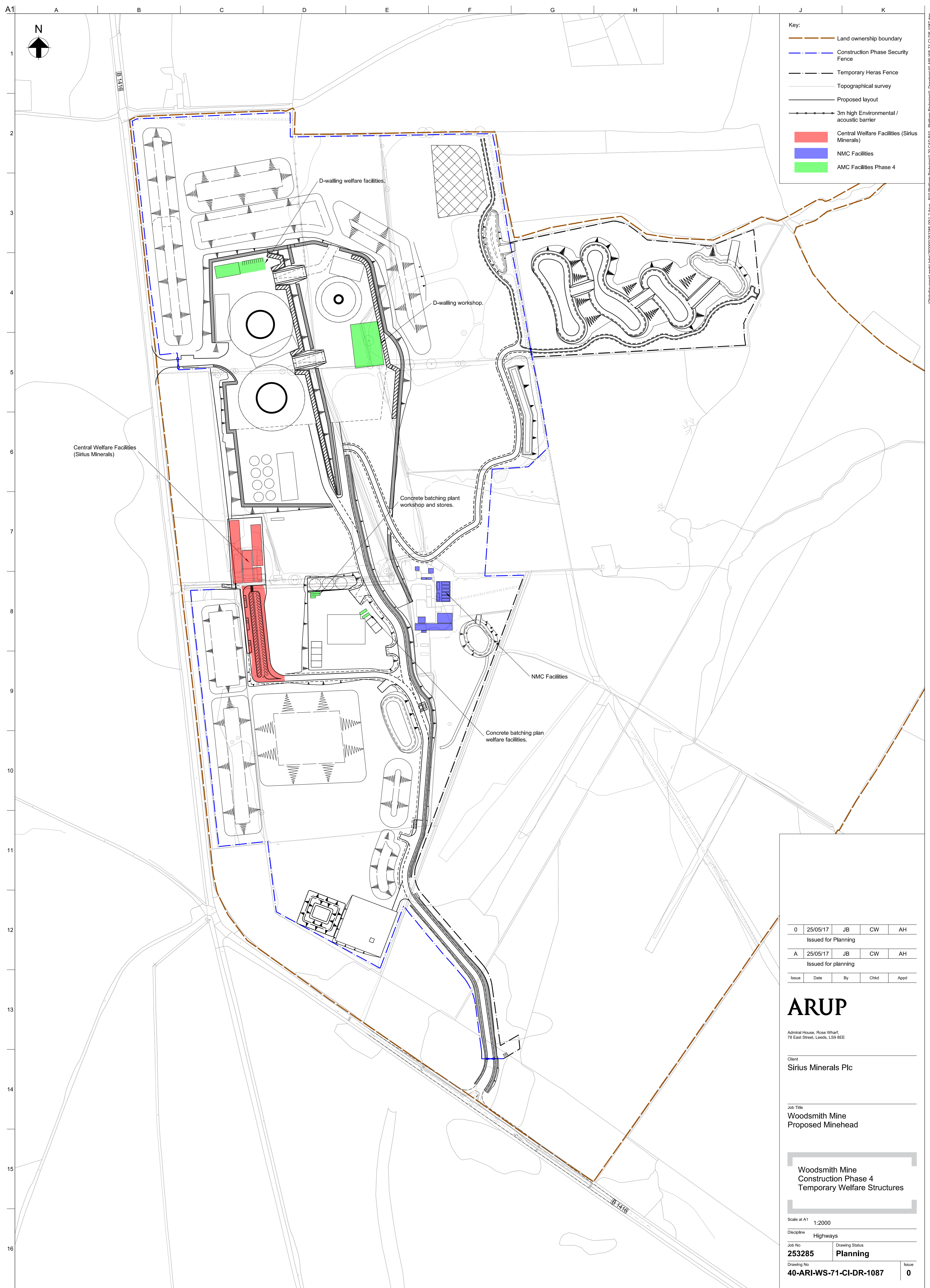


Photograph 7: Desanding Unit



Photograph 8: Flocculant unit (below) and decanter unit (on top)

Annex 1 - Temporary Structures Plan (40-ARI-WS-71-CI-DR-1087)



Key:

- Land ownership boundary
- Construction Phase Security Fence
- Temporary Heras Fence
- Topographical survey
- Proposed layout
- 3m high Environmental / acoustic barrier
- Central Welfare Facilities (Sirius Minerals)
- NMC Facilities
- AMC Facilities Phase 4

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A	25/05/17	JB	CW	AH
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Issue	Date	By	Chkd	Appd

ARUP
 Admiral House, Rose Wharf,
 78 East Street, Leeds, LS9 8EE

Client
Sirius Minerals Plc

Job Title
**Woodsmith Mine
 Proposed Minehead**

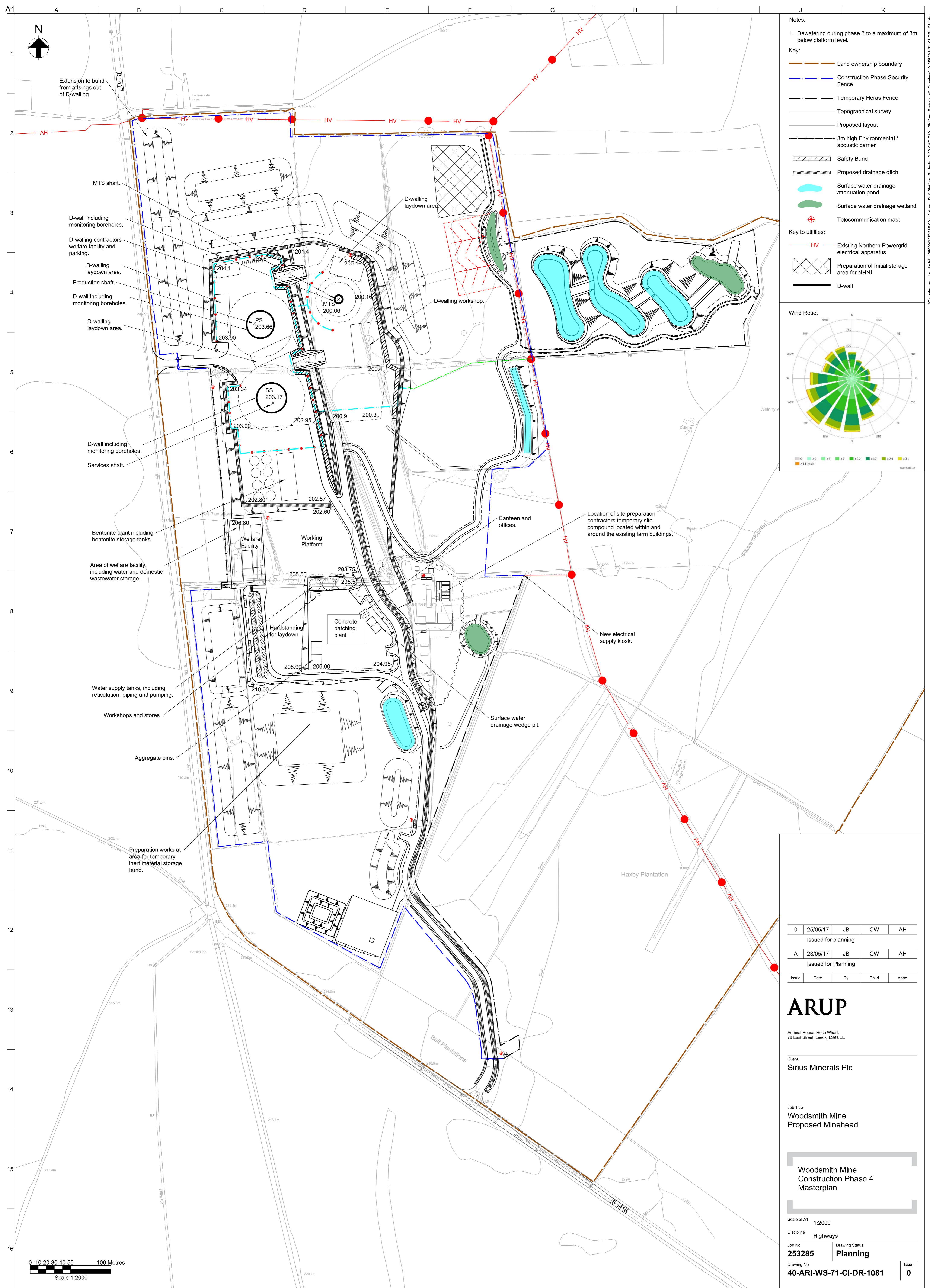
**Woodsmith Mine
 Construction Phase 4
 Temporary Welfare Structures**

Scale at A1 1:2000

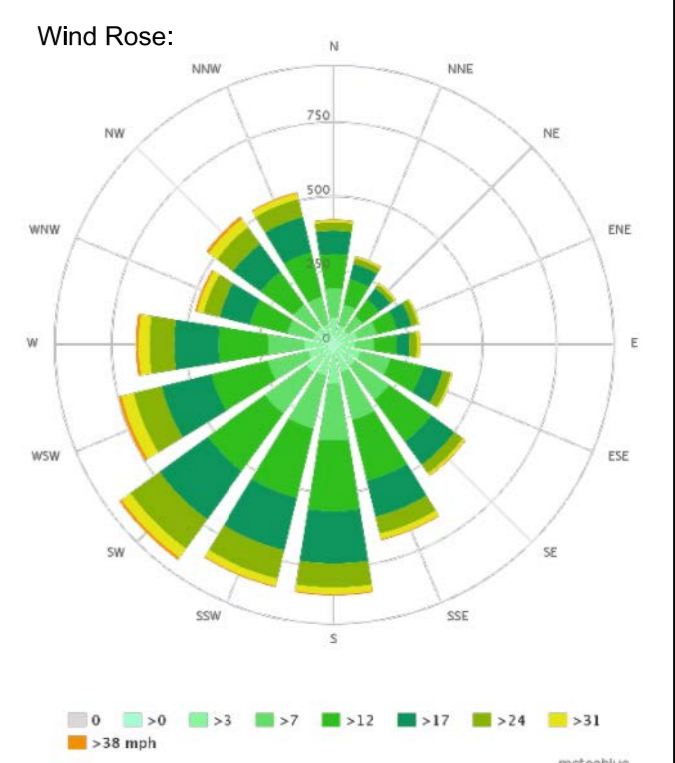
Discipline **Highways**

Job No 253285	Drawing Status Planning
Drawing No 40-ARI-WS-71-CI-DR-1087	Issue 0

Annex 2 - Masterplan showing bentonite plant layout (40-ARI-WS-71-CI-DR-1081)



- 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:
- HV Existing Northern Powergrid electrical apparatus
 - Preparation of initial storage area for NHNI
 - D-wall



0	25/05/17	JB	CW	AH
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 Admiral House, Rose Wharf,
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 Proposed Minehead**

**Woodsmith Mine
 Construction Phase 4
 Masterplan**

Scale at A1 1:2000
 Discipline Highways
 Job No 253285 Drawing Status Planning
 Drawing No 40-ARI-WS-71-CI-DR-1081 Issue 0

