Sirius Minerals Plc

Woodsmith Mine - Phase 4a Works

NYMNPA 60 and 79 Surface Water Drainage Scheme

40-ARI-WS-71-PA-RP-1054

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Ove Arup & Partners Ltd
Admiral House Rose Wharf
78 East Street
Leeds LS9 8EE
United Kingdom
www.arup.com

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Appendices

Appendix A

Phase 4a - Surface Water Drainage Layout

1 Introduction

1.1 Overview

This document has been prepared on behalf of Sirius Minerals PLC and details the surface water drainage design for the Phase 4a construction activity at Woodsmith Mine (Phase 4a Works). This is required to discharge conditions 60 and 79 of the North York Moors National Park Authority (NYMNPA) planning permission NYM/2014/0676/MEIA [1].

This report only details the works required at the Woodsmith Mine site.

The Phase 4a Works comprise:

- Mobilisation to site;
- Use of a Vertical Shaft Sinking Machine (VSM) at the MTS Shaft, in place of the previously planned diaphragm walling machines;
- Construction of the guide wall and strand jacks for the operation;
- Installation of ancillary equipment;
- Machine setup and installation of VSM;
- Excavation to -55m below platform level (bpl);
- Excavation to -120m bpl;
- Deposition of limited extractive material from within the first 120m of the MTS shaft into earthworks bunds; and
- Grouting of annulus.

1.2 Compliance with Conditions

The drainage strategy, calculations and surface water management plan described in the Phase 3 Surface Water Drainage Scheme [2] are still applicable during the Phase 4a works. The surface water system that will be in use during Phase 4a is shown on the general arrangement drawing 40-ARI-WS-71-CI-DR-1091 in Appendix A. The changes between Phases 3, 4 and 4a do not have a significant impact on the surface water drainage design.

- The installation and operation of the VSM including slurry treatment plant and bentonite lubrication system and associated structures in Phase 4a does have an interaction with the surface water drainage scheme and these are described in Section 2.1 of this report.
- Surface water drainage from the earthwork bunds will continue to be collected via perimeter drainage swales and discharge into the site surface water drainage system, with ongoing site testing and pH correction where necessary prior to outfall via silt buster.

- The continuation of the placement of excavated material to the north of the shaft sinking platform retains the existing swale constructed during the Phase 3 and 4 work stages to intercept surface water runoff from the extended bund. The run-off from this area was accounted for in the Phase 3 drainage design due to the natural slope of the site. Hence the extension of the bund has no impact on the drainage strategy in Phase 4a, and does not affect the strategy's compliance with the planning conditions.
- Water pumped from the MTS excavation as outlined within the CMS (Condition 94) will be discharged to the site wide surface water drainage system, following treatment. This water will be a mixture of potable water added to assist operation of the VSM and groundwater entering from the near surface aquifers. This water will then be attenuated within the drainage attenuation ponds to ensure that the overall discharge from site does not exceed the permissible discharge rate.

No other changes between Phases 3, 4 and 4a impact on compliance with the conditions that were described in the Phase 3 report.

2 Phase 4a Design Amendments

2.1 VSM

Surface water runoff from areas where there is a higher risk of pollution from the VSM process, including the slurry treatment plant and bentonite lubrication system will be kept separate from the site-wide surface water drainage system as follows:

- Processes where there is a higher risk of pollution will be located on bunded concrete containment slabs and wedge pits enabling surface water to be contained and collected.
- Any rainwater collected within the bunded slab will be tankered off-site. No rainwater from this area will enter the site wide surface water drainage system.

3 Conclusions

There are no changes between Phases 3 and 4a that adversely impact the surface water drainage design. The Phase 3 Surface Water Drainage Scheme [2] is still applicable during Phase 4a.

The additions of the operation of the VSM in Phase 4a does have an interaction with the surface water drainage, but the mitigation proposed minimises the risk to an acceptable level. The extension of the earthworks bunding to the northern edge of the site does not impact on the drainage strategy and does not increase the risk of flooding on site.

This report demonstrates that the Surface Water Drainage design and management during the Phase 4a Works meets the requirements of conditions 60 and 79 of the North York Moors National Park Authority (NYMNPA) planning permission NYM/2014/0676/MEIA.

No new land drainage consents are required for the Phase 4a works because there are no new outfalls or works near watercourses proposed.

References

[1] North York Moors National Park Authority planning permission NYM/2014/0676/MEIA.

[2] NYMNPA 60 and 79 Surface Water Drainage Scheme, 40-ARI-WS-71-PA-RP-1050_0_IFU_20170403 SWD DoC 60_79, Rev 0, Arup, April 2017.

Appendix A

Phase 4a - Surface Water Drainage Layout

A1

N

Tributary of Sneaton Thorpe Beck where additional temporary silt control measures are able to be installed.

Piped outfall to be kept for emergency use only.

Volume = 3700m³

Volume = 2500m³

Volume = 3700m³

Slit removal facility.

Tributary of Sneaton Thorpe Beck where additional temporary silt control measures are able to be installed.

Concrete Batching Plant overflow to surface water network for storm events greater than the 1 in 100 storm event. Refer to batching plant surface water management plan.

Tributary of Sneaton Thorpe Beck where additional temporary silt control measures are able to be installed.

For continuation see inset plan

Inset Plan

0 10 20 30 40 50 100 Metres

Scale 1:2000

Do not scale

Notes:

1. This drawing shows the proposed surface water drainage network for Site Preparation Phase 4a.

Key:

- Land Ownership Boundary
- Proposed General Arrangement layout
- Surface water drainage attenuation pond
- Wetland
- Existing watercourses / ditch
- Manhole and carrier pipe
- Swale
- Check dam
- Silt fence
- Ditch
- Ditch with impermeable liner
- Inlet / outlet headwall
- Filter drain
- Dewatering pipeline and wells

Issue	Date	By	Chkd	Appd
0	05/04/18	JB	CW	CW
	Issue			
C	04/04/18	JB	CW	CW
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B	03/04/18	KK	JB	CW
	For comment			
A	26/03/18	JB	CW	CW
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Admiral House, Rose Wharf,
78 East Street, Leeds, LS9 8EE

www.arup.com

Client
Sirius Minerals Plc

Job Title
Woodsmith Mine
Proposed Minehead

Woodsmith Mine Site
Construction Phase 4a
Drainage General Arrangement

Scale at A1 1:2000

Discipline Drainage

Job No **253285**

Drawing Status **Issue**

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