



Project Title / Facility Name:
North Yorkshire Polyhalite Project

Document Title:
CONSTRUCTION METHOD STATEMENT - WOODMSITH MINE PHASE 5 (CMS)

NYMNPA
25/05/2018

Document Review Status

- 1. Reviewed – Accepted – Work May Proceed By: Robert Staniland
- 2. Reviewed – Accepted As Noted, Work May Proceed, Revise & Resubmit On: 25 May 2018 11:12
- 3. Reviewed – Work May Not Proceed, Revise & Resubmit
- 4. For information only

Rev.	Revision Date (dd mmm yyyy)	Reason For Issue	Prepared by	Verified by	Approved by
5	25-May-2018	Information	IFI		
4	11-May-2018	Information	IFI		
0	20-Apr-2018	Information	IFI		

Document ID:

40-CAR-WS-1000-PA-MS-00001

Site Working Hours:	For works on surface and at ground level: Monday – Sunday 07:30 – 19:00 For shaft excavation teams: Monday – Sunday: 07:30 – 19:30 / 19:30 – 07:30		
Document Title:	NYMNP 94 – CONSTRUCTION METHOD STATEMENT (PHASE 5) 40-CAR-1000-PS-MS-00001		
Revision:	Rev 5		
Date:	25/05/18		
Prepared by:			
Name: Clare Masters	Position: CCE Sustainability and Environment Manager	Signed:	Date: 11.05.2018
Reviewed by:			
Name: Pat Grenham	Position: CCE Project Manager	Signed:	Date:
Approved by:			
Name:	Position:	Signed:	Date:

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1. Purpose

The purpose of this document is to describe the construction method techniques and processes that will be undertaken during Phase 5 of the Woodsmith Mine development by Sirius Minerals PLC. This document also references the key points to discharge planning conditions from Planning Permission Reference NYM/2017/0505/MEIA.

Prior to commencement of works, a full health and safety risk assessment will be carried out to assess the risks associated with the construction techniques.

2. Scope of Work

The scope of works described by this document cover the aspects listed below:

- Construction of Service Shaft foreshaft chamber to a depth of 168.7m AOD;
- Construction of Service Shaft permanent winder foundations to a depth of 197.17m AOD;
- Construction of Service Shaft permanent winder basement to a depth of 194.17m AOD;
- Construction of Service Shaft permanent building foundations to 202.2m AOD;
- Dewatering of Service Shaft foreshaft and platform to facilitate excavations;
- Excavation and construction of a working platform area on the western edge of the Production Shaft platform, with an AOD of 203.7m.
- Stockpiling of extractive material for re-use.

3. Compliance with Planning Conditions from NYMNP

The wording of planning condition 94 and where the necessary material has been provided within the report is set out in Table 1.

Table 1: Details of NYMNP Condition 94

NYM/2017/0505/MEIA: Condition 94: Management of Construction	Reference to appropriate section of CMP or other documents
Prior to the commencement of each Phase of Construction at Doves Nest Farm or Lady Cross Plantation, a Construction Method Statement shall be submitted for that phase and approved in writing by the MPA, in consultation with the appropriate Highway Authority. Each approved Statement shall be adhered to throughout the construction period.	This CMS is provided for Phase 5 Works at Woodsmith Mine only.
i. The parking of vehicles of site operatives and visitors clear of the highway;	Refer to Section 4.1
ii. Loading and unloading of plant and materials;	Refer to Section 4.2
iii. Storage of plant and materials used in constructing the development;	Refer to Section 4.3
iv. Erection and maintenance of security fencing;	Not applicable to this phase of works
v. Wheel washing facilities	Refer to Section 4.5
vi. An outline construction method for sub-surface works including adherence to the "rack and pillar" method of mining described in the SEI (14 th February 2015) and the SRK Subsidence Memorandum (15 th May 2013);	Not applicable to this phase of works.
vii. Buildings and structures associated with the mine and tunnel shafts;	Not applicable to this phase of works.
viii. Welfare / office building and security gatehouse;	Refer to Section 4.8
ix. Screening bunds;	Not applicable to this phase of works
x. Hardstanding;	A temporary extension to the Production Shaft Platform will be constructed to facilitate development of the temporary winding gear. This extension will follow the same construction methodology, as approved under Phase 2.
xi. Shuttle bus terminal;	Not applicable to this phase of works.
xii. Park and ride layby;	Not applicable to this phase of works

xiii.	Emergency helipad;	Not applicable to this phase of works
xiv.	Lighting columns;	No permanent lighting columns will be installed in this Phase of Works. Only temporary task lighting will be used.
xv.	Internal access and haul roads;	Refer to Section 4.6
xvi.	Domestic wastewater (foul sewage) treatment plant;	Not applicable to this phase of works and covered in previous phases for the installation of welfare and office building.
xvii.	Non-domestic wastewater treatment plant and settlement tanks;	Not applicable to this phase of works and as per installation of the settlement tanks in previous phases
xviii.	Surface water attenuation ponds, settlement ponds, swales and wetland areas;	Not applicable to this phase of works
xix.	Temporary spoil and Polyhalite storage areas;	Not applicable to this phase of works
xx.	Removal of any temporary structures;	Not applicable to this phase of works
xxi.	Formation of spoil mounds and the establishment of vegetation on them.	Not applicable to this phase of works
The CMS shall contain a construction timetable and order of works noting any construction dependencies; refer to any inherent mitigation to address adverse impacts identified in the EIA and cross refer to the CEMP in relation to any additional avoidance or mitigation measures.		Refer to Section 6
This CMS also provide the information necessary for the partial discharge of Condition 81 Non-Domestic Wastewater Management, as relevant to the Phase 5 Works only. The process for removing, treating and discharging water associated with the Works is described in Section 5.		Refer to Section 5

4. Site Logistics

4.1. Parking of cars

Sirius Minerals has agreed with North Yorkshire County Council (NYCC) Highways that up to 187 additional parking spaces will be constructed at the existing NYCC Park and Ride facility at Cross Butts, Whitby; for the use of construction and, subsequently, operational employee parking.

Permission was granted in 2014 for 180 spaces at Cross Butts (Ref: NYM/2014/0864/FL). A Section 73 variation to this permission has subsequently been submitted to North York Moors National Park Authority to provide a further seven spaces (and other minor amendments) and currently awaits determination.

Pending the Section 73 decision, cars associated with the Phase 5 works will use the Cross Butts Park and Ride

There will be no parking on site with the exception of limited designated spaces for exceptional permitted use.

4.2. Unloading and Loading of Materials

The areas for storage have been planned to prevent excessive handling of material and to facilitate loading and unloading.

The majority of materials requiring loading will be fresh concrete (for internal site transportation from the batching plant to the work area); the excavated soil and stone from the shaft construction and; wastes that require disposal off site.

Concrete will be discharged directly from the concrete batching plant into conventional concrete trucks, which is the same as already approved under Phases 3 and 4.

Other materials requiring loading onto site transport will generally be handled using all terrain fork-lifts or telehandlers. Loading will only take place on level stable ground to minimise the risk of loads becoming unstable and spilling. The handling of materials on site will be controlled to protect land and water in accordance with the appropriate section of the Construction Environmental Management Plan (CEMP) submitted for Phase 5 (Ref: 40-CAR-WS-8300-PA-MS-00001).

An offsite holding point will be used to consolidate smaller deliveries and prevent unnecessary transport on the roads to the main site. The location of the offsite holding point is to be confirmed as the project progresses.

4.3. Storage of Plant and Materials

File Ref: 11.0

Document No.: CCE-SET-SFM-3383_01.00

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Date Published: 20.04.18

Materials will be stored in accordance with the approach established for Phase 2 and implemented throughout all subsequent phases.

Plant and materials will be stored in designated areas as close to the works as possible. All storage areas will be on hardstanding appropriate to the plant and materials and away from sensitive receptors. COSHH and fuel storage will be as per Pollution Prevention Best Practice measures and as described in the CEMP (Ref: 40-CAR-WS-8300-PA-MS-00001).

4.4. Mobilisation

All equipment, plant and materials will be delivered to site using the approved traffic routes as per the Phase 5 Construction Traffic Management Plan (Ref: 40-RHD-WS-70-CI-PL-0008).

All HGVs and abnormal loads will drive directly to site and will not stop / wait on the public highway.

All storage units will be painted RAL6008 (brown/green) prior to arrival on site.

4.5. Wheel Wash

Vehicles entering site will stay on hardstanding already installed in previous phases. No plant will travel off site other than by specialised plant moving transport.

Vehicles exiting the site and on-site plant will use the wheel wash as described in the approved documents for Phase 3.

4.6. Internal Access Routes

Haul roads and internal access routes within the Phase 5 working area will be demarcated and separated from pedestrians. Speed limits will be enforced as per the site wide limits.

4.7. Lighting columns

No permanent lighting columns will be installed in this Phase of Works. Only temporary task lighting will be used, as described in the CEMP (Ref: 40-CAR-WS-8300-PA-MS-00001).

4.8. Welfare and Office Set Up

Welfare and office buildings required for this phase of work will be as per the site set up already approved and installed during previous phases.

5. Construction Method Statement

5.1. Construction of Service Shaft foreshaft chamber to a depth of 168.7m AOD;

The service shaft foreshaft chamber will be excavated to a depth of 168.7m AOD by using two number 22 tonne excavators, one number 35 tonne excavator, and a 160-tonne crawler crane and gantry system. The excavation area will be within the circular diaphragm walls installed previously under the permitted Phase 4 activities. These works will entail demolition of the top of the diaphragm wall to the Service Shaft Head Frame Chamber (foreshaft). As part of these works, rock will be excavated from the footprint of the Winder foundations and basement to a depth of 200.17m AOD. To maintain this excavation dry, temporary dewatering will be undertaken, where necessary, to maintain groundwater levels below a maximum elevation of 199.17m AOD within the Moor Grit aquifer. This temporary dewatering will be achieved by pumping from the array of wells installed around the south shaft platform in Phase 4 as a continuation of the previously approved dewatering programme.

A concrete blinding layer will be placed onto the capping beam from concrete pumped directly from concrete wagons from the on-site batching plant.

Reinforcement bars will be installed after being placed in the excavation works area by the crawler crane. Plywood shutters will be installed by the crawler crane. A concrete pump will supply concrete for formation of the capping beam. The shutters will then be struck and lifted away by the crawler crane. Site won, non-waste material will be used to backfill to the capping beam.

The foreshaft chamber will then be excavated to a depth of 168.7m AOD using the excavators. Material will be removed from the excavation using skips lifted to the surface where it will be transferred to a tipper truck (moxi) and stockpiled for re-use on site (see Section 5.7).

During excavation, to maintain a dry working area, any water (either from rainfall or from water trapped within the diaphragm wall) accumulating will be pumped from a sump to a settlement. Should groundwater be encountered, it will be pumped to a settlement tank at surface level for particulates to settle and, in the unlikely event it is necessary, pH balanced, before being passed through an oil/water interceptor and discharged to the surface water drainage system, under the same methodology as

used in Phase 4a. Water will be pumped from the excavation at a rate not exceeding 50m³ per day, for a duration of less than six months in total. A water meter will be installed to monitor rate of pumping.

5.2. Construction of Service Shaft permanent winder foundations to a depth of 197.17m AOD;

The permanent winder foundations will be excavated to 197.17m AOD with the following plant; two number 22 tonne excavators; 1 x 35 tonne excavator and; two number 35 tonne dump trucks. number 22tonne excavators, 1 x 35tonne excavator, two number 35 tonne dump trucks. The excavators will excavate/grade off the ground to formation level.

Excavated material will be taken by moxi to stockpiles for beneficial re-use on site (as per Section 5.7). Concrete blinding concrete will be placed with an excavator and poured to the formation level at 197.17m.

The mobile crane will lift reinforcement to create the winder foundations. Plywood shutters will be installed and lifted into position by the mobile crane. The reinforced concrete slab will be poured from the concrete pump supplier by the onsite batching plant. The shutters will be struck and lifted away by the mobile crane.

The winder foundation walls will then be created by installing reinforcement. Shutters will be installed and lifted into position by the mobile crane. The concrete will be poured from the concrete pump. The shutters will be removed by the crane. Site won, non-waste material will be used as backfill to the winder building foundations.

During these activities, the shallow dewatering system approved under Phase 4 will continue to be used to maintain a water level below 196.07m AOD. If required, any seepage into the excavation will be managed by sump pumping, as previously described. The overall rate of abstraction, on this basis, would not result in a change to the overall rate of abstraction approved as part of the Phase 4 Works.

5.3. Construction of Service Shaft permanent winder basement to a depth of 194.17m AOD;

As above method for wider foundation to a depth of 194.17m AOD

5.4. Construction of Service Shaft permanent building foundations to 202.2m AOD;

The service shaft permanent building foundations will be excavated to a depth of 202.2m AOD by using one number 22 tonne excavator and transported to the onsite stockpile using moxis.

A concrete blinding layer will be placed onto the base of the foundations using an excavator. Concrete will be supplied from the on-site batching plant.

Reinforcement bars will be installed after being placed in the excavation works area by mobile crane or excavator. Plywood shutters will then be installed by ether crane or excavator. A concrete pump will supply concrete to foundations. The shutters will then be struck and lifted away by crane/excavator. Site won, non-waste material will then be used to backfill the foundations.

Any necessary temporary dewatering will be carried out as described in 5.2, using the Phase 4 dewatering arrangement, supplemented by pumping from a sump, as necessary.

5.5. Excavation and construction of a working platform area on the western edge of the Production Shaft platform, with an AOD of 203.7m.

The working platform will be extended and constructed as per the methods provided in Phase 2.

5.6. Stockpiling of extractive material for re-use.

Non-waste material excavated form the winder foundation and fore-shaft chamber is to be stockpiled temporarily to the south of the concrete batching plant and laydown area for subsequent use in backfilling excavations and construction of earthworks screening bunds.

The following works will be undertaken:

- Topsoil will be stripped from beneath the temporary storage area (drawing 40-ARI-WS-CI-DR-1200) following the relevant principles and practices adopted within the approved Phase 3 and Phase 4 Soil Management Plans (see document references: 40-FWS-WS-70-CI-PL-0002 and 40-FWS-WS-70-CI-PL-0003). While it is unlikely that any such stripping would be necessary beyond the 1st of October 2018, should the need arise, written approval will be sought from the Minerals Planning Authority, as was the case for Phase 4.
- Topsoil will be deposited in a temporary storage mound adjacent to the welfare car park (drawing 40-ARI-WS-CI-DR-1200). The temporary storage mound will be hydroseeded with grass seed using the seed mix already agreed with NYMNPA, as per the approved Soil Management Plans.
- Excavated material will be loaded from the excavation using a tracked excavator into moxis for transport to the stockpiling area.

- The moxix will travel on the prepared haul-roads to the stockpiling area. The majority of the haul road is surfaced with asphalt and will be maintained by regular sweeping and damped down to supress dust as necessary using a tractor and bowser.
- The excavated material will be deposited within the stockpiling area where it will be spread and graded using a D6 dozer or similar.
- Excavated sandstone, which is suitable for creating aggregates for use in construction, will be stockpiled separately from mudstone and siltstone that will ultimately be used as bulk fill in landscape bunds, as required for beneficial use/mitigation screening.
- A mobile crusher will be brought to site temporarily as and when required to process a proportion of the excavated sandstone to produce aggregate for backfill to temporary excavations around the winder basement and capping beam.

6. Programme

The Phase 5 Works are programmed to be carried out between July 2018 and December 2018.