

FAO Rob Smith  
North York Moors National Park Authority  
The Old Vicarage  
Bondgate  
Helmsley  
York  
YO62 5BP

NYMNP

14/06/2018

**Date:** 13 June 2018

**Our ref:** 50303/04/HS/JCx/16049598v1

**Your ref:** NYM/2017/0505/MEIA

Dear Rob

**North York Moors: Woodsmith Mine - Application to Partially Discharge Conditions 4, 18, 34, 45, 46, 47, 52, 57, 60, 64, 68, 70, 71, 73, 76, 79, 91, 92, 93, 94 & 95 of Planning Permission NYM/2017/0505/MEIA**

On behalf of our client, Sirius Minerals plc ("Sirius Minerals"), we are pleased to submit this application for limited and partial approval of Planning Conditions 4, 18, 34, 45, 46, 47, 52, 57, 60, 64, 68, 70, 71, 73, 76, 79, 91, 92, 93, 94 & 95 of Planning Permission NYM/2017/0505/MEIA.

The Project will be delivered in a series of Phases. This application relates solely to the Phase 6 works at the Woodsmith Mine.

## **Background**

*On 19 October 2015, the NYMNP granted planning permission for the "Winning and working of polyhalite by underground methods including the construction of a minehead at Dove's Nest Farm involving access, maintenance and ventilation shafts, the landforming of associated spoil, the construction of buildings, access roads, car parking and helicopter landing site, attenuation ponds, landscaping, restoration and aftercare and associated works. In addition, the construction of an underground tunnel between Doves Nest Farm and land at Wilton that links to the mine below ground, comprising 1 no. shaft at Doves Nest Farm, 3 no. intermediate access shaft sites, each with associated landforming of associated spoil, the construction of buildings, access roads and car parking, landscaping, restoration and aftercare, and the construction of a tunnel portal at Wilton comprising buildings, landforming of spoil and associated works" (Council Reference NYM/2014/0676/MEIA).*

NYM/2014/0676/MEIA was approved subject to 95 planning conditions and a Section 106 Agreement.

On 6 February 2017, the NYMNP granted planning permission for the "Variation of Condition 5 of planning permission NYM/2014/0676/MEIA to allow minor material amendments relating to that part of the development at the Woodsmith Mine site (formerly known as Doves Nest Farm and Haxby Plantation), including; re-design of foreshafts and shaft construction methodology, changes to building layout and shaft access arrangements, revisions to construction and operational shaft platform levels, revisions to location and layout of surface water attenuation ponds, revisions to groundwater management

*arrangements and amendments to internal access arrangements”* (Council Reference NYM/2017/0505/MEIA).

The amended scheme (NYM/2017/0505/MEIA) was approved subject to 98 planning conditions and a deed of variation to the originally approved Section 106 Agreement.

### **Phase 6 Works**

Phase 6 covers off the following proposed works at the Woodsmith Mine:

- Reticulation of mains power from Northern Power Grid (“NPG”) kiosk;
- Construction of temporary Secure Storage Unit (“SSU”);
- Civils work to construct an access road, pad and associated drainage in a previously cleared area within Haxby Plantation; and
- Second level welfare buildings

### **Proposals**

As noted above, Sirius Minerals is seeking limited and partial approval of Planning Conditions 4, 18, 34, 45, 46, 47, 52, 57, 59, 60, 64, 68, 70, 71, 73, 76, 79, 91, 92, 93, 94 & 95 of Planning Permission NYM/2017/0505/MEIA via submission of the information listed in **Appendix 1**.

### **Planning Conditions 52, 57, 70, 73 and 95**

Sirius Minerals is committed to implementing the mitigation, monitoring and reporting measures developed for the Phase 3, 4/4a and 5 Works, throughout Phase 6 for the following conditions:

- NYM-52 Protected Species Management Plans;
- NYM-57 Landscape and Ecological Management Plan;
- NYM-70 Arboricultural Method Statement;
- NYM-73 Woodland Management Plan; and
- NYM-95 Archaeological Written Scheme of Investigation;

Sirius Minerals is not intending to re-submit the documentation for the above conditions as they have already been approved and implemented in full for the duration of Phases 3, 4/4a, 5 and will continue to be implemented insofar as they relate to Phase 6.

### **Partial Discharge**

Sirius Minerals acknowledges that limited and partial approval of the above-listed condition when given, does not constitute permission to undertake works other than those described, including any works at Lady Cross Plantation, and that such works remain subject to the approval of other conditions.

This approach has been discussed and agreed with your Planning Team and is consistent with the approach taken on previous phases of the Project.

### **Application Submission**

The application was submitted via the planning portal on 13 June 2018 (reference PP-07048321) and comprises the following documentation:

- Completed application form;
- Application drawings – Please see Appendix 1;

- Supporting Documents – Please see Appendix 1.

The requisite planning application fee of £116 has been paid online by credit card.

**Conclusion**

We trust that this application provides you with the necessary information to be able to partially discharge the above conditions to cover Phase 6 works at Woodsmith Mine. However, should you require any further information, please do not hesitate to contact me.

Yours sincerely

**James Cox**  
Senior Planner



**Appendix 1 : Supporting Documents**

**Table 1: List of Supporting Documents**

Condition No	Description	Document Name / Number	To be read in conjunction with
N/A	N/A	Listed Plans	<p>40-ARI-WS-7100-CI-18-01000 - Woodsmith Mine Construction Phase 6 Masterplan</p> <p>40-ARI-WS-7100-CI-18-01001 - Woodsmith Mine Construction Phase 6 Planning Phases Comparison General Arrangement</p> <p>40-ARI-WS-7231-CI-18-01000 - Woodsmith Mine Construction Phase 6 Electrical Infrastructure</p> <p>40-ARI-WS-7244-CI-18-1002 - Woodsmith Mine Phase 6 Additional Platform</p> <p>40-ARI-WS-7100-CI-18-01002 - Woodsmith Mine Construction Phase 6 Drainage General Arrangement</p>
4	Phasing Plan	40-ARI-WS-7100-CI-18-01001 - Woodsmith Mine Construction Phase 6 Planning Phases Comparison General Arrangement	40-ARI-WS-7100-CI-18-01000 - Woodsmith Mine Construction Phase 6 Masterplan
18	Noise & Vibration	Phase 5 Woodsmith Mine Noise and Vibration Management Plan – 40-RHD-WS-70-EN-PL-0027	<p>A Noise &amp; Vibration Management Plan (NVMP) (reference 40-RHD-WS-70-EN-PL-0027) was submitted to discharge condition NYMNPA-18 as part of the Phase 5 Works at Woodsmith Mine.</p> <p>The Phase 6 Works will overlap in time with Phase 5, and the existing plant on site for Phase 5 will be used to carry out Works associated with Phase 6. Noise emissions from these items of plant were considered in the Phase 5 NVMP. There will be one additional mobile crane used during Phase 6, which would be operational for only a very short period of time (up to a week). It is therefore not anticipated that the operation of this additional item of plant would result in a significant contribution to noise emissions during Phase 6, in the</p>

			<p>context of the other plant working on site.</p> <p>The sound power level (L<sub>wA</sub>, 72dB) of the transformers to be used within the proposed substations in Phase 6 is such that their operation will not contribute to noise levels at nearby receptors, in the context of the Phase 5 construction activities on site.</p> <p>The Phase 5 NVMP is therefore considered to be applicable for Phase 6.</p>
34	Construction Traffic Management Plan	Phase 5 - Woodsmith Mine Construction Traffic Management Plan 40-RHD-WS-70-CI-PL-0008	<p>To manage the potential impacts of construction traffic associated with the Phase 5 works at Woodsmith Mine a Construction Traffic Management Plan (CTMP; Reference 40-RHD-WS-70-CI-PL-0008) was submitted to North York Moors National Park Authority and North Yorkshire County Council (local highway authority).</p> <p>The proposed duration of the Phase 6 works would be entirely within the programme duration set out within the Phase 5 CTMP. The Phase 6 works will be undertaken by the existing contractors and would not require additional workers above the peak levels set out within the Phase 5 CTMP. Whilst the Phase 6 works will require HGV deliveries, the Contractors have confirmed that the demand for deliveries can be accommodated within the daily targets set out in the Phase 5 CTMP.</p> <p>The Phase 6 works are expected to require up to 48 abnormal load deliveries associated with the installation of the second floor of welfare buildings (modular buildings). The routing and timing of these deliveries will be subject to separate agreement with the local highway authorities and police through the established Electronic Service Delivery for Abnormal Loads system ESDAL process.</p> <p>It is therefore considered that the targets, measures and monitoring processes</p>

			contained within the Phase 5 CTMP would be appropriate to manage the additional construction activities proposed as part of Phase 6.
<b>45</b>	Recharge Trench	Phase 6 Works at Woodsmith Mine, North Yorkshire Hydrogeological Risk Assessment – 40-FWS-WS-70-WM-RA-0007	N/A
<b>46</b>	GW / SW Monitoring Scheme	Phase 6 Works at Woodsmith Mine, North Yorkshire Hydrogeological Risk Assessment – 40-FWS-WS-70-WM-RA-0007	Phase 4a Works at Woodsmith Mine, North Yorkshire Construction and Operation Phase Ground and Surface Water Monitoring Scheme – 40-FWS-WS-70-CI-PL-0005  Phase 4 Works at Woodsmith Mine, North Yorkshire Construction and Operation Phase Ground and Surface Water Monitoring Scheme – 40-FWS-WS-70-WM-PL-0008
<b>46</b>	Hydrogeological Risk Assessment	Phase 6 Works at Woodsmith Mine, North Yorkshire Hydrogeological Risk Assessment – 40-FWS-WS-70-WM-RA-0007	N/A
<b>46</b>	Remedial Action Plan	Phase 6 Works at Woodsmith Mine, North Yorkshire Hydrogeological Risk Assessment – 40-FWS-WS-70-WM-RA-0007	Phase 4a Works at Woodsmith Mine, North Yorkshire Remedial Action Plan – 40-FWS-WS-70-PL-0013  Phase 4 Remedial Action Plan (reference 40-FWS-70-PL-009)
<b>47</b>	Groundwater Management Scheme	Phase 6 Works at Woodsmith Mine, North Yorkshire Hydrogeological Risk Assessment – 40-FWS-WS-70-WM-RA-0007	N/A
<b>52</b>	Protected Species Management Plan	Refer to CEMP (Condition 93)	N/A
<b>57</b>	Landscape &	Refer to CEMP	Phase 3 Landscape and Ecological

	Ecological Management Plan	(Condition 93)	Management Plan (40-RHD-WS-70-EN-PL-0008)
<b>60</b>	Surface Water Drainage	Woodsmith Mine – Phase 6 Works – NYMNPA 60 and 79 Surface Water Drainage Scheme - 40-ARI-WS-7100-CI-RP-01000	Woodsmith Mine- Phase 3 Works NYMNPA 60 and 79 Surface Water Drainage Scheme (40-ARI-WS-71-PA-RP-1050)
<b>64</b>	Temporary Fencing	Refer to Construction Method Statement (Condition 94)	Listed plans.
<b>68</b>	Temporary Structures	Refer to Construction Method Statement (Condition 94)	Listed plans.
<b>70</b>	Arboricultural Method Statement	Refer to CEMP (Condition 93)	N/A
<b>71</b>	Hard & Soft Landscaping	40-ARI-WS-7100-CI-18-01003 - Woodsmith Mine Construction Phase 6 Hard and Soft Landscaping Plan	N/A
<b>73</b>	Woodland Management Plan	N/A	No additional tree removal is proposed as part of Phase 6 and therefore no specific management measures are included within this phase.
<b>76</b>	Soil Management Plan	Refer to CEMP (Condition 93)	N/A
<b>79</b>	Surface Water Drainage	Woodsmith Mine – Phase 6 Works – NYMNPA 60 and 79 Surface Water Drainage Scheme - 40-ARI-WS-7100-CI-RP-01000	N/A
<b>91</b>	Emissions	Phase 5– Woodsmith Mine Emissions to Atmosphere – NYMNPA - 91: 40-RHD-WS-70-EN-RP-0004	To consider the potential impact of emissions from on-site generators at designated ecological sites, a generator emissions assessment (reference 40-RHD-WS-70-EN-RP-0004) was submitted to discharge condition NYMNPA-91 for Phase 5 at Woodsmith Mine.



			<p>The works associated with Phase 6 will overlap with Phase 5, and will not require any additional diesel power generation. The Phase 5 generator emissions assessment included the consideration of the Vertical Shaft-Sinking Machine, that forms part of the Phase 4a scope of works, being powered by diesel generator. Sirius Minerals is now committed to powering this equipment via the 11kV electrical supply, and therefore the diesel power requirement is reduced from that presented in the Phase 5 assessment. The Phase 5 generator emissions assessment was therefore conservative, and its conclusions remain valid for Phase 6, and additional ecological impact will not occur.</p>
92	CVPMP	Phase 5-Woodsmith Mine : Construction Vehicle and Plant Management Plan - 40-RHD-WS-70-CI-PL-0009	<p>A Construction Vehicle and Plant Management Plan (CVPMP) (reference 40-RHD-WS-70-CI-PL-0009) was submitted to discharge condition NYMNPA-92 as part of the Phase 5 Works at Woodsmith Mine.</p> <p>The Phase 6 Works will overlap in time with Phase 5, and the existing plant on site for Phase 5 will be used to carry out Works associated with Phase 6. Emissions from these items of plant were considered in the Phase 5 CVPMP. There will be one additional mobile crane used during Phase 6, which would be operational for only a very short period of time (up to a week). It is therefore not anticipated that the operation of this additional item of plant would result in a significant contribution to particulate emissions during Phase 6, in the context of the other plant working on site.</p> <p>Emissions from vehicle movements were considered in the Phase 5 CVPMP, and were based on the maximum permissible light and heavy goods vehicle movements that can travel to and from Woodsmith Mine. Traffic movements associated with the Phase 6 Works will be accommodated within these limits and therefore consideration of additional traffic</p>

			<p>movements is not required.</p> <p>The Phase 5 CVPMP is therefore considered to be applicable for Phase 6.</p>
<b>93</b>	CEMP	Construction Environmental Management Plan – Woodsmith Mine Phase 6 – 40-RHD-WS-70-EN-PL-0028	<p>Phase 6 Construction Method Statement - 40-SMP-WS-7100-PA-MS-00002</p> <p>Phase 3 Surface Water Management Plan (reference 40-FWS-WS-70-EN-PL-0002)</p> <p>Phase 5 CEMP (reference 40-CAR-WS-8300-PA-MS-00001)</p> <p>Phase 4a CEMP (reference 40-RHD-WS-70-EN-PL-0026)</p> <p>Phase 4 CEMP (reference 40-RHD-WS-70-EN-PL-0023)</p> <p>Phase 3 CEMP (reference 40-RHD-WS-70-EN-PL-0014)</p> <p>Protected Species Management Plans:</p> <p>40-RHD-WS-70-EN-PL-0010 Ph3 PSMP for Reptiles; 40-RHD-WS-70-EN-PL-0011 Ph3 PSMP for Badgers; 40-RHD-WS-70-EN-PL-0012 Ph3 PSMP for Birds; and 40-RHD-WS-70-EN-PL-0013 Ph3 PSMP for Bats.</p> <p>Phase 3 Landscape and Ecological Management Plan (LEMP) (40-RHD-WS-70-EN-PL-0008)</p> <p>Tree Protection and Clearance (40-RHD-WS-70-ENMS-0002 (Phase 3)</p>
<b>94</b>	Phase 6 Construction Method Statement	Phase 6 Construction Method Statement - 40-SMP-WS-7100-PA-MS-00002	<p>Listed plans.</p> <p>Construction Environmental Management Plan – Woodsmith Mine Phase 6 (40-RHD-WS-70-EN-PL-0028)</p>
<b>95</b>	Written Scheme of Investigation	Refer to CEMP (Condition 93)	N/A

**\* As agreed, Phase 3, 4, 4A and 5 documents (where they remain unchanged in relation to the Phase 5) have not been resubmitted with this application**

Sirius Minerals

**Phase 6 Works**

**NYMNPA 60 and 79 Surface Water  
Drainage Scheme**

40-ARI-WS-7100-CI-RP-01000

Rev 0 | 12 June 2018



This report takes into account the particular instructions and requirements of our client.

It is not intended for and should not be relied upon by any third party and no responsibility is undertaken to any third party.

Job number 253285-00

**Ove Arup & Partners Ltd**  
Admiral House Rose Wharf  
78 East Street  
Leeds LS9 8EE  
United Kingdom  
[www.arup.com](http://www.arup.com)

**ARUP**

# Document Verification

<b>Job title</b>		Phase 6 Works		<b>Job number</b>		253285-00	
<b>Document title</b>		NYMNP 60 and 79 Surface Water Drainage Scheme		<b>File reference</b>		0-12-08	
<b>Document ref</b>		40-ARI-WS-7100-CI-RP-01000					
<b>Revision</b>	<b>Date</b>	<b>Filename</b>	40-ARI-WS-7100-CI-RP-01000_A_IFR_20180607.docx				
Draft A	07 June 2018	<b>Description</b>	First draft				
			Prepared by	Checked by	Approved by		
		Name	N. Ferro	C. Williams	A. Hornung		
		Signature					
Rev 0	12 June 2018	<b>Filename</b>	40-ARI-WS-7100-CI-RP-01000_0_IFI_20180612				
		<b>Description</b>	Issue				
			Prepared by	Checked by	Approved by		
		Name	N. Ferro	C. Williams	A. Hornung		
		Signature					
		<b>Filename</b>					
		<b>Description</b>					
			Prepared by	Checked by	Approved by		
		Name					
		Signature					
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		<b>Description</b>					
			Prepared by	Checked by	Approved by		
		Name					
		Signature					

Issue Document Verification with Document



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## References

## Appendices

### Appendix A

Phase 6 - Surface Water Drainage Layout

# 1 Introduction

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## 1.1 Overview

This document has been prepared on behalf of Sirius Minerals PLC and details the surface water drainage scheme for the Phase 6 construction activity at Woodsmith Mine (Phase 6 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, as subsequently varied by NYM/2017/0505/MEIA [1].

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

The Phase 6 Works comprise:

- Reticulation of mains power from Northern Powergrid kiosk;
- Construction of a temporary Secure Storage Unit;
- Civils work to construct an access road, pad and associated drainage in previously cleared area within Haxby Plantation;
- Second level of welfare buildings.

## 1.2 Surface Water Drainage Strategy - 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 6 works. The surface water system that will be in use during Phase 6 is shown on the general arrangement drawing 40-ARI-WS-7100-CI-18-01002 in Appendix A. The changes between Phases 3 and 6 do not have a significant impact on the surface water drainage design as outlined below:

- The additional platform within Haxby plantation and provision of a drainage ditch is described in Section 2.1 of this report.
- The secure storage unit and provision of a filter drain to drain the associated hard standing area increases the overall site drained area by approximately 0.01ha. This is a very small increase in the overall site area that is positively drained. This can be accommodated within the existing drainage network without any modifications, whilst still achieving the permitted discharge rates and design basis. The small surrounding earthwork bunds will be vegetated and drain to the surrounding area.

No other changes between Phases 3, and 6 impact on compliance with the conditions that were described in the Phase 3 report.

## 2 Phase 6 Design Amendments

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### 2.1 New Platform and Access Road

#### 2.1.1 Access Road

Surface water run-off from the access road will drain directly to an existing watercourse that is located adjacent to and runs parallel to the access road. This reflects the current drainage strategy for the section of the main site access road which runs through Haxby Plantation.

#### 2.1.2 New Platform

A new platform will be constructed within Haxby plantation as shown on the general arrangement layout drawing (40-ARI-WS-7100-CI-18-01002 Woodsmith Construction Phase 6 Drainage General Arrangement) in Appendix A. The platform will consist of an impermeable hard standing area with surface water run-off being captured in a drainage feature on the down-gradient side. This drainage feature will take the form of an attenuation ditch, attenuating run-off to the greenfield runoff rate.

The risk of silty runoff from the platform is low due to the impermeable concrete surfacing, however the attenuation ditch will be maintained to remove any silt that does build up, as stated in the Phase 3 surface water management plan [2].

In case of oil spillage on the platform a small oil separator will be located after the attenuation ditch. The outlet from the oil separator will discharge into an existing small watercourse that runs through Haxby Plantation. The drainage strategy retains the pre-development hydrological regime as runoff from the platform area currently drains to this watercourse.

The new platform will be constructed over a separate and very minor watercourse that feeds through Haxby plantation. The intention is to divert this watercourse into a watercourse running parallel to the side of the platform, as shown on the accompanying drainage drawing 40-ARI-WS-7100-CI-18-01002 Woodsmith Construction Phase 6 Drainage General Arrangement.

To ensure there is no adverse impact of constructing the platform on the local ground water regime, a shallow granular infiltration trench will be constructed on the up-gradient side of the platform. This will outfall into a proposed ditch on the down-gradient side of the platform to assist with ground water recharge.

During construction of the platform the surface water management plan described in the Phase 3 Surface Water Drainage Scheme [2] will be followed to minimise the risk of downstream sediment pollution.

### 2.2 Discharge and Attenuation Calculations

The Phase 6 Works layout for the Woodsmith Mine has been assessed and the required attenuation volumes calculated based on the allowable  $Q_{\text{Bar}}$  greenfield runoff rate for the site of 6.5 l/s/ha.

The total contributing area from the new platform is 0.587 ha, which gives an allowable rate of discharge of 3.8 l/s.

The flow rate will be controlled by a flow control device located on the outlet of the attenuation trench. A circular orifice 45mm in diameter would limit the flow to 3.8 l/s. As this is a small diameter at risk of blockage, a trash screen will be placed upstream to minimise this risk occurring.

For the Phase 6 Works, a 1 in 20 year return period storm with no climate change allowance has been applied to a Quick Storage Estimate in MicroDrainage to ensure the attenuation is sufficient throughout the construction phase.

The inputs and outputs of this Quick Storage Estimate are shown below:

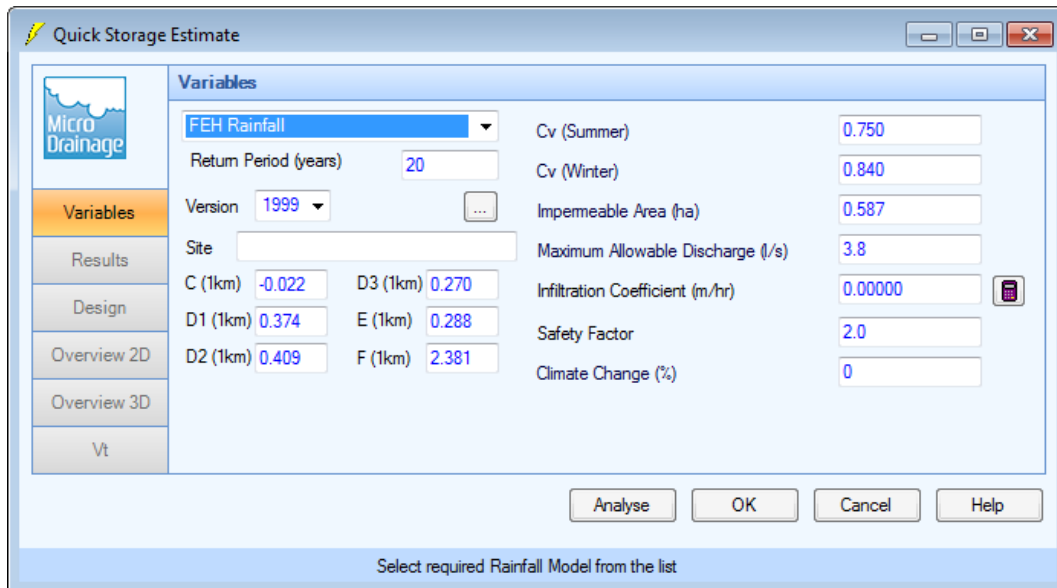


Figure 1: Inputs into the quick storage estimate

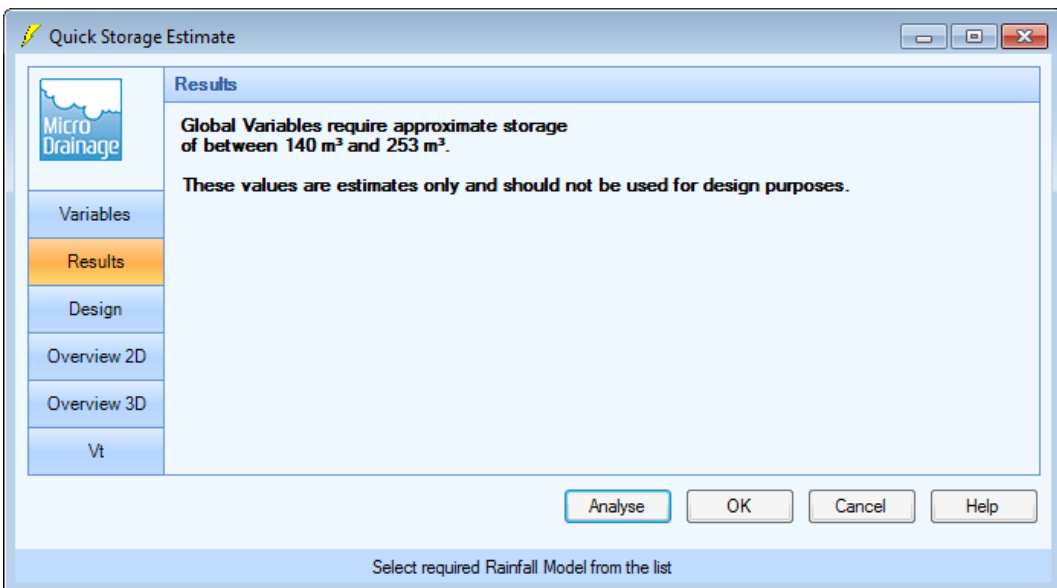


Figure 2: Outputs from the quick storage estimate.



The volume of attenuation provided by the Phase 6 earthworks design is 270m<sup>3</sup>. The above MicroDrainage report demonstrates that the attenuation provided in the earthworks design has sufficient storage volumes to attenuate surface water runoff to the allowable rate of discharge.

### 3 Conclusions

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There are no changes between Phases 3 and 6 that adversely impact the surface water drainage design. The Phase 3 Surface Water Drainage Scheme [2] is still applicable during Phase 6.

The addition of the new platform in Phase 6 does have an impact on the surface water drainage strategy, however the proposed attenuation retains the total flow rate from the site to the agreed limits.

The Secure Storage Unit 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 6 Works meets the requirements of conditions 60 and 79 of the North York Moors National Park Authority (NYMNP) planning permission NYM/2014/0676/MEIA, as subsequently varied by NYM/2017/0505/MEIA.

A new land drainage consent will be required for the proposed outfall from the new platform drainage to the local watercourse within Haxby Plantation. The diversion of the minor watercourse will also be included in the land drainage consent.

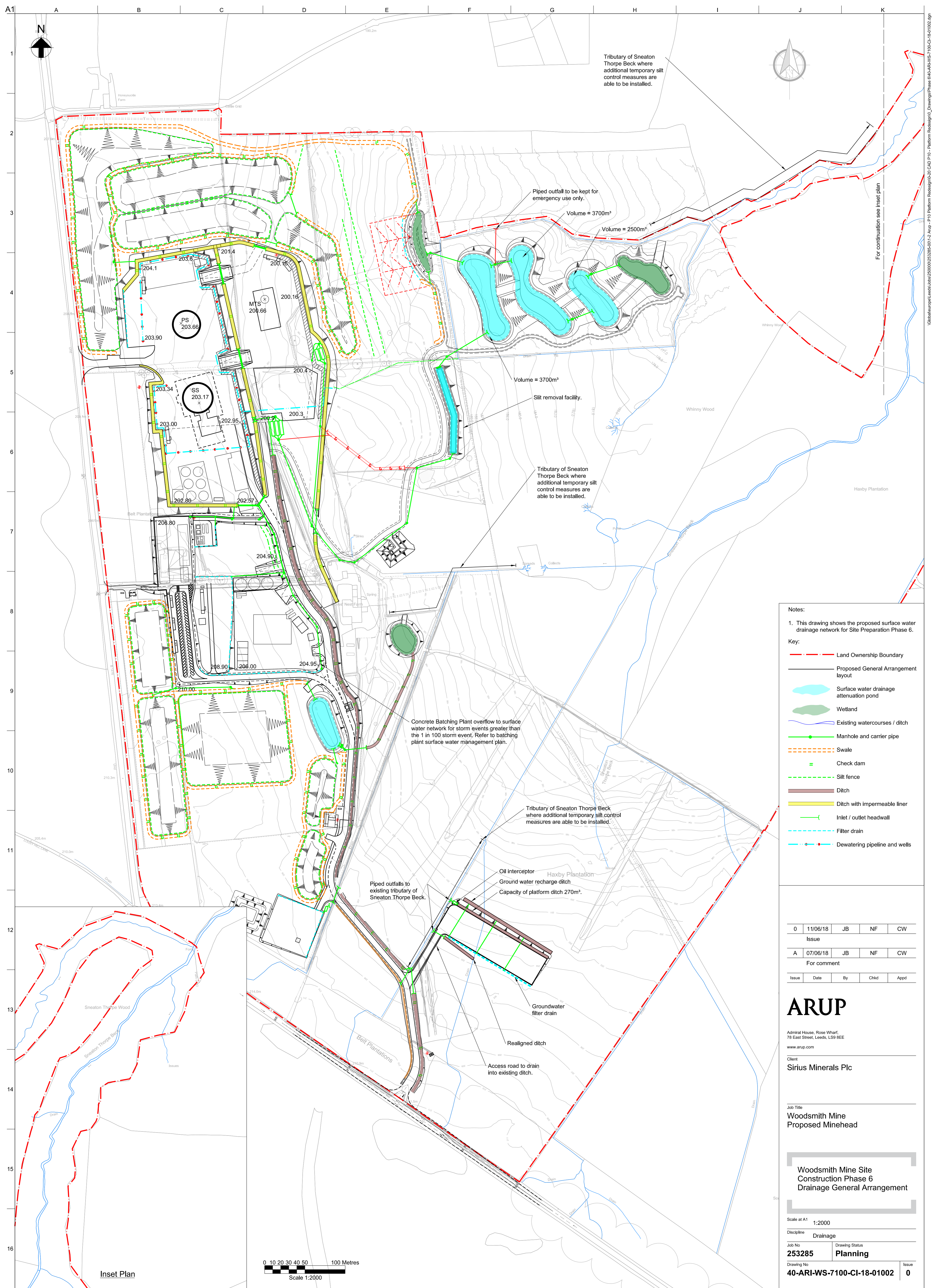
## References

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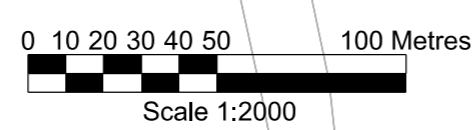
- [1] North York Moors National Park Authority planning permission NYM/2014/0676/MEIA and as subsequently varied by NYM/2017/0505/MEIA.
- [2] NYMNP 60 and 79 Surface Water Drainage Scheme, 40-ARI-WS-71-PA-RP-1050\_0\_IFU\_20170403 SWD DoC 60\_79, Rev 0, Arup, April 2017.

## Appendix A

### Phase 6 - Surface Water Drainage Layout



Do not scale



Inset Plan

- Notes:
- This drawing shows the proposed surface water drainage network for Site Preparation Phase 6.
- 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

0	11/06/18	JB	NF	CW
Issue				
A	07/06/18	JB	NF	CW
For comment				
Issue	Date	By	Chkd	Appd

**ARUP**  
 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 6  
 Drainage General Arrangement**

Scale at A1 1:2000

Discipline **Drainage**

Job No <b>253285</b>	Drawing Status <b>Planning</b>
Drawing No <b>40-ARI-WS-7100-CI-18-01002</b>	Issue <b>0</b>

10bbaleuropeleeds\luba\20000203285-01-2-Arup - P10 Platform Redesign\0 - CAD P10 - Platform Redesign\0\_Drawings\Phase 6\40-ARI-WS-7100-CI-18-01002.dgn

NYMNP A

14/06/2018

**SIRIUS MINERALS PLC - DISCHARGE OF PLANNING CONDITIONS FOR  
PLANNING PERMISSION NYM/2014/0676/MEIA (AS VARIED BY  
NYM/2017/0505/MEIA),  
NORTH YORKSHIRE POLYHALITE PROJECT**

<b>CONDITION</b>	NYMNP A 46
<b>REPORT</b>	HYDROGEOLOGICAL RISK ASSESSMENT (NYMNP A 46 – PHASE 6)
<b>SITE</b>	PHASE 6 WORKS AT WOODSMITH MINE, NORTH YORKSHIRE
<b>DOCUMENT NUMBER</b>	40-FWS-WS-70-WM-RA-0007

1433DevOR396 Rev.3/June 2018

FWS Consultants Ltd  
Merrington House  
Merrington Lane Ind Est  
Spennymoor  
County Durham  
DL16 7UT  
Company Registration No. 3944252

[www.fwsconsultants.com](http://www.fwsconsultants.com)



<b>PROJECT NUMBER</b>	1433Dev			
<b>PROJECT TITLE</b>	North Yorkshire Polyhalite Project			
<b>CLIENT</b>	Sirius Minerals Plc Resolution House Lake View Scarborough YO11 3ZB			
<b>REPORT TITLE</b>	Hydrogeological Risk Assessment (NYMNP 46 – PHASE 6)			
<b>REPORT REFERENCE</b>	1433DevOR396			
<b>DOCUMENT NUMBER</b>	40-FWS-WS-70-WM-RA-0007			
<b>REVISION</b>	<b>DATE</b>	<b>AUTHOR</b>	<b>CHECKED</b>	<b>APPROVED</b>
Rev 00	07/06/2018	CM	RIL	RIL
Rev 01	11/06/2018	CM	RIL	RIL
Rev 02	13/06/2018	CM	RIL	RIL
Rev 03	14/06/2018	CM	RIL	RIL

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## HYDROGEOLOGICAL RISK ASSESSMENT (NYMNP 46 – PHASE 6)

### 1 INTRODUCTION

#### 1.1 General Background

Previous documents prepared by FWS on the hydrogeology of the site and the phased construction works have included a revised Hydrogeological Baseline Report (Ref. 1), Hydrogeological Risk Assessments for the Phase 2, 3, 4 and 4a, and 5 Works (Refs. 2, 3, 4, 5 and 6) and an assessment of the long term cumulative hydrogeological impacts, in support of the s73 application (Ref. 7). This document has been prepared on behalf of Sirius Minerals Plc and provides the Hydrogeological Risk Assessment (HRA) for the Phase 6 Works at Woodsmith Mine, as required to satisfy Condition 46 of the North York Moors National Park Authority (NYMNP) planning permission NYM/2014/0676/MEIA (as varied by NYM/2017/0505/MEIA).

As no significant hydrogeological risks have been identified associated with the Phase 6 Works, there will be no additional requirements for construction and operational environmental monitoring and remedial actions above those previously documented for Phase 4 and 4a (Refs. 9, 10, 12 and 13). As such, within this document to meet the requirements of Planning Conditions 45, 46 and 47, recommendations are also provided on the requirement for a recharge trench, monitoring and remedial actions to supplement the management schemes currently employed for the concurrent Phase 4, 4a and 5 Works, as detailed in (Refs. 9, 10, 11, 12 and 13).

#### 1.2 Compliance with Conditions

Table 1 sets out the wording of Planning Conditions 45, 46 and 47 to Planning Permission Ref No. NYM/2014/0676/MEIA (as varied by NYM/2017/0505/MEIA) that relates to the Hydrogeological Risk Assessment, the Construction and Operational Phase Ground and Surface Water Monitoring Scheme and Remedial Action Plan and details where the relevant material, to comply with this condition, has been provided within this report:-

**Table 1 - Summary of Planning Conditions 45 and 46 and Where Relevant Details Are Provided In This Report**

<b>PLANNING CONDITIONS RELATING TO IMPLEMENTATION OF THE RECHARGE TRENCH AND GROUNDWATER DRAINAGE</b>	
<b>NYMNP Condition 45</b>	<b>Compliance with Condition 45</b>
<p>Prior to the commencement of shaft sinking or chamber formation beneath ground at Doves Nest Farm site and in accordance with the details in the document “York Potash Project: Habitats Regulation Assessment” prepared by Amec Foster Wheeler dated June 2015 with document reference 35190CGos064R, and as updated by the HRA prepared by Royal Haskoning DHV dated November 2017 with document reference 40-RHD-WS-83-WM-RP-001 Rev 4, a programme for the implementation of the following shall be submitted to and agreed in writing with the MPA:</p> <p style="margin-left: 20px;">a. A recharge trench to promote re-infiltration of surface runoff to recharge the Moor Grit up hydraulic gradient of the source area to Moorside Farm Spring;</p>	<p>Comment on the requirement for implementation of the recharge trench and groundwater drainage beneath bunds E and F are presented in Section 7.</p>

<p>b. Provision of groundwater drainage areas beneath bunds E and F to collect spring waters issues from the Scarborough and Cloughton Formations for discharge via the mine site surface water drainage system.</p>	
<p><b>PLANNING CONDITIONS RELATING TO THE HYDROGEOLOGICAL RISK ASSESSMENT</b></p>	
<p><b>NYMNP Condition 46</b></p>	<p><b>Compliance with Condition 46</b></p>
<p>Prior to the Commencement of Development at the Doves Nest Farm Minesite a revised Hydrogeological Risk Assessment based on the most up to date monitoring data shall be undertaken in accordance with the details in the document “York Potash Project: Habitats Regulations Assessment” prepared by Amec Foster Wheeler dated June 2015, with document reference 35190CGos064R and as updated by the HRA prepared by Royal Haskoning dated November 2017 with document reference 40-RHD-WS-83-WM-RP-0001 Rev 4; and submitted for approval in writing by the MPA in consultation with Natural England and the Environment Agency.</p>	<ol style="list-style-type: none"> <li>1. Details of the Phase 6 Works are presented in Section 3.</li> <li>2. Up to date monitoring is presented in FWS Consultants Ltd 2016 Hydrogeological Baseline Report for the Doves Nest Farm Minesite, 2012 to 2016 (1975OR01 Ref. 1).</li> <li>3. Details of the Hydrogeological Risk Assessment are presented in Section 6.</li> </ol>
<p><b>PLANNING CONDITIONS RELATING TO THE CONSTRUCTION AND OPERATIONAL PHASE GROUND AND SURFACE WATER MONITORING</b></p>	
<p><b>NYMNP 46</b></p>	<p><b>Compliance with Condition 46</b></p>
<p>The scheme shall include: -</p>	
<p>Details of the number, type and location of monitoring points.</p>	<p>Section 8 and Phase 4 and 4a GW&amp;SWMS (Refs. 9 and 12).</p>
<p>A protocol for the removal and replacement of any existing monitoring points.</p>	
<p>Details of the frequency of monitoring during construction and operation.</p>	
<p>A list of the ground and surface water determinands to be tested for.</p>	
<p>Monitoring of ground water levels and spring flows.</p>	
<p>Monitoring of surface water quality including sediment, BOD, ammonia, pH.</p>	
<p>Geomorphology in Sneaton Thorpe Beck.</p>	
<p>A list of SAC/SSSI habitat measures to be tested for.</p>	
<p>Groundwater quality and level triggers.</p>	
<p>Surface water quality triggers.</p>	
<p>Surface water geomorphology triggers.</p>	
<p>SAC/SSSI habitat triggers.</p>	
<p>Monitoring of groundwater quality against groundwater triggers.</p>	
<p>A scheme for periodic review and refinement of the monitoring regime to take account of any approved changes to site layout/design, construction methods and monitoring data.</p>	
<p>A protocol for notifying the MPA of any breach of the Trigger Values, including the timing of any such notification.</p>	
<p>Details of the method and frequency with which monitoring results will be shared with the MPA, Natural England and the Environment Agency.</p>	
<p>The approved scheme shall thereafter be implemented in full, with monitoring continuing in accordance with the approved scheme until such time that it is agreed in writing by the MPA in consultation with Natural England and the Environment Agency that monitoring may cease.</p>	

<b>PLANNING CONDITIONS RELATING TO THE REMEDIAL ACTION PLAN</b>	
<b>NYMNP 46</b>	<b>Compliance with Condition 46</b>
The scheme shall include: -	
Prior to commencement of each Phase of Construction at Doves Nest Farm a Remedial Action Plan, setting out the remedial actions to be taken in the event that any monitoring triggers of the approved Construction and operation Phase Ground and Surface Water Monitoring Scheme are exceeded, shall be submitted to and approved in writing by the MPA in consultation with the Environment Agency.	Section 9 and Phase 4 and 4a Remedial Action Plan (Refs. 10 and 13).
Should any monitoring results exceed those triggers set out in the approved Construction and Operation Phase Ground and Surface Water Monitoring Scheme, the MPA, the Environment Agency and Natural England shall be informed as soon as possible, and the approved Remedial Action Plan shall thereafter be implemented as soon as possible and within one month of the relevant monitoring trigger having been exceeded. Following remedial action, monitoring in accordance with the Construction and Operation Phase Ground and Surface Water Monitoring Scheme will be undertaken in accordance with the timescale to be submitted to and approved by the MPA in consultation with the Environment Agency, the results of which shall be reported to the MPA within four weeks of the monitoring date.	
<b>NYMPA Condition 47</b>	<b>Compliance with Condition 47</b>
Following the approval of the Revised Hydrogeological Risk Assessment but prior to the commencement of development, a Groundwater Management Scheme (covering construction, operation and post-operation phases), shall be submitted to and approved in writing by the Local Planning Authority in consultation with the Environment Agency.	Section 8

### 1.3 Objectives

The purpose of this document is to:-

- Provide details of the hydrogeology of the site and adjacent areas.
- Provide details of the Phase 6 Works and the groundwater control measures that will be implemented.
- Provide a qualitative assessment of the magnitude of risks to hydrogeological receptors from the Phase 6 Works undertaken concurrently with Phases 4, 4a and 5 Works.
- Provide recommendations on groundwater and surface water monitoring and remedial actions to be undertaken in addition to that currently carried out for the Phase 4, 4a and 5 Works.

All details relating to the “as built” conditions, long term impacts and associated qualitative and quantitative modelling of the completed Service, Production and MTS shafts remain unchanged and are as addressed in detail in the Section 73 Works Hydrogeological Risk Assessments (Ref. 7).

## 2 DATA SOURCES

The data considered within this report are from the following sources:-

## **Hydrogeological Data**

- Hydrogeological Baseline Report for the Woodsmith Mine, North Yorkshire 2012 to 2016 (1975OR01; Ref. 1).

## **Development Details of Phase 6 Works**

- Sirius NYMNP 94 - Construction Method Statement (Phase 6) Document No. 40-SMP-WS-7100-PA-MS-0002.
- Arup Woodsmith Minesite Construction Phase 6 Master Plan. Drawing No. 40-ARI-WS-7100-CI-18-01000.
- Arup Woodsmith Minesite Construction Phase 6 Planning Phases Comparison General Arrangement. Drawing No. 40-ARI-WS-7100-CI-18-01001.
- Arup Woodsmith Minesite Construction Phase 6 Additional Platform. Drawing No, 40-ARI-WS-7100-CI-18-01002.
- Arup Woodsmith Minesite Construction Phase 6 Electrical Infrastructure. Drawing No, 40-ARI-WS-7231-CI-18-01000.

## **3 DETAILS OF THE PHASE 6 WORKS**

### **3.1 General Description**

Construction of the Phase 4, 4a and 5 works, as detailed in the Hydrogeological Risk Assessments (Refs. 4, 5 and 6), are ongoing. Provided below are details of the proposed Phase 6 Works which will be undertaken concurrently with the Phase 4 to 5 works.

- Reticulation of mains power from Northern Power Grid (NPG) kiosk;
- Construction of temporary secure storage unit;
- Civils work to construct an access road, pad and associated drainage in a previously cleared area within Haxby Plantation;
- Second level welfare buildings.

The following sections present details of the design levels and construction methodology for the Phase 6 Works.

### **3.2 Construction Methodology**

#### **3.2.1 Additional Platform and Access Road**

The additional platform to be constructed in the southeast of the site will be constructed in a previously cleared area within Haxby Plantation. Shallow earthworks will be undertaken in this area to a depth of around 1.0 m to regrade the surface to form a working platform with a concrete hard standing with a shallow gradient to the east. This shallow construction is expected to be contained within the superficial deposits, as illustrated in Section A-A Arup Drawing No. 40-ARI-WS-7100-CI-18-01002. To accommodate discontinuous perched groundwater that may be present within the Glacial Till in this area a 1.2 m deep groundwater filter drain will be constructed on the southwestern side of the platform, with carrier drains extending across the platform to

discharge the collected water back into the Till via an infiltration trench constructed along the northeastern boundary of the platform.

### 3.2.2 Shaft Platform Works (Switch rooms, Transformer, Substations, NPG Kiosk and Access Road and Second Storey to Welfare Facility)

Construction works are to be carried out on the main Shaft Platform including switch rooms, a transformer, substations, NPG Kiosk, a short section of access road and an additional storey to the welfare facility, as shown in Arup Drawing No. 40-ARI-WS-7100-CI-18-01001. All of these works are constructed on the completed shaft platform. Construction of the switch rooms, transformers and substations will be incorporate environmental protection measures in accordance with industry guidance, as detailed in the Construction Environmental Management Plan (CEMP) (Ref. 15).

### 3.2.3 Secure Storage Unit

An at grade secure storage unit (2 x 4 m) is to be constructed in the centre of the site surrounded by a low soil bund, within an area measuring 20 x 40 m.

## 4 MINESITE HYDROGEOLOGICAL CONDITIONS

The proposed Phase 6 development works are contained either within the existing Shaft Platform construction or are limited to only shallow excavation within the topsoil, subsoil and shallow Glacial Till Deposits. As such, the proposed Phase 6 works are not expected to penetrate into or interact with groundwaters within the near surface aquifers within the Moor Grit sandstone underlying the Secure Storage Area or the Long Nab sandstone underlying the proposed platform area.

The superficial deposits beneath this section of the Service Shaft Platform comprise 1 m of granular structural fill underlain by between 1 to 2 m of lime modified Class 2 cohesive general fill and 0.5 to 1.5 m of insitu firm sandy gravelly clay (Glacial Till). Therefore, the proposed Phase 6 development on the Shaft Platform will be separated from groundwaters in the Ravenscar aquifers by the presence of the natural geological barrier or enhanced geological barrier, installed as part of the Phase 3 construction works.

The superficial deposits across the central and southern area of the site consist of sandy gravelly clay (Glacial Till) to depths between 1.4 to 4.7 m bgl, generally thinning towards the southeast of the minesite, and containing frequent sand lenses at the base of this unit. In this area perched groundwaters are anticipated within the Glacial Till that are not expected to be in direct hydraulic continuity with groundwater's within the Moor Grit sandstone underlying the central area or the Long Nab sandstone beneath the southern area.

## 5 RECEPTORS

The hydrogeological receptors that may be impacted upon by the Phase 6 Works are shown in Drawing 1433DevOR357 and summarised in Table 4.

**Table 4 - Receptors**

Type	Receptor	Sensitivity
Sensitive Aquifers	Moor Grit Member	Medium
	Scarborough Formation	Medium
	Cloughton Formation	Medium
	Saltwick Formation	Medium
Base Flow Springs	Doves Nest Farm Spring (DNS1)	Very Low
	Ugglebarnby Moor Spring (SP01)	Very Low
	Springs Northwest of Ugglebarnby Moor (SP02, SP03)	Very Low
	Springs North of Woodsmith Mine (SP04)	Very Low
	Springs North of Woodsmith Mine (KHF)	Very Low
Spring Water Supplies	Moorside Farm Spring (MF2)	High
	Soulsgrave Farm Spring (SF2)	High
	Newton House Farm Spring (NHF1)	High
Groundwater Abstractions	Sneaton Low Moor Caravan Park	High
Ecological Receptors	Ugglebarnby Moor Northern Dry Heath Area	Low
	Ugglebarnby Moor Central Wet Heath Area	Low
	Ugglebarnby Moor Southern Dry Heath Area	Low
	Ugglebarnby Moor Southern Spring Flush	Very High
	Sneaton Low Moor Dry Heath Area	Low
Surface Waters	Sneaton Thorpe Beck	Low
	Little Beck	Medium

## 6 QUALITATIVE HYDROGEOLOGICAL RISK ASSESSMENT

### 6.1 Conceptual Model

The principal hydrogeological units underlying the Shaft Platform, Secure Storage Unit and the additional platform area comprise perched waters in the Glacial Till non aquifer, beneath which are Secondary A aquifers of local importance (Long Nab and Moor Grit).

Within the minesite area, there are no hydrogeologically supported terrestrial ecosystems or groundwater abstractions. The shallow Secondary A Aquifers beneath the minesite area are determined as being of local importance providing base flow to surface waters.

Offsite, bordering and within close proximity to the minesite, there is flora in the Spring Flush habitat, in the southern areas of Ugglebarnby Moor (Drawing 1433DevOD356), which is intermittently hydrogeologically supported, though predominantly fed by infiltration from superficial deposits. The dry heath ecosystems in the northern and southern areas of Ugglebarnby Moor, and on Sneaton Low Moor and the wet heath ecosystems in the central area of Ugglebarnby Moor, are not hydrogeologically supported by shallow groundwaters in the bedrock aquifers. There are four groundwater abstractions in close proximity to the minesite (Drawing 1433DevOD355); one from a well drilled into the Cloughton Formation at Sneaton Low Moor Caravan Park, and three from spring issues; one associated with Thornhill Farm (and the adjacent property) Moorside Farm Spring (MF2), Soulsgrave Farm Spring (SF2) and Newton House Farm Spring (NHF1). There are three spring discharges that have been determined to contribute low and intermittent volumes to surface water flows to the west of Ugglebarnby Moor (SP01, SP02 and SP03), and two to the north of the Woodsmith Mine (SP04 and KHF), as shown on Drawing 1433DevOD355.

## 6.2 Groundwater Effects

The physical and chemical groundwater effects that may arise as a result of the Phase 6 Works are summarised in Tables 5 and 6:-

### 6.2.1 Physical Effects

**Table 5 – Physical Effects**

Effect	Discussion	Magnitude of Effect at Source
<b>Reduction in surface recharge into the near surface aquifers during construction of the electrical switch rooms, NPG Kiosk and access road, electrical transformers and sub stations.</b>	During construction of the electrical switch room, NPG Kiosk and access road, electrical transformer, sub stations are to be built on the already constructed shaft platform. The proposed construction works will have no significant physical impact on recharge.	No Magnitude of Effect at Source
<b>During construction of the secure storage unit and the additional platform with access road, reduction in surface recharge into the near surface aquifers.</b>	Due to the small surface areas of both the secure storage unit and additional platform the proposed construction works will have no significant physical impact on recharge into the Long Nab or Moor Grit Aquifers will occur with no physical impact to the groundwater levels.	Very Low Magnitude of Effect at Source.
<b>Groundwater drain in additional platform will change recharge into the near surface aquifer.</b>	From surface water collected in the drain and transported across the platform collecting along the re-infiltration trench the proposed construction works will have no significant physical impact on recharge.	Very Low Magnitude of Effect at Source.

### 6.2.2 Chemical Effects

**Table 6 – Chemical Effects**

Effect	Discussion	Magnitude of Effect at Source
<b>Temporary and localised groundwater pollution arising from leakage / spillage of hydraulic fluids and fuel oils on the concrete hardstanding of the additional platform area.</b>	A structured maintenance and monitoring regime will be adopted for the construction operations and plant to ensure that there are no significant leaks or spillages of hydraulic fluids or lubricants that may enter the excavations.	Very Low Magnitude of Effect at Source.
<b>Temporary and localised groundwater pollution arising from leakage/spillage of hydraulic fluids and fuel oils from the installation/ operation of the switch rooms and substations.</b>	Hydrocarbon based coolants and transformer oils may be used in these areas, which could represent a pollution hazard to groundwaters. Construction of these electrical facilities will be undertaken to take consideration of all current best practice and guidance and carried out so that no significant leaks or spillage of polluting fluids occur. A structured maintenance and monitoring regime will be adopted for the construction operations and plant to ensure that there are no significant leaks or spillages of hydraulic fluids or lubricants that may enter the excavations with maintenance facilities undertaken in accordance with the CEMP (Ref. 15).	Very Low Magnitude of Effect at Source.

### 6.3 Hydrogeological Risk Assessment

A qualitative hydrogeological risk assessment has been carried out in accordance with the methodology presented in Appendix 2 to evaluate the potential physical and chemical impacts of the Phase 6 Works on the site specific hydrogeological receptors, detailed in Section 5, and the results are presented in Appendix 3.2 and discussed in Section 6.4.

Evaluation of the Likelihood of Occurrence of an impact has been undertaken by consideration of the Proximity and Connectivity between an activity and the receptor. Appendix 3.1, evaluates the proximity of each activity to each receptor taking account of both horizontal and vertical proximity. To determine the Likelihood of Occurrence of an impact on a receptor, the physical and chemical impacts have been evaluated by consideration of the activity with the worst case proximity (i.e. highest values detailed in Appendix 3.2) to each receptor in conjunction with the worst case connectivity (between an activity and the receptor). The magnitude of the worst case proximity adopted for each receptor and the Likelihood of Occurrence determined are presented in Appendix 3.2.

The Magnitude of Effect at the Receptor has been evaluated by consideration of the qualitative assessment of the Magnitude of Effect at Source, as presented in Section 6.2 and the Likelihood of Occurrence as presented in Appendix 3.2.

Assessment of the Significance of Impact of the physical and chemical effects on the specific hydrogeological receptors have been evaluated by consideration of the Magnitude of Effect at Receptor and the Receptor Sensitivity and the results are presented in Appendix 3.2 and evaluated in Section 6.4.

### 6.4 Results of the Hydrogeological Risk Assessment

For all hydrogeological receptors, including Moorside Farm, Soulsgrave Farm and Spring Flush, as well as the surface waters and springs, the qualitative risk assessment demonstrates that the Phase 6 Works will have a Negligible Physical and Chemical Impact. As detailed in the Section 73 Hydrogeological Risk Assessment (Ref. 7), this development will have a negligible cumulative long term hydrogeological impact on all hydrogeological receptors.

## 7 CONSIDERATION OF MITIGATION MEASURES

As part of this assessment, consideration has been given as to whether the recharge trench to the west of Bund C and groundwater drainage beneath Bunds E and F are necessary mitigation measures to be initiated as part of these Phase 6 Works. Taking account of the previously submitted quantitative modelling outputs and field monitoring data (Ref. 8), this hydrogeological risk assessment has demonstrated that these measures are not warranted at this stage of the construction process.

## 8 CONSTRUCTION OPERATION GROUND AND SURFACE WATER MONITORING SCHEME

As determined from the hydrogeological risk assessment presented in Sections 6, the proposed Phase 6 Works presents a negligible physical and chemical impact on groundwater levels and spring flow rates at Moorside and Soulsgrave Farm springs and a negligible physical and chemical



impact on groundwater levels and spring flows that may, under certain conditions, contribute to the water that sustains the Spring Flush terrestrial ecosystem.

Over the Phase 6 construction period, construction ground and surface water monitoring will be undertaken in accordance with the procedures detailed in the Construction and Operation Groundwater and Surface Water Monitoring Scheme for the Phase 4 and 4a Works (Refs. 9 and 12).

An additional surface water monitoring point from the drain on the additional platform, as shown on Drawing 1433DevOD357, will be monitored for the same range of onsite determinands as set in Section 4.7 of the Construction and Operation Groundwater and Surface Water Monitoring Scheme for the Phase 4 and 4a Works (Refs. 9 and 12).

The scope of monitoring and the Trigger Values proposed for the Phase 4 and 4a Works are also considered appropriate for the Phase 6 Works. As such, for the Phase 6 Works, no amendment or addition is considered necessary to the trigger values implemented through the Phase 4 and 4a agreed procedures.

## 9 REMEDIAL ACTION PLAN

During the Phase 6 construction period the procedures for evaluating breaches in Trigger Values for groundwater quality, spring water quality, surface water quality and geomorphology and ecology, the reporting strategy, and the responsibilities and contacts of parties who will manage the remedial actions, will all be as detailed in the approved Remedial Action Plan for the Phase 4 Works (Ref. 10).

## 10 GROUNDWATER MANAGEMENT PLAN

As-built records of the groundwater filter drain and carrier drains, the infiltration drain and re-infiltration trench will be provided to the Environmental Officer along with any maintenance and management scheme for the long term, management of the drainage system.

C MILLER  
ASSOCIATE DIRECTOR

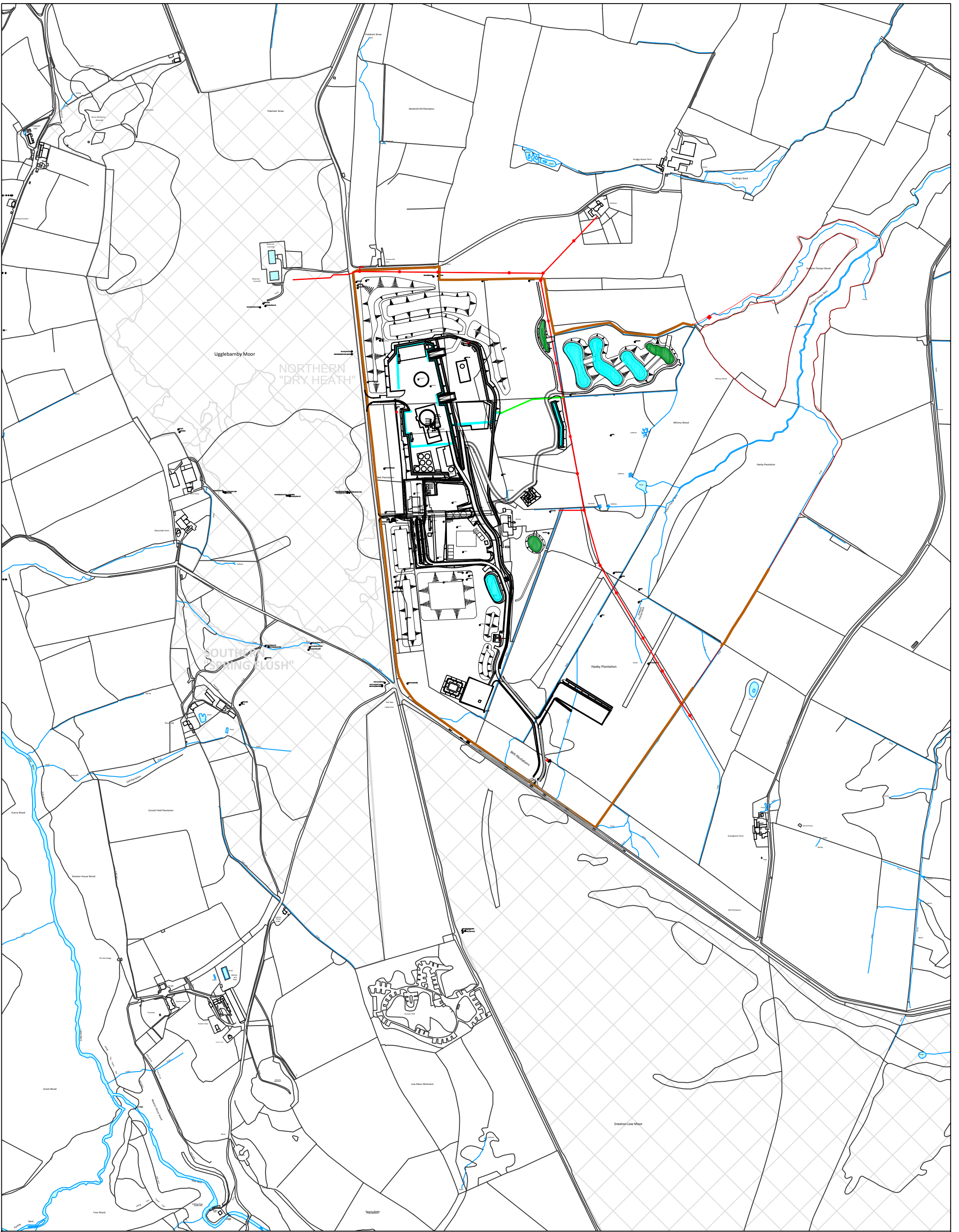
R IZATT-LOWRY  
DIRECTOR

## 11 REFERENCES

- 1 FWS Consultants Ltd, 2016. Hydrogeological Baseline Report for the Doves Nest Farm Minesite, North Yorkshire 2012 to 2016 (1975OR01).
- 2 FWS Consultants Ltd, 2017 Hydrogeological Risk Assessment for the Phase 2 Works at Doves Nest Farm Minesite, North Yorkshire (1433OR27).
- 3 FWS Consultants Ltd, 2017 Hydrogeological Risk Assessment for the Phase 3 Works at Woodsmith Mine, North Yorkshire, North Yorkshire (1433OR175).
- 4 FWS Consultants Ltd, 2017 Hydrogeological Risk Assessment for the Phase 4 Works at Woodsmith Mine, North Yorkshire, North Yorkshire (1433OR205).
- 5 FWS Consultants Ltd, 2017 Hydrogeological Risk Assessment for the Phase 4a Works at Woodsmith Mine, North Yorkshire, North Yorkshire (1433OR378).
- 6 FWS Consultants Ltd, 2018 Hydrogeological Risk Assessment for the Phase 5 Works at Woodsmith Mine, North Yorkshire, North Yorkshire (1433OR378).
- 7 FWS Consultants Ltd, 2017 Hydrogeological Risk Assessment Section 73 Works At Woodsmith Mine, North Yorkshire (1433OR385).
- 8 FWS Consultants Ltd, 2014 Hydrogeological Risk Assessment of the Minesite Development at the Dove's Nest Site, North Yorkshire (1433MineOR24).
- 9 FWS Consultants Ltd, 2017 Construction and Operation Phase Ground and Surface Water Monitoring Scheme for the Phase 4 Works at Woodsmith Mine, North Yorkshire (1433OR206).
- 10 FWS Consultants Ltd, 2017 Remedial Action Plan for the Phase 4 Works at Woodsmith Mine, North Yorkshire (1433OR207).
- 11 FWS Consultants Ltd, 2017 Groundwater Management Scheme for the Phase 4 Works at Woodsmith Mine, North Yorkshire (1433OR208).
- 12 FWS Consultants Ltd, 2018 Construction and Operation Phase Ground and Surface Water Monitoring Scheme for the Phase 4a Works at Woodsmith Mine, North Yorkshire (1433OR379).
- 13 FWS Consultants Ltd, 2018 Remedial Action Plan for the Phase 4a Works at Woodsmith Mine, North Yorkshire (1433OR380).
- 14 FWS Consultants Ltd, 2018 Groundwater Management Scheme for the Phase 4a Works at Woodsmith Mine, North Yorkshire (1433OR381).
- 15 Royal HaskoningDHV, June 2018. Phase 6 - Woodsmith Mine Construction Environmental Management Plan, Ref. No. 40-RHD-WS-70-EN-PL-0028

# **APPENDIX 1**

## **DRAWINGS**



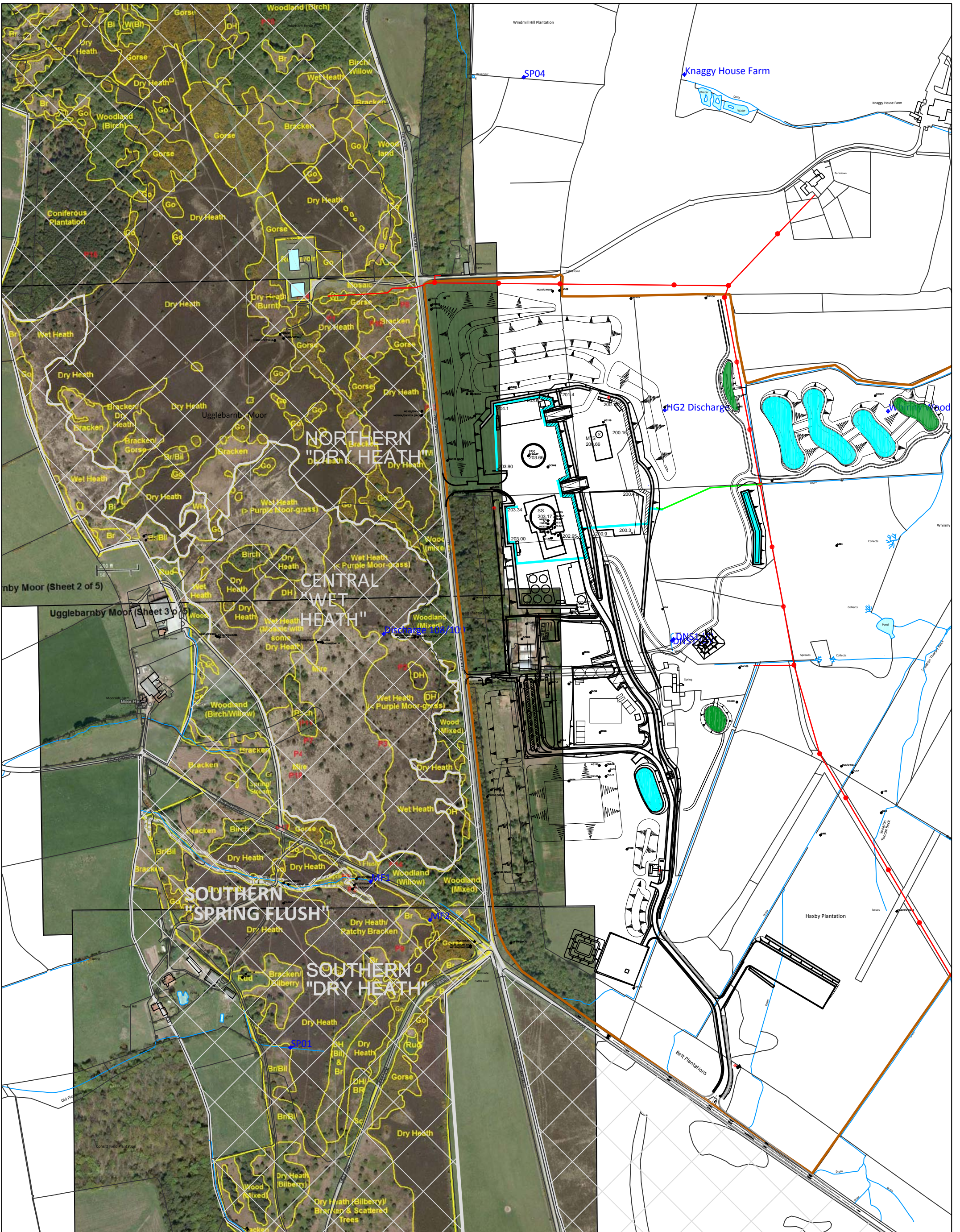
NOTES / KEY	
SITE OWNERSHIP BOUNDARY	
NYM SAC	
SURFACE WATER	
BOREHOLES	GCBH01
HYDROGEOLOGICAL RECEPTORS	MF2

<b>DRAWING TITLE</b>	HYDROGEOLOGICAL RECEPTORS - PHASE 6
<b>PROJECT TITLE</b>	NORTH YORKSHIRE POLYHALITE PROJECT

<b>CLIENT</b>	SIRIUS MINERALS PLC	
<b>STATUS</b>	FINAL	<b>PROJECT NUMBER</b> 1433Dev
<b>DRAWN BY</b>	CM	<b>DATE</b> June 2018
<b>SCALE</b>	1:8,000@A3/1:4,000@A1	<b>DRG. No.</b> 1433DevOD355

**FWS** Geological & Geo-Environmental Consultants

Merrington House  
Merrington Lane Industrial Estate  
Spennymoor  
County Durham  
DL16 7UT



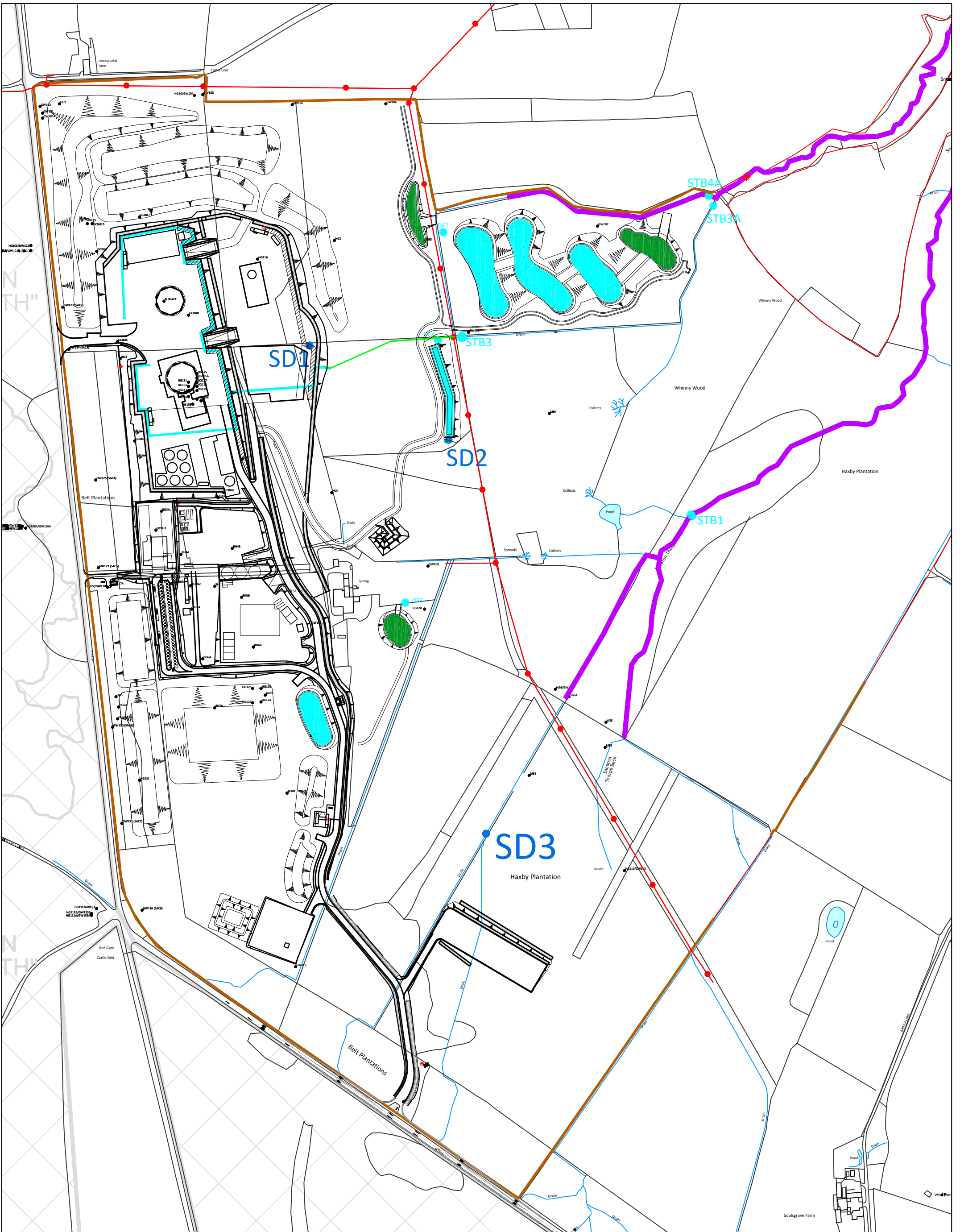
NOTES / KEY	
NYM SAC	
SURFACE WATER	
BOREHOLES	GCBH01
HYDROGEOLOGICAL RECEPTORS	MF2

<b>DRAWING TITLE</b>	ECOLOGICALLY SENSITIVE HABITATS ON UGGLBARNBY MOOR - PHASE 6
<b>PROJECT TITLE</b>	NORTH YORKSHIRE POLYHALITE PROJECT

<b>CLIENT</b>	SIRIUS MINERALS PLC	
<b>STATUS</b>	FINAL	<b>PROJECT NUMBER</b> 1433Dev
<b>DRAWN BY</b>	CM	<b>DATE</b> June 2018
<b>SCALE</b>	1:5,000@A3/1:2,500@A1	<b>DRG. No.</b> 1433DevOD356

**FWS** Geological & Geo-Environmental Consultants

Merrington House  
Merrington Lane Industrial Estate  
Spennymoor  
County Durham  
DL16 7UT



<b>NOTES / KEY</b> SITE OWNERSHIP BOUNDARY SURFACE WATER BOREHOLES SD3 SURFACE WATER MONITORING LOCATIONS GEOMORPHOLOGY SURVEY NYM SAC	<b>DRAWING TITLE</b> PHASE 6 SURFACE WATER QUALITY MONITORING POINT		<b>CLIENT</b> SIRIUS MINERALS PLC	
	<b>PROJECT TITLE</b> YORK POTASH PROJECT		<b>STATUS</b> FINAL	<b>PROJECT NUMBER</b> 1433Dev
		<b>SCALE</b> 1:4,000@A3/1:2,000@A1	<b>DRAWN BY</b> CM	<b>DATE</b> June 2018
			<b>DRG. No.</b> 1433DevOD357	<b>FWS Geological &amp; Geo-Environmental Consultants</b> Merrington House Merrington Lane Industrial Estate Spennymoor County Durham DL16 7UT

## APPENDIX 2

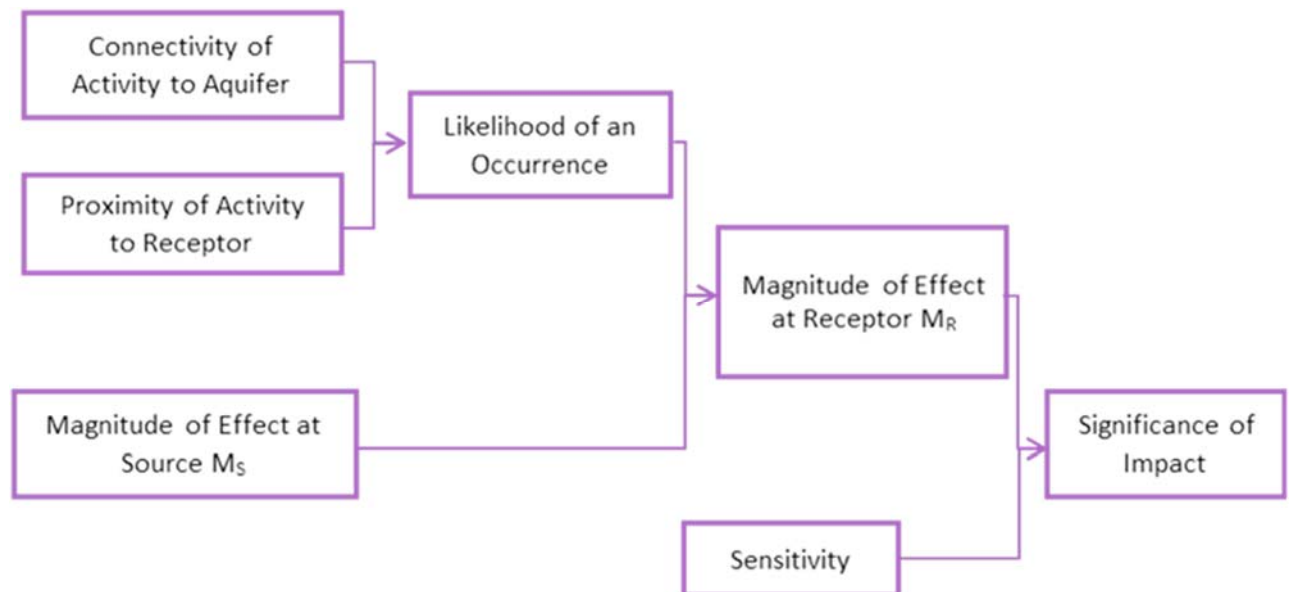
### RISK ASSESSMENT METHODOLOGY

## APPENDIX 2

### 1 RISK ASSESSMENT METHODOLOGY

The revised qualitative hydrogeological risk assessment presented in this report evaluates the “Significance of Impact” of the proposed Works on hydrogeologically sensitive receptors, and follows a source-pathway-receptor approach to meet regulatory requirements.

In order to evaluate the physical and chemical hydrogeological impacts, the following criteria, and the linkages between them, have been considered:-



Two criteria have been used to assess the “Likelihood” of an effect propagating through the hydrogeological system to a receptor. These are the Connectivity and Proximity of an activity to a receptor. Therefore, the closer and more directly connected an activity is to a receptor, the more likely it is that a pathway will exist between an activity and that receptor.

The Magnitude of Effect at Source (MS) has been considered in terms of the worst-case physical and chemical changes to baseline conditions that might occur.

Combining the Likelihood of an Occurrence with the Magnitude of Effect at Source provides a qualitative evaluation for the Magnitude of Effect at Receptor (MR), which is the effect that a particular activity will have on a specific receptor.

The Magnitude of Effect at Receptor is then combined with the Sensitivity of the Receptor to provide an estimate of the Significance of Impact.

Five categories are used to describe the Connectivity, the Proximity, the Likelihood of an Occurrence, the Magnitude of Effect at Source (MS), the Magnitude of Effect at Receptor (MR); and the Sensitivity of a Receptor:-

- Very High
- High
- Medium
- Low
- Very Low



Four categories are then used to describe the overall “Significance of Impact”:-

- Major
- Moderate
- Minor
- Negligible

The results of the revised qualitative assessment are given in risk matrices presented in Appendix 3 that identify which of the five categories above apply to specific activities and receptors during the relevant Phase of Works and, from this, it has been assessed which of the four categories of “Significance of Impact” they belong.

The following sections provide descriptions and definitions for each of these categories as they apply to each of the components of the qualitative risk assessment.

### 1.1 Likelihood of Occurrence

The Likelihood of Occurrence of a physical or chemical effect is evaluated by combining Connectivity and Proximity of an activity to a receptor, as detailed below.

Likelihood	Connectivity between Activity and Receptor					
		Very Low	Low	Medium	High	Very High
Receptor Proximity to Activity	Very Low	Very Low	Low	Low	Medium	Medium
	Low	Low	Low	Medium	Medium	High
	Medium	Low	Medium	Medium	High	High
	High	Medium	Medium	High	High	Very High
	Very High	Medium	High	High	Very High	Very High

#### 1.1.1 Connectivity

Very High Connectivity	Activity and receptor occur in the same aquifer unit, with a direct or known pathway between them. For chemical impacts, the receptor is also down hydraulic gradient from the activity and on the same flow path (determined as being a line of flow between the source and the receptor that is perpendicular to groundwater contours).
High Connectivity	Activity and receptor occur in the same aquifer unit but the pathway is indirect as a result of the presence of a very thin (<1 m) or discontinuous aquitard. For chemical impacts, the receptor is down hydraulic gradient from the activity and is slightly oblique to the flow path.
Medium Connectivity	Activity and receptor occur in adjacent aquifer units that are in hydraulic continuity but are separated by a thin (>1 m), fractured or leaky aquitard. For chemical impacts the receptor is down hydraulic gradient from the activity and is strongly oblique to a flow path.
Low Connectivity	Activity and receptor are in adjacent aquifer units with no or very limited hydraulic continuity between them due to the presence of a natural or man-made aquitard. For chemical impacts the receptor is down hydraulic gradient from the activity and is on a different flow path.
Very Low Connectivity	There is no hydraulic continuity between the activity and the receptor due to the presence of a laterally and vertically continuous, or multiple thin (>1 m) aquitard units, an aquiclude unit or an engineered barrier unit. For chemical impacts, the receptor is up hydraulic gradient from the activity.

### 1.1.2 Proximity

In accordance with Environment Agency guidance on groundwater protection (Ref. 12), the minimum permitted distance for the proximity of a potentially polluting activity to a water abstraction is 50 m (equivalent to Source Protection Zone I). As such, for the purpose of this qualitative risk assessment a distance of <50 m has been used to define the condition of Very High Proximity. By consideration of Environment Agency guidance for the minimum distance of 250 m to a Source Protection Zone II this distance has been used to define the condition of High Proximity. Moderate and a Low Proximity limits have been set equally spaced from the 250 m zone, at 500 and 750 m respectively, and a Very Low Proximity has been defined as >750 m. The following absolute values have, therefore, been used to evaluate the Proximity of an activity to a receptor.

<b>Very high proximity</b>	< 50 m
<b>High proximity</b>	51 – 250 m
<b>Medium proximity</b>	251 – 500 m
<b>Low proximity</b>	501 – 750 m
<b>Very low proximity</b>	>750 m

A multi-layered aquifer system also requires consideration of vertical proximity. In order to take this into account, the proximity between aquifers moving down vertically through a sequence is reduced by one category for each aquifer to be consistent with the concept of connectivity.

### 1.2 Magnitude of Effect at Source (M<sub>s</sub>)

The Magnitude of Effect at Source of a physical or chemical impact is categorised, as detailed below:-

<b>Very High Magnitude of Effect at Source</b>	A very high degree of physical change is a change in groundwater level that is >150% of the regional natural annual groundwater level variation for an aquifer, or >150% of the natural variation in flowrate from a spring. A very high degree of chemical change is a change of >150% of the natural baseline chemical quality variation that could cause a risk of harm or give rise to a pollution risk.
<b>High Magnitude of Effect at Source</b>	A high degree of physical change is a change in groundwater level that is between 100 and 150% of the regional natural annual groundwater level variation for an aquifer, or between 100 and 150% of the natural variation in flowrate from a spring. A high degree of chemical change is a change of between 100 and 150% of the natural baseline chemical quality variation that could cause a risk of harm or give rise to a pollution risk.
<b>Medium Magnitude of Effect at Source</b>	A moderate degree of physical change is a change in groundwater level that is between 50 and 100% of the local natural annual groundwater level variation for an aquifer, or between 50 and 100% of the natural variation in flowrate from a spring. A high degree of chemical change is a local change of between 50 and 100% of the natural baseline chemical quality variation that could cause a risk of harm or give rise to a pollution risk.
<b>Low Magnitude of Effect at Source</b>	A low degree of physical change is a change in groundwater level that is between 20 and 50% of the local natural annual groundwater level variation for an aquifer, or between 20 and 50% of the natural variation in flowrate from a spring. A low degree of chemical change is a local change of between 20 and 50% of the natural baseline chemical quality variation.
<b>Very Low Magnitude of Effect at Source.</b>	A very low degree of physical change is a change in groundwater level that is <20% of the local natural annual groundwater level variation for an aquifer, or <20% of the flow from a spring. A very low degree of chemical change is a local change of <20% of the local natural baseline chemical variation.

### 1.3 Magnitude of Effect at Receptor (MR)

The Magnitude of Effect at any Receptor is estimated by combining the Magnitude of Effect at Source and the Likelihood of a hydrogeological “effect” occurring, as detailed in the matrix below:-

Magnitude of Effect at the Receptor		Likelihood				
		Very Low	Low	Medium	High	Very High
Magnitude of Effect at Source	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low
	Low	Very Low	Very Low	Low	Low	Low
	Medium	Very Low	Low	Low	Medium	Medium
	High	Very Low	Low	Medium	High	High
	Very High	Very Low	Low	Medium	High	Very High

A description of the five categories of hydrogeological “Magnitude of Effect at the Receptor” that have been used in this report are presented below:-

Magnitude of Effect at Receptor	Description
<b>Very High</b>	Loss of resource and/or integrity of the resource; severe damage to key characteristics or features and permanent/ irreplaceable change is certain to occur.
<b>High</b>	Loss of resource, but not affecting the overall integrity of the resource; partial loss of or damage to key characteristics or features and permanent/irreplaceable change is likely to occur.
<b>Medium</b>	Minor loss of, or alteration to, key characteristics of a resource; measurable change in attributes, quality or vulnerability. Long term, though reversible change, is likely to occur.
<b>Low</b>	Very minor loss of, or alteration to, key characteristics of a resource; noticeable change in attributes, quality or vulnerability. Short to medium term, though reversible, change could possibly occur.
<b>Very Low</b>	Temporary or intermittent very minor loss of, or alteration to, key characteristics of a resource; noticeable change in attributes, quality or vulnerability. Short to medium term change is unlikely to occur, and when does is likely to be intermittent and reversible.

### 1.4 Receptor Sensitivity

The sensitivity of groundwater receptors in the qualitative risk assessment has been assessed in terms of their ability to accommodate physical or chemical change and on the impact any change may have on a regional or local ecological or other environmental system. By adopting this approach to the qualitative assessment, the most sensitive receptors are determined to be those with very limited or no capacity to accommodate physical and/or chemical change that are of very high importance as a groundwater resource. Conversely very low sensitivity receptors are those that can generally tolerate physical and/or chemical changes and are of low importance as a groundwater resource. Groundwater receptor characteristics and receptor examples are detailed in the table overleaf:-

Sensitivity	Groundwater Receptor Characteristics	Receptor Examples
<b>Very High</b>	<ul style="list-style-type: none"> <li>• Has very limited or no capacity to accommodate physical or chemical changes.</li> <li>• Supports internationally important ecological, amenity or landscape features.</li> </ul>	<ul style="list-style-type: none"> <li>• Licensed public water supply or major industrial abstractions (e.g. SPZ 1/2).</li> <li>• Licensed/unlicensed abstractions and springs providing potable water supply, for which there is no alternative source (e.g. mains water).</li> <li>• Designated SAC, SPA, or Ramsar site with fauna or flora that are hydrogeologically supported from groundwaters within rock aquifers.</li> <li>• Surface water bodies supporting the above.</li> </ul>
<b>High</b>	<ul style="list-style-type: none"> <li>• Has limited capacity to accommodate physical or chemical changes.</li> <li>• Supports nationally important ecological amenity or landscape features.</li> </ul>	<ul style="list-style-type: none"> <li>• Designated 'Principal Aquifer'.</li> <li>• Licensed/unlicensed abstractions and springs providing potable water supply, for which an alternative source (e.g. mains water) is available.</li> <li>• Designated SAC, SPA, or Ramsar site with fauna or flora that are intermittently but not primarily hydrogeologically supported from groundwaters.</li> <li>• SSSI, NNR with fauna or flora that are hydrogeologically supported from groundwaters within rock aquifers.</li> <li>• Surface water bodies supporting the above.</li> </ul>
<b>Medium</b>	<ul style="list-style-type: none"> <li>• Has limited capacity to accommodate physical or chemical changes.</li> <li>• Supports regionally important ecological, amenity or landscape features.</li> </ul>	<ul style="list-style-type: none"> <li>• Designated 'Secondary A (or Undifferentiated) Aquifer'.</li> <li>• Regionally important wildlife sites with fauna or flora that are hydrogeologically supported from groundwaters within rock aquifers.</li> <li>• Non-potable licensed abstractions.</li> <li>• Surface water bodies supporting the above or classified as Good under Water Framework Directive.</li> </ul>
<b>Low</b>	<ul style="list-style-type: none"> <li>• Has moderate capacity to accommodate physical or chemical changes.</li> <li>• Supports locally important ecological, amenity or landscape features.</li> </ul>	<ul style="list-style-type: none"> <li>• Non-potable unlicensed abstractions.</li> <li>• Local wildlife sites (LNR, SNCI, RIGS), country parks with flora hydrogeologically supported from groundwaters within rock aquifers.</li> <li>• Designated SAC, SPA, or Ramsar site with fauna or flora that are not hydrogeologically supported from groundwaters within rock aquifers.</li> <li>• Surface water bodies supporting the above or classified as Moderate under Water Framework Directive.</li> </ul>
<b>Very Low</b>	<ul style="list-style-type: none"> <li>• Generally tolerant of and can accommodate physical or chemical changes.</li> <li>• Supports no features of significant ecological, amenity or landscape value.</li> </ul>	<ul style="list-style-type: none"> <li>• Designated 'Secondary B Aquifer' or 'Unproductive Strata'.</li> <li>• Surface waters with no important, dependent receptors.</li> <li>• SSSI, NNR with fauna or flora that are not hydrogeologically supported from groundwaters within rock aquifers.</li> </ul>

## 1.5 Significance of Impact

The significance of the impact that changes will have on a hydrogeological receptor is assessed by comparing the Magnitude of Effect at Receptor with the receptor Sensitivity. This is assessed using the following matrix.

Receptor Sensitivity	Magnitude Of Effect At Receptor				
	Very Low	Low	Medium	High	Very High
Very Low	Negligible	Negligible	Negligible	Negligible	Minor
Low	Negligible	Negligible	Minor	Minor	Minor
Medium	Negligible	Minor	Minor	Moderate	Moderate
High	Negligible	Minor	Moderate	Moderate	Major
Very High	Negligible	Minor	Moderate	Major	Major

The four categories assigned to the Significance of Impact above relate to a Major, Moderate, Minor or negligible (as identified below) against which the necessity to implement mitigation measures is evaluated.

Significance of Impact	Description	Necessity Of Mitigation Measures
Major	Major risk of unacceptable change to a sensitive hydrogeological receptor.	Mitigation measures required.
Moderate	Moderate risk with measurable change to a sensitive hydrogeological receptor.	Mitigation measures required.
Minor	Minor risk with local minor change to a sensitive hydrogeological receptor.	Mitigation measures may be required.
Negligible	No risk and no discernible change to a sensitive hydrogeological receptor.	No mitigation measures required.

## APPENDIX 3

### QUALITATIVE RISK ASSESSMENT

## APPENDIX 3.1

**EVALUATION OF PROXIMITY OF RECEPTOR TO THE PHYSICAL AND CHEMICAL EFFECTS  
OF CONSTRUCTION WORKS ASSOCIATED WITH SPECIFIC SITE PREPARATORY WORKS ACTIVITIES**

Receptor and Associated Geology		() = overlying	Phase 6 Works Activities And Associated Geology
			Service Shaft
			Moor Grit, Scarborough, Cloughton, Saltwick
Ugglebarnby Moor Northern Dry Heath Area	Dry Heath Ecology	Distance (m) Horizontal Proximity <b>Calculated Proximity</b>	100 High <b>Medium</b>
Ugglebarnby Moor Central Wet Heath Area	Wetland Ecology	Distance (m) Horizontal Proximity <b>Calculated Proximity</b>	100 High <b>Medium</b>
Ugglebarnby Moor Southern Dry Heath Area	Dry Heath Ecology	Distance (m) Horizontal Proximity <b>Calculated Proximity</b>	400 Medium <b>Low</b>
Ugglebarnby Moor Southern Spring Flush	Wetland Ecology	Distance (m) Horizontal Proximity <b>Calculated Proximity</b>	350 Medium <b>Low</b>
Sneaton Low Moor Dry Heath Area	Dry Heath Ecology	Distance (m) Horizontal Proximity <b>Calculated Proximity</b>	255 Medium <b>Low</b>
Sneaton Thorpe Beck	Surface Water	Distance (m) Horizontal Proximity <b>Calculated Proximity</b>	120 High <b>High</b>
Little Beck	Surface Water	Distance (m) Horizontal Proximity <b>Calculated Proximity</b>	1270 Very Low <b>Very Low</b>
Sneaton Low Moor Caravan Park Cloughton Fm	Drinking Water	Distance (m) Horizontal Proximity <b>Calculated Proximity</b>	650 Low <b>Very Low</b>
MF2 Moor Grit	Drinking Water	Distance (m) Horizontal Proximity <b>Calculated Proximity</b>	350 Medium <b>Low</b>
SF1 Scarborough Fm	Drinking Water	Distance (m) Horizontal Proximity <b>Calculated Proximity</b>	490 Medium <b>Low</b>
NHF Cloughton Fm	Drinking Water	Distance (m) Horizontal Proximity <b>Calculated Proximity</b>	1000 Very Low <b>Very Low</b>
SP01 Moor Grit	Baseflow	Distance (m) Horizontal Proximity <b>Calculated Proximity</b>	700 Low <b>Very Low</b>
SP02, SP03 Cloughton Fm	Baseflow	Distance (m) Horizontal Proximity <b>Calculated Proximity</b>	980 Very Low <b>Very Low</b>
SP04 Moor Grit	Baseflow	Distance (m) Horizontal Proximity <b>Calculated Proximity</b>	450 Medium <b>Very Low</b>
DNS1 Moor Grit	Baseflow	Distance (m) Horizontal Proximity <b>Calculated Proximity</b>	30 Very High <b>High</b>
Knaggy House Farm Spring Scarborough Fm	Baseflow	Distance (m) Horizontal Proximity <b>Calculated Proximity</b>	470 Medium <b>Very Low</b>
Moor Grit Secondary A Aquifer	"Shallow aquifer/ Drinking water/ Baseflow"	Distance (m) Horizontal Proximity <b>Calculated Proximity</b>	0 Very High <b>Very High</b>
Scarborough Fm Secondary A Aquifer	"Shallow aquifer/ Drinking water/ Baseflow"	Distance (m) Horizontal Proximity <b>Calculated Proximity</b>	0 Very High <b>Very High</b>
Cloughton Fm Secondary A Aquifer	"Moderate depth aquifer/ Drinking water/ Baseflow"	Distance (m) Horizontal Proximity <b>Calculated Proximity</b>	0 Very High <b>Very High</b>
Saltwick Fm Secondary A Aquifer	Moderate depth aquifer	Distance (m) Horizontal Proximity <b>Calculated Proximity</b>	0 Very High <b>Very High</b>

Note: Calculated Proximity is determined from the Horizontal Proximity and the Vertical Proximity as detailed in Appendix 3.

**APPENDIX 3.2 - Qualitative Hydrogeological Risk Assessment - Phase 6 Works**

		Ugglebarnby Moor Northern Dry Heath Area	Ugglebarnby Moor Central Wet Heath Area	Ugglebarnby Moor Southern Dry Heath Area	Sneaton Low Moor Dry Heath Area	Ugglebarnby Moor Southern Spring Flush	Sneaton Thorpe Beck	Little Beck	Caravan Park	MF2	SF1	NHF	SP01	SP02, SP03	SP04	DNS1	Knaggy House Farm Spring	Moor Grit Secondary A Aquifer	Scarborough Fm Secondary A Aquifer	Cloughton Fm Secondary A Aquifer	Saltwick Fm Secondary A Aquifer	
		Dry Heath Ecology	Wetland Ecology	Dry Heath Ecology	Dry Heath Ecology	Wetland Ecology	Surface Water	Surface Water	Drinking Water	Drinking Water	Drinking Water	Drinking Water	Baseflow	Baseflow	Baseflow	Baseflow	Baseflow	Shallow aquifer/ Drinking water/ Baseflow	Shallow aquifer/ Drinking water/ Baseflow	Moderate depth aquifer/ Drinking water/ Baseflow	Moderate depth aquifer	
CHEMICAL IMPACTS	During construction of the secure storage unit and the additional platform with access road, reduction in surface recharge into the near surface aquifers.	Connectivity between Activity and Receptor	Low	Low	Low	Low	Low	Very Low	Very Low	Low	Low	Low	Low	Low	Low	Low	Low	Low	Low	Low	Low	Low
		Receptor Proximity to Activity	Medium	Medium	Low	Low	Low	High	Very Low	Very Low	Low	Low	Very Low	Very Low	Very Low	Very Low	High	Very Low	Low	Low	Low	Low
		Likelihood	Medium	Medium	Low	Low	Low	Medium	Very Low	Very Low	Low	Low	Low	Low	Low	Low	Medium	Low	Low	Low	Low	Low
		Magnitude of Effect at Source	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low
		Magnitude of Effect at Receptor	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low
		Sensitivity (Value of Resource)	Low	Low	Low	Low	Low	Low	Medium	High	High	High	High	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low
		Significance of Impact	Negligible	Negligible	Negligible	Negligible	Negligible	Negligible	Negligible	Negligible	Negligible	Negligible	Negligible	Negligible	Negligible	Negligible	Negligible	Negligible	Negligible	Negligible	Negligible	Negligible
	Groundwater drain in additional platform will change recharge into the near surface aquifer.	Connectivity between Activity and Receptor	Low	Low	Low	Low	Low	Low	Very Low	Very Low	Low	Low	Low	Low	Low	Low	Low	Low	Low	Low	Low	Low
		Receptor Proximity to Activity	Medium	Medium	Low	Low	Low	High	Very Low	Very Low	Low	Low	Very Low	Very Low	Very Low	Very Low	High	Very Low	Low	Low	Low	Low
		Likelihood	Medium	Medium	Low	Low	Low	Medium	Very Low	Very Low	Low	Low	Low	Low	Low	Low	Medium	Low	Low	Low	Low	Low
		Magnitude of Effect at Source	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low
		Magnitude of Effect at Receptor	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low
		Sensitivity (Value of Resource)	Low	Low	Low	Low	Low	Low	Medium	High	High	High	High	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low
		Significance of Impact	Negligible	Negligible	Negligible	Negligible	Negligible	Negligible	Negligible	Negligible	Negligible	Negligible	Negligible	Negligible	Negligible	Negligible	Negligible	Negligible	Negligible	Negligible	Negligible	Negligible
Temporary and localised groundwater pollution arising from leakage / spillage of hydraulic fluids and fuel oils on the concrete hardstanding of the additional platform area.	Connectivity between Activity and Receptor	Low	Low	Low	Low	Low	Low	Very Low	Very Low	Low	Low	Low	Low	Low	Low	Low	Low	Low	Low	Low	Low	
	Receptor Proximity to Activity	Medium	Medium	Low	Low	Low	High	Very Low	Very Low	Low	Low	Very Low	Very Low	Very Low	Very Low	High	Very Low	Low	Low	Low	Low	
	Likelihood	Medium	Medium	Low	Low	Low	Medium	Very Low	Very Low	Low	Low	Low	Low	Low	Low	Medium	Low	Low	Low	Low	Low	
	Magnitude of Effect at Source	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	
	Magnitude of Effect at Receptor	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	
	Sensitivity (Value of Resource)	Low	Low	Low	Low	Low	Low	Medium	High	High	High	High	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	
	Significance of Impact	Negligible	Negligible	Negligible	Negligible	Negligible	Negligible	Negligible	Negligible	Negligible	Negligible	Negligible	Negligible	Negligible	Negligible	Negligible	Negligible	Negligible	Negligible	Negligible	Negligible	
Temporary and localised groundwater pollution arising from leakage/spillage of hydraulic fluids and fuel oils from the installation/ operation of the switch rooms and substations.	Connectivity between Activity and Receptor	Low	Low	Low	Low	Low	Low	Very Low	Very Low	Low	Low	Low	Low	Low	Low	Low	Low	Low	Low	Low	Low	
	Receptor Proximity to Activity	Very Low	Low	Low	Low	Low	Medium	Very Low	Very Low	Medium	Medium	Medium	Very Low	Very Low	Very Low	High	Very Low	Low	Low	Low	Low	
	Likelihood	Low	Low	Low	Low	Low	Medium	Very Low	Very Low	Medium	Medium	Medium	Low	Low	Low	Medium	Low	Low	Low	Low	Low	
	Magnitude of Effect at Source	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	
	Magnitude of Effect at Receptor	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	
	Sensitivity (Value of Resource)	Low	Medium	Low	Low	Low	Low	Medium	High	High	High	High	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	
	Significance of Impact	Negligible	Negligible	Negligible	Negligible	Negligible	Negligible	Negligible	Negligible	Negligible	Negligible	Negligible	Negligible	Negligible	Negligible	Negligible	Negligible	Negligible	Negligible	Negligible	Negligible	



NYMNPA

14/06/2018

## REPORT

# Phase 6 - Woodsmith Mine Construction Environmental Management Plan

Woodsmith Mine Phase 6 - CEMP

Client: Sirius Minerals PLC

Reference: 40-RHD-WS-70-EN-PL-0028 REV 0

Revision: 01/Final

Date: 13 June 2018

HASKONINGDHV UK LTD.

Rightwell House  
Rightwell East  
Bretton  
Peterborough  
PE3 8DW  
Industry & Buildings  
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Drafted by: Charlotte Goodman

Checked by: Matthew Hunt

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## 1 Introduction

### 1.1 Purpose of Document

- 1.1.1 In 2014 a planning application (reference NYM/2014/0676/MEIA) was submitted to the North York Moors National Park Authority (NYMNP) for permission to develop a polyhalite mine and underground Mineral Transport System (MTS). Planning permission was subsequently granted in 2015 subject to conditions, as varied in February 2018 by NYM/2017/0505/MEIA.
- 1.1.2 This Construction Environmental Management Plan (CEMP) has been prepared on behalf of Sirius Minerals plc (Sirius Minerals) for the Phase 6 Works at Woodsmith Mine (as described in paragraph 1.2.1 below).
- 1.1.3 This document is required to partially discharge condition NYMNP-93, and has been prepared in accordance with current good practice. This planning condition states that:

Table 1-1 Condition NYMNP-93: Construction Environmental Management Plan

NYMNP-93	Compliance with Condition NYMNP 93
Prior to the commencement of each Phase of Construction in accordance with the approved Phasing Plan at either Dove's Nest Farm or Lady Cross Plantation, an updated CEMP shall be based on the approved Construction Method Statement (CMS) and shall be submitted to and approved in writing by the MPA in consultation with the Environment Agency in respect of the area concerned. The CEMP shall include details of:	This version of the CEMP is for Phase 6 as defined in Section 1.2 below.  Earlier versions of the CEMP have been produced for preceding works.
The size, location and design of any site compounds, including how any potentially polluting materials will be stored to minimise the risk of pollution;	Section 3.2, 3.3, Section 3.6 and Section 11.2 Phase 6 Construction Method Statement 40-SMP-WS-7100-PA-MS-00002
An Incident Response Plan to deal with any pollution that may occur during the course of construction;	Section 12
A scheme for the recycling/disposing of waste resulting from demolition and construction works;	Section 11
Storage of waste not covered by the Mine Waste Directive;	Section 11
Measures to control the glare from on-site lighting;	Section 3.4
Measures to manage deliveries by HGV including routing and timing for deliveries and details of the penalty system for breaches of the agreed control;	Section 4
Temporary traffic management;	Not applicable to this Phase

NYMNP-93	Compliance with Condition NYMNP 93
<p>The provision of a Dust Management Plan relating to Phase 1 of the construction period (earth works and bund formation) and Polyhalite handling and stockpiling to include dust generation modelling so as to identify sensitive receptors; likely dust generation and its disposition during the construction Phases and operation over time and under different weather conditions; the avoidance and mitigation measures required to ensure dust deposition levels at the sensitive receptors are maintained at the residual levels identified in the approved EIA, and monitoring arrangements. The Dust Management Plan must comply with the criteria set out in the 'Dust and Air Emission Mitigation Measures' best practice guidance for control of dust on construction sites from the Institute of Air Quality Management 2012. The monitoring arrangements will include dust deposition or dust flux or real-time PM<sub>10</sub> continuous monitoring locations; baseline dust monitoring at least three months before construction commences; daily on-site and off-site inspections at monitoring locations with results recorded in a log to be made available to the MPA on request, and more frequent monitoring during periods of high dust generation;</p>	Section 6
<p>In the event that there is insufficient clay within the Lady Cross Plantation site to form the 1m deep basal layer beneath the spoil storage area, a contingency plan to address the importation of clay, including the source, quantity and quality of such material, and how adverse effects on the water environment would be avoided;</p>	Lady Cross Plantation is not covered in this CEMP as works at that site have been deferred.
<p>How the requirements of the approved CEMP will be disseminated to all relevant staff/ Contractor's throughout the construction period;</p>	Section 2.2
<p>The location of the site notice board;</p>	2.2.7
<p>A scheme for parking, loading, unloading during construction;</p>	4.1.2
<p>A scheme for security and lighting during construction;</p>	Section 3.1 and 3.4

NYMNP-93	Compliance with Condition NYMNP 93
A protocol for the replenishment of tanks and containers including that all refuelling of vehicles, generators, plant and equipment shall be supervised and shall take place within a suitable bunded, impervious hardstanding;	Section 11.2
Contingency proposals for if fuel cannot be delivered for the generators, e.g. due to adverse weather;	40-RHD-WS-70-EN-PL-0014 - Phase 3 CEMP
How those artificial or historically straightened ephemeral surface water channels referenced in sections 15.7.22-15.7.24 of chapter 15 of part 2 of the ES are to be retained wherever possible, and enhanced to increase their capacity (e.g. through the introduction of meanders) and to increase their ability to capture sediment (e.g. through suitable planting);	40-FWS-WS-70-CI-PL-0002 – Phase 3 Surface Water Management Plan Phase 3 CEMP
Proposals / contingency plans for waste not managed as part of the Mine Waste Permit comprising the storage and management of temporary mining waste stored on-site for less than three years (e.g. Pyritic Mudstone); non-inert and non-hazardous materials stored for less than one year, and unexpected hazardous waste stored for less than six months, including measures to prevent the dispersal of dust, leachate and surface water runoff;	Section 11
A Precautionary Method of Working for Site Clearance (PMWSP) which shall be submitted to and agreed in writing by the MPA prior to commencement of Preparatory Works and shall be adhered to thereafter. The PMSWP shall set out proposals for tree clearance and the demolition of structures and shall include that between March and September each year surveys of areas to be cleared should occur no less than 48 hours before clearance occurs so that occupied wild bird nests can be identified and prevented from being destroyed;	Section 7
Alarms fitted to mobile plant and vehicles for the purposes of warning pedestrians of their movements.	Phase 3 CEMP

#### 1.1.4 Additional Conditions addressed in this CEMP are detailed in **Table 1-2**.

Table 1-2 Additional Planning Conditions Addressed in the CEMP

Condition	Topic	Compliance with Condition
NYMNP-52	Protected species	Section 7 Refer to Protected Species Management Plans:

Condition	Topic	Compliance with Condition
		40-RHD-WS-70-EN-PL-0010 Ph3 PSMP for Reptiles; 40-RHD-WS-70-EN-PL-0011 Ph3 PSMP for Badgers; 40-RHD-WS-70-EN-PL-0012 Ph3 PSMP for Birds; and 40-RHD-WS-70-EN-PL-0013 Ph3 PSMP for Bats. These remain applicable for Phase 6
NYMNPA-57	Landscape and ecological management	No works of landscape or ecological management relating to the long-term environment of the mine site will be undertaken during Phase 6. See Section 7.3.  Refer to the Phase 3 Landscape and Ecological Management Plan (LEMP) (40-RHD-WS-70-EN-PL-0008) as this remains applicable for Phase 6
NYMNPA-70	Trees and vegetation	Section 7
NYMNPA-76	Soil management	Section 10.
NYMNPA-95	Archaeological written scheme of investigation	Section 8.

1.1.5 This document only details the additional activities required for Phase 6 at Woodsmith Mine associated with the Sirius Minerals North Yorkshire Polyhalite Project ('the project'). It does not include any activities at Lady Cross Plantation as these Works have been deferred. Updates to this plan will be prepared for subsequent construction Phases and following any design or method change. The NYMNPA, as well as the Environment Agency and Natural England agreed that they support this approach in meetings held in April 2016.

## 1.2 Phase 6

1.2.1 The scope of Phase 6 described by this document is as follows:

- Reticulation of mains power from Northern Powergrid kiosk;
- Construction of temporary Secure Storage Unit (SSU);
- Civils work to construct an access road, pad and associated drainage in a previously cleared area within Haxby Plantation; and
- Second level of welfare buildings.

## 1.3 Scope of this Document

1.3.1 This CEMP details how the Phase 6 Works will be planned, monitored and managed in an environmentally responsible manner. It outlines the management framework for the environmental requirements, commitments, and performance targets associated with the planning and implementation of Phase 6 of the project.

1.3.2 This CEMP refers to several management plans, which have been prepared to partially discharge a number of planning conditions. Collectively these plans incorporate all mitigation measures relevant to Phase 6 (condition NYMNPA-06 refers).

1.3.3 This CEMP should be read in conjunction with the following previous CEMPs:



- Phase 3 CEMP 40-RHD-WS-70-EN-PL-0014;
- Phase 4 CEMP 40-RHD-WS-70-EN-PL-0023;
- Phase 4a CEMP 40-RHD-WS-70-EN-PL-0026; and
- Phase 5 CEMP 40-CAR-WS-8300-PA-MS-00001.

1.3.4 The Phase 6 CEMP should also be read together with the documentation submitted to partially discharge the following conditions. Information provided in these documents is summarised in this CEMP where appropriate:

- Condition NYMNPA-18: *Noise and Vibration Management Plan* (40-RHD-WS-70-EN-PL-0027 (Phase 5));
- Condition NYMNPA-34: *Construction Traffic Management Plan* (40-RHD-WS-70-CI-PL-0008 (Phase 5));
- Condition NYMNPA-46: *Hydrogeological Risk Assessment, Ground and Surface Water Monitoring Scheme and Remedial Action Plan* (40-FWS-WS-70-WM-RA-0007 (Phase 6));
- Condition NYMNPA-52: *Protected Species Management Plans* (40-RHD-WS-70-EN-PL-0010 Ph3 PSMP Reptiles; 40-RHD-WS-70-EN-PL-0011 Ph3 PSMP Badger; 40-RHD-WS-70-EN-PL-0012 Ph3 PSMP Birds; 40-RHD-WS-70-EN-PL-0013 Ph3 PSMP Bats as these remain applicable for Phase 6);
- Condition-NYMNPA-60 and 79: *Surface Water Management Plan Woodsmith Mine – Phase 6 Works – NYMNPA 60 and 79 Surface Water Drainage Scheme* (40-ARI-WS-7100-CI-RP-01000);
- Condition NYMNPA-70: *Tree Protection and Clearance* (40-RHD-WS-70-EN-MS-0002 (Phase 3) as this remains applicable for Phase 6);
- Condition NYMNPA-76: *Soil Management Plan* (40-AMC-W-71-EN-PL-0006 (Phase 4));
- Condition NYMNPA-91: *Emissions to Atmosphere* (40-RHD-WS-70-EN-RP-0004 (Phase 5));
- Condition NYMNPA-92: *Construction Vehicle and Plant Management Plan* ( 40-RHD-WS-70-CI-PL-0009 (Phase 5)); and
- Condition NYMNPA-95: *Written Scheme of Investigation* (40-COT-WS-70-EN-PL-0002 (Phase 3) as this remains applicable for Phase 6).

1.3.5 The CEMP will remain a live document, being reviewed and updated in consultation with the appointed Contractors or sub-Contractor(s) as required. Each of these updated CEMPs will be submitted to NYMNPA for approval prior to the start of each Phase of construction.

## 2 Environmental Management Framework

### 2.1 Structure and Responsibilities

2.1.1 This CEMP addresses those environmental matters within the responsibility of Sirius Minerals and the Contractors engaged on its behalf to deliver the Phase 6 Works. While overall responsibility for compliance with environmental and approvals requirements will remain with Sirius Minerals, the Contractors working on site are accountable for undertaking the construction activities in line with the requirements of this CEMP as well as all legal and other requirements imposed via permits and licences.

### 2.2 Training, Awareness and Competence

#### Internal Communication

2.2.1 All staff and sub-contractors working on Site will be required to attend a Site Induction prior to commencing work. This will cover the key environmental aspects relating to the project and the roles and responsibilities of individuals.

2.2.2 Toolbox talks will be undertaken by the Environmental Manager or other nominated personnel throughout the project. The aim will be to communicate information to all staff and serve to educate, prompt and remind them of their responsibility to protect the environment during construction activities.

2.2.3 Additional details on staff training and awareness are provided in the Phase 4 CEMP (reference 40-RHD-WS-70-EN-PL-0023).

2.2.4 Monthly progress meetings will be used to disseminate the results of monitoring and audit reports. At these meetings, a review of the environmental performance throughout the site to date will be undertaken and any improvements required during the construction phase will be identified. Details of where sustainable approaches to construction have been implemented or developed as the work proceeds will also be discussed and recorded. Their suitability for implementation at other areas of the site will be considered and applied where appropriate. Decisions about amendments required to the processes and procedures will also be agreed.

#### External Communication

2.2.5 Sirius Minerals will communicate with members of the public, including adjacent landowners, local residents and businesses in line with the Community Stakeholder and Engagement Framework (CSEF) (refer to **Appendix A**).

2.2.6 The CSEF includes provision for a quarterly Liaison Group Forum meeting, which are open to members of the public to attend. These Liaison Group Forum meetings provide a mechanism to provide project updates and to exchange feedback on all project matters, including environmental ones.

### **Site Notice Boards**

- 2.2.7 A display board (i.e. a site information board) will be erected at the entrance to the Woodsmith Mine site, to keep local residents and stakeholders informed of the Works and their schedule. The site information board will identify key personnel, contact addresses, and telephone numbers, as well as showing visually the progress of Works.

### **Traffic Management Liaison Group**

- 2.2.8 A Traffic Management Liaison Group (TMLG) has been convened to oversee the implementation of the Construction Traffic Management Plan (CTMP), monitoring and enforcement of construction traffic movements. The TMLG will facilitate liaison between Sirius Minerals, planning authorities, highways authorities, and other key stakeholders in relation to the transportation aspects of the construction and operation of the project.
- 2.2.9 Full details of the remit of the TMLG, its membership and its operation can be found in Section 6 of the Phase 5 CTMP (reference 40-RHD-WS-70-CI-PL-0008 which also applies to the Phase 6 Works).

## **2.3 Monitoring of Compliance**

- 2.3.1 All construction and installation activities for Phase 6 Works will be supervised by the Contractors' Project Managers with the support of members of their teams on a daily basis using the same procedures as detailed in the Phase 4 CEMP.

## **2.4 Complaints Procedure**

- 2.4.1 The implementation of the systems and procedures to protect the environment will, if implemented, fully prevent environmental breaches. However complaints may still be received, and in this event the Complaints Procedure, which remains unchanged from that outlined in Appendix 6 of the Phase 3 CEMP (reference 40-RHD-WS-70-EN-PL-0014), will be implemented.

## **3 Description of Site**

### **3.1 Fencing and Security of the Site**

- 3.1.1 Most of the site fencing and security measures remain as per the Phase 4 and Phase 5 CEMPs. Additional security fencing will be required around the Secure Storage Unit and the additional construction platform, as shown on drawing 40-ARI-WS-7100-CI-18-01000.

### **3.2 Site Layout and Compounds**

- 3.2.1 The Phase 6 site layout is detailed in drawing reference 40-ARI-WS-7100-CI-18-01000 and the Phase 6 Construction Method Statement (40-SMP-WS-7100-PA-MS-00002).

### 3.3 Welfare Facilities

- 3.3.1 The welfare facilities detailed in the Phase 4 and Phase 5 CEMP documents remain valid for Phase 6.
- 3.3.2 An extension to the welfare facilities will be provided for Phase 6 to centralise the location of welfare facilities on site, as shown in drawing reference 40-ARI-WS-7100-CI-18-01000.

### 3.4 Lighting

- 3.4.1 The additional Phase 6 Works areas that are to be carried out off the existing platform will be illuminated during the hours of darkness via additional task-specific directional lighting. The lighting strategy will ensure that, when illumination is required, the following will apply:
- Directional tower lighting with directional lanterns will be used, with lights directed down towards the area required to be lit and away from any areas of concern (e.g. roads).
  - Task lighting will be used where appropriate to light up local areas of small works instead of mast illumination affecting a large radius. Where required for safety reasons, lighting may be required from crane or rig masts.
  - All open excavations will be fenced off and have adequate general and task lighting in order to ensure that all open excavations are clearly visible.
  - The lighting will comply with the lowest recommended criteria within the relevant British Standards and relevant Chartered Institution of Building Services Engineers Lighting Guides (BS EN 12464-2 Lighting of work places – Outdoor work place, CIBSE Lighting Guide 6 – Lighting of the outdoor environment and CIBSE Lighting Guide 1 – Lighting of the industrial environment),
  - Any construction lighting will be designed in accordance with relevant British Standards and guidance from the 'Bat Conservation Trust's Interim Guidance Note on Artificial Lighting and Wildlife' (June 2015 [http://www.bats.org.uk/pages/bats\\_and\\_lighting.html](http://www.bats.org.uk/pages/bats_and_lighting.html)).
  - Lights will be switched off when not in use.

### 3.5 Materials Storage

- 3.5.1 Details of the locations for storage of plant and materials remain unchanged from Phase 5. Where additional storage is required, this will be local to the Works. Materials will be stored appropriately in accordance with the approach detailed in the Phase 4 (reference 40-RHD-WS-70-EN-PL-0023) and Phase 5 CEMP (reference 40-CAR-WS-8300-PA-MS-00001).

### 3.6 Wheel Washing Facilities

- 3.6.1 Wheel washing facilities are provided on the site access road. Spent water will be managed as described in the Phase 5 CEMP (reference 40-CAR-WS-8300-PA-MS-00001).

### 3.7 Site Housekeeping

- 3.7.1 The implementation of a good site housekeeping policy is key to reducing the likelihood of accidents and environmental pollution incidents. Good housekeeping measures that will be implemented on site remain as for Phase 4 (reference 40-RHD-WS-70-EN-PL-0023) and Phase 5 (reference 40-CAR-WS-8300-PA-MS-00001).

## 4 Traffic

### 4.1 Construction Traffic Management Plan (CTMP)

4.1.1 A Phase 5 Construction Traffic Management Plan (CTMP) was prepared for Woodsmith Mine, (40-RHD-WS-70-CI-PL-0008) and submitted to partially discharge condition NYMNPA-34. The CTMP contains a range of measures for the management of transport, and the submitted document remains applicable to Phase 6.

#### **Parking and Deliveries to Site**

4.1.2 Details of parking, deliveries and unloading at Woodsmith Mine remain unchanged from Phase 5.

#### **Pedestrians and cyclists**

4.1.3 The procedures set out in the Phase 5 CEMP are applicable to Phase 6.

### 4.2 Enforcement Systems for Breaches of Traffic Management Requirements

4.2.1 These remain unchanged from Phase 5.

## 5 Noise and Vibration

### 5.1 Noise and Vibration Management Plan

5.1.1 A Phase 5 Noise and Vibration Management Plan (40-RHD-WS-70-EN-PL-0027) was prepared and submitted to the NYMNPA to partially discharge condition NYMNPA-18. It includes details of the noise sensitive receptors, agreed noise limits, monitoring to be undertaken and the mitigation measures to be implemented. These remain applicable to the Phase 6 Works.

## 6 Air Quality and Dust Management

6.1.1 Measures developed to reduce the impact of construction on air quality and, as part of this, to manage dust, remain unchanged from Phase 5. They are set out in the Phase 5 CEMP (reference 40-CAR-WS-8300-PA-MS-00001) and no additional dust control measures are required for Phase 6.

### 6.2 Construction Vehicle and Plant Management Plan

6.2.1 A Phase 5 Construction Vehicle and Plant Management Plan (40-RHD-WS-70-CI-PL-0009), was prepared to enable the partial discharge of planning condition NYMNPA-92. This remains applicable to the Phase 6 Works.

6.2.2 Mitigation measures identified in the Phase 5 CVPMP to minimise particulate emissions remain applicable for Phase 6.

## **7 Nature Conservation**

### **7.1 Protected Species and Precautionary Method of Working for Site Clearance**

- 7.1.1 Protected Species Management Plans (PSMP) were produced for bats, reptiles, badgers and birds to partially discharge planning condition NYMNPA-52 for Phase 3. These remain applicable for the Phase 6 Works, and the Precautionary Methods of Working will be applied.
- 7.1.2 Trees in Haxby Plantation were felled prior to Phase 6. Pre-commencement checks were undertaken by an ecologist to ensure that no protected species were harmed during the felling. The associated report concluded that no protected species were present in the felling zone or within the relevant zones of influence and therefore there was no impact on these species.

### **7.2 Vegetation Clearance**

- 7.2.1 The Arboricultural Method Statement (AMS), with an accompanying Tree Protection Plan (TPP) that was prepared to partially discharge NYMNPA-70 for Phase 3 remains applicable for Phase 6, and was followed for the clearance of trees in Haxby Plantation. Areas of tree stumps to be grubbed up are shown in drawing 40-ARI-WS-7100-CI-18-01003.

### **7.3 Environmental Enhancement**

- 7.3.1 The Phase 3 Landscape and Ecological Management Plan (LEMP; reference 40-RHD-WS-70-EN-PL-0008) was prepared to partially discharge condition NYMNPA-57 and remains applicable for Phase 6.

## **8 Archaeology**

- 8.1.1 The Written Scheme of Investigation (WSI) submitted prior to the Phase 4 Works (40-COT-WS-70-EN-PL-0002) remains valid for Phase 6 and will be applied to the limited earthworks being undertaken in this Phase.

## **9 Hydrogeology, Water Quality and Drainage**

### **9.1 Introduction and Generic Water Protection Issues**

- 9.1.1 A range of watercourses run through the site. In addition there are three different groundwater tables. In order to prevent pollution of the water environment the construction works will be undertaken in accordance with industry guidance set out in the withdrawn Pollution Prevention Guidance (PPG5) which was produced by the Environment Agency.

## 9.2 Groundwater Management

- 9.2.1 As no significant hydrogeological risks have been identified associated with the Phase 6 Works, there are no additional requirements for construction and operational environmental monitoring and remedial actions above those previously documented for Phase 4 and 4a (reference 40-FWS-WS-70-WM-PL-0012).
- 9.2.2 Details on the requirement for a groundwater recharge trench, monitoring and remedial actions are detailed in 40-FWS-WS-70-WM-RA-0007.

## 9.3 Surface Water Management

- 9.3.1 The Phase 6 Surface Water Drainage Scheme (40-ARI-WS-7100-CI-RP-01000) and the information contained in the Phase 5 CEMP remains applicable for Phase 6. Additional surface water drainage will be constructed for the concrete platform and SSU, as detailed in the Phase 6 Construction Method Statement (reference 40-SMP-WS-7100-PA-MS-00002) and shown in drawings 40-ARI-WS-7100-CI-18-01002 and 40-ARI-WS-7100-CI-18-01002.

## 9.4 Silt and Pollutant Management

- 9.4.1 Silt and pollutant management measures remain as per the Phase 4 CEMP (reference 40-RHD-WS-70-EN-PL-0023).

## 10 Soils and Contaminated Land

- 10.1.1 As part of Phase 6, soils will be stripped and added to the temporary storage mounds on site, as detailed in the Phase 6 Construction Method Statement (40-SMP-WS-7100-PA-MS-00002). The Phase 4 Soil Management Plan (40-FWS-WS-70-CI-PL-0003) outlines the methodologies for this work, which will be adhered to for Phase 6.
- 10.1.2 No areas of potentially-contaminated land were identified within the footprint of Phase 6 at Woodsmith Mine. The approach for dealing with unexpected contaminated soils found on site as described in the Phase 3 CEMP (reference 40-RHD-WS-70-EN-PL-0014) remains applicable for Phase 6.

## 11 Materials and Waste

- 11.1.1 Details of the materials and waste materials stored on site are provided in the Phase 4 (reference 40-RHD-WS-70-EN-PL-0023), 4a (reference 40-RHD-WS-70-EN-PL-0026) and 5 (reference 40-CAR-WS-8300-PA-MS-00001) CEMPs and remain applicable for Phase 6.

## 11.2 Fuel Oil Storage and Refuelling on Site

- 11.2.1 Delivery and refuelling will be supervised at all times and checks will be made to ensure that the correct type and volume is being delivered. Appropriate pollution mitigation measures (including drip trays and spill kits) will be employed. Refuelling will occur across the site with appropriate control measures in place, as detailed in the Phase 5 CEMP (CEMP 40-CAR-WS-8300-PA-MS-00001).
- 11.2.2 Fuel will be stored in accordance with The Control of Pollution (Oil Storage) (England) Regulations 2001. All static fuel tanks and bowsers will be integrated bunded tanks. These will have a primary container manufactured with integral secondary containment that holds a minimum of 110% of the volume of the inner tank. The locations of storage areas are shown in drawing 40-ARI-WS-7100-CI-18-01000.
- 11.2.3 Bunds for the 11kV transformers will have their own oil scrubber system and as a secondary containment safeguard the bund dewatering systems will be supported by a pumped water filtering system. The filtered water will be discharged to the site surface water drainage system. Static fuel tanks (such as those linked to generators) will be sited on sealed, level ground adjacent to generators.

## 11.3 General Management of Non-Extractive Waste

- 11.3.1 The management of non-extractive wastes will remain as set out in the Phase 4 CEMP (reference 40-RHD-WS-70-EN-PL-0023).

## 12 Incident and Emergency Planning

- 12.1.1 The Phase 3 CEMP and the associated appendices detailed actions that will be taken to minimise the risk of pollution incidents occurring on site and identifies the actions to be taken in the event of a pollution incident. These documents remain applicable to Phase 6.





## **Appendix A Sirius Minerals Community and Stakeholder Engagement Framework**



# Community and Stakeholder Engagement Framework

Document Verification					
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# Community and Stakeholder Engagement Framework

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# Community and Stakeholder Engagement Framework

## 1 Purpose and Scope

### 1.1 Background

There is widespread interest in the Company's North Yorkshire polyhalite (the Project) at local, regional and national levels. This is demonstrated by the ongoing media and stakeholder enquiries, as well as the levels of participation during the planning consultations or at Company events.

Sirius Minerals (the Company) has successfully engaged the community and other key stakeholders during this period, gaining widespread support for the Project. This has helped to provide the Company with a social license to operate. Maintaining this throughout the construction period is important to the successful delivery of the Project and is a key objective of the Company's board and management team.

### 1.2 Purpose

This Community and Stakeholder Engagement Framework (CSEF or the Framework) aims to set out a clear communications approach during the construction period which, when implemented correctly, can help to maintain the Project's social license to operate.

### 1.3 Scope

The Framework sets out an approach to community and stakeholder communications during the construction period. It outlines the overall strategy, identifies the main stakeholder groups and details the engagement objectives and activities. It sets out the roles and responsibilities of the Company and the principle construction contractors for implementing and managing its delivery.

Detailed community and stakeholder engagement action plans, which align to the approach set out in this Framework, will be produced before each of the construction events listed in Appendix 1.

It is not within the scope of this plan to include engagement with the planning authorities and other statutory bodies in relation to the compliance with planning obligations and further environmental requirements, other than those specifically regarding community engagement.

## 2 Engagement Strategy

This section summarises the strategy for communicating with the community and stakeholders during the construction of the Project.

### 2.1 Rationale

The strategy is based on the principle that the local community and key stakeholders will react best to being kept informed of developments and in advance of them occurring. The failure to communicate always leads to a communications vacuum and this in turn leads to misinformation and rumours which can negatively affect the perception of the Project.

Similarly, providing channels for feedback to the Company in the first instance allows local people or spokespeople to be engaged in matters that might affect them. It also allows them to be able contact the Company in the first instance.

Keeping people informed is not just about notification of physical activities during the construction period, but is also about allowing a channel for feedback that might raise an issue or local knowledge that the Company or its contractor teams was not previously aware of. It also enables a channel to positively promote the benefits of the Project as well as engaging in other positive public relations activities.

Any materials that are prepared for public consumption to explain parts of the construction work should be designed / drafted in a manner that promotes the understanding of works or issues in as clear and straightforward manner as possible. Ideas and initiatives to better explain construction work or progress will be received well by the Company.

## 2.2 Approach

In summary, the strategy that is to be adopted is to:

1. **Conduct pre-briefings for key events or activities**

Providing clear information before works commence at each site detailing what construction will involve, when it will take place and the measures to limit impacts.

2. **Have effective ongoing management of local communications**

Providing ongoing updates about construction progress and establish mechanisms that enable concerns to be raised and acted upon. This includes participation in the various liaison groups and clear processes to manage incoming queries or complaints.

3. **Community benefit initiatives**

Undertaking and promoting regular initiatives that deliver community benefits such as education and training schemes and employment and business opportunity information sessions. This may include any other positive public relations activities.

Further details on the methodology for pre-briefings, ongoing management and community benefits initiatives are available in sections 4.2 – 4.4.

## 3 Stakeholder Identification

Stakeholder groups have been identified and engaged as the Project has developed and can be broadly categorised as follows:

- **Local residents**

Residential neighbours and or landowners close to the individual construction sites. This could also include those directly affected in other areas such as those living close to key transport corridors or junctions.

- **Community representatives**  
This group includes elected representatives of the community including parish and town councils, local authority officers and councillors, and local MPs.
- **Interest groups**  
Business networks, environmental bodies, other local clubs and groups.
- **Education institutions**  
This includes local schools, colleges, universities and other training providers.
- **Media**  
All online, print and broadcast outlets and journalists are considered key stakeholders.
- **General public**  
The wider public as accessed through media channels, the website or site signage etc.

The engagement approach for each stakeholder group will follow a ‘monitor’, ‘keep informed’, ‘keep satisfied’, or ‘manage closely’ hierarchy depending on their level of interest and ability to influence the successful delivery of the Project.

## 4 Engagement Methodology

This section sets out how community and stakeholder communications will be handled during the construction of the Project.

### 4.1 Identify stakeholders

Whilst the broad stakeholder groups have already been identified there will be specific stakeholders relevant to each of the construction sites, consisting of those that are most likely to be impacted by the works, which will need to be engaged. This will include landowners and local residents in close proximity to the sites. The detailed action plans will identify these.

### 4.2 Pre-briefings for key events

Before construction of key stages of the Project begins it is important to provide information to the local community. For the purpose of this Framework these stages are defined as “construction events” (these are listed in appendix 1) and each would trigger the requirement to undertake these pre-briefing activities.

The information to be included in these activities will include details about what construction will involve and, if appropriate, focus on the main issues that have been raised during previous consultation. Reassurance will be given that measures will be taken to limit adverse impacts to an acceptable level and that planning conditions and other requirements are in place to ensure that this happens. People will also be informed of what they can do if they have questions or concerns.

This will help to raise awareness of what to expect and demonstrate that concerns will be listened to and acted upon wherever reasonably possible. As a minimum, the pre-briefing activities will include:

- Letters – Letters and or emails should be sent to those that are likely to be immediately affected. This might include neighbouring residents or households and businesses on access routes. As a courtesy, the same information will be sent to the local Parish Council, borough and county councillors covering those areas and the local MP.
- Newsletter / Leaflet – A short summary newsletter or leaflet about the works will be made available. Depending on the scale or profile of the works, this can be posted out to the recipients of the above or circulated more widely. The precise details will be a matter of judgement and as a result of discussions between the contractor and the Company. As a minimum, copies of the leaflet will be available on site during the works in case people make onsite queries.
- Information board and signage – Each site should have an information board at its entrance (and potentially at other prominent locations) containing the key details of what the work is, how long it is expected to last and contact details for further information, queries or emergencies. This should also include signage at sites where highways works related to the Project are being undertaken. HGV's associated to the Project should also be clearly identified.
- Exhibitions / Open days – In the case of certain key events it will be appropriate to inform local residents and the wider general public through open days prior to works starting. This would include further information on exhibition boards and would be attended by key personnel from the Company and contractors, who would be able to respond to queries and be able to provide reassurance on potential concerns.
- Press release – If appropriate (often where a wider audience is potentially affected or interested in the works planned) then a press release will be prepared detailing the key facts. The distribution will be a matter of judgement depending on the scope of the works. Any press release needs to be signed off by the Company in a timeframe that makes sure newspaper deadlines are met. Coverage should always appear in the week prior to the proposed activities beginning.
- Website updates – Details of key events should be uploaded to the Company website. Some works may also require more detailed information and documents to be uploaded. This information needs to be provided to the Company in a timely fashion to enable this happen.
- Social media updates – The Company will control its social media accounts. As above, the contractor will be expected to provide the relevant details to the Company in a timely fashion so the relevant information can be released through its social media channels.
- Stakeholder briefings – In some circumstances the contractor will be required to undertake specific stakeholder briefings to inform them of key events. This may be as a result of the stakeholders being closely affected by the works or as a reaction to the issuing of any of the publications detailed above. The Company will take the lead on such matters, in close



collaboration with the contractor (as it is likely to have existing knowledge or dealings with the stakeholders concerned). Each case will be different and on some occasions representatives from the Company may not be required to attend the meetings. Each case should be discussed in advance with the Company.

### **4.3 Ongoing management**

Local residents and stakeholders will need to continue to be engaged as construction progresses and be kept informed of key developments (i.e. general updates outside those covered under 'key events' in appendix 1). This will enable the Company to provide regular updates of the Project's progress, and that it is being delivered in accordance with planning consents and any other Company commitments. Alternatively, if the Project is not progressing as expected it is important that stakeholders are provided with an explanation and reassurance that corrective measures will be implemented.

In addition, on-going engagement will include a range of communication channels that enable stakeholders to raise issues and ask questions and for the Company or the contractor to respond to these.

#### **4.3.1 Liaison Group Forum**

A Liaison Group Forum will be established prior to the commencement of construction and will meet quarterly, as a minimum, throughout the construction and post-construction period. It will be chaired by the Company and its membership will include representatives from the National Park Authority, parish and town councils, local residents and wider community stakeholder representation as appropriate. It will also be open for the general public to attend.

The purpose of the group is to facilitate liaison between local stakeholders about construction, providing updates about progress, and to enable issues and concerns to be raised and resolved. The contractor will be expected to provide one or more representatives at this forum to contribute to its successful operation. Attendees from the contractor must be of a suitably senior position to enable meaningful dialogue and feedback at the Forum.

#### **4.3.2 Traffic Management Liaison Group**

The purpose of this group will be to facilitate liaison between local authorities and other interested stakeholders in regards to construction traffic. The group will oversee the management and monitoring of the Construction Traffic Management Plan (CTMP), and will be chaired by the Company.

There will be representation from the National Park Authority, local authorities, parish and town councils, and other stakeholders who may be affected by construction traffic.

#### **4.3.3 24-hour community helpline**

To ensure that there are accessible points of contact for the local community and wider stakeholders there will be a 24-hour helpline and a community email address, which will be widely promoted and staffed by the Company.

#### **4.3.4 Regular briefings and updates**

Key individuals and organisations will be regularly briefed and updated, the frequency of which will be determined by whether they have been categorised as monitor, keep informed, keep satisfied or

manage closely. The general public will also be kept informed. Similarly to pre-briefings for key events, updates will be communicated through the following channels:

- Public meetings and presentations - Parish council and town council meetings will be regularly attended, together with presentations to local interest groups.
- Press releases - the print and broadcast media will be utilised extensively to communicate with the wider community and at a regional and national level.
- Newsletters, website and social media – regular updates produced throughout construction via the website, leaflets, newsletters, social media and publications relating to specific issues, such as careers.

#### **4.4 Community benefit initiatives**

The Company has made a number of commitments to benefit the local area during construction such as providing employment and supply chain opportunities, training schemes, school outreach programmes and funding community projects. It is important that these are implemented and widely promoted so that the community and stakeholders are aware that the Company's commitments are being delivered. The initiatives, many of which are planning obligations in the S106 agreements, are outlined below:

- Funding to Scarborough Borough Council and Redcar and Cleveland Council to identify and prepare local people for employment opportunities.
- Funding to raise awareness of science, technology, engineering and maths (STEM) related careers in schools in North Yorkshire and Redcar and Cleveland.
- Targets specified in the YPL Skills Strategy - take on 50 apprentices, recruit 15 local students on the YPL Undergraduate Programme and train 300 adults.
- Quarterly employment opportunity sessions to promote job opportunities to local people
- Education outreach initiatives, careers events and presentations.
- Meet the buyer events for local businesses.
- Funding community projects through the York Potash Foundation.

#### **4.5 Protocols and guidelines**

There are guidelines in place, as listed below, to ensure that communication methods are clear, consistent, responsive and appropriate to the audience when dealing with different situations. Contractors will be expected to adhere to these procedures.

- Complaints procedure
- Media protocol

- Crisis readiness

A clear communications approach is important should a major incident occur. The Company's Communications Issues Management Plan (CIMP) sets out the steps to be taken following a major incident. In such a situation the reporting procedures in the CIMP should be followed and it is the responsibility of contractors to incorporate key aspects of this plan into their own processes.

## 5 Roles and Responsibilities

This section provides a framework that identifies responsibilities for the delivery and management of community and stakeholder engagement, focusing on roles of the Company and the principle construction contractors.

The Company will be responsible for community and stakeholder engagement during construction, supported by each construction contractor as required.

### 5.1 *Sirius Minerals*

The Company will be responsible for:

- Identify key stakeholders likely to be impacted by the works.
- Undertake pre-briefing activities before construction starts such as:
  - Open Days / exhibitions as appropriate
  - Signage at construction sites and update as necessary
  - Produce an information leaflet including an outline of the programme, impacts and mitigation, contact information, etc.
  - Direct correspondence with neighbours and landowners in regards to construction events such as blasting
- Liaison with the planning authorities and community representatives, including chairing the Liaison Group Forum and Traffic Management Liaison Group.
- Media relations.
- Manage the complaints procedure.
- Staffing the 24-hour community helpline, producing project newsletters, social media and updating the website.
- Direct engagement and briefings with key stakeholders including local residents, community representatives and interest groups.

The YPL External Affairs Director has responsibility for all company communications and external relations and should receive a monthly community and stakeholder engagement report. The External Affairs Director will chair the Liaison Group Forum and YPL's Development Manager will chair the Traffic Management Liaison Group.

The External Affairs General Manager, reporting to the External Affairs Director, is responsible for production and implementation of detailed community and stakeholder engagement action plans.

## **5.2 Construction Contractors**

Each of the construction contractors will be required to support the Company's stakeholder engagement approach as follows:

- Provide expected durations of phases or work, their potential impact on the local community and mitigation measures.
- Provide details of any expected public transport diversions, delays, planned road closures, impacts on highways, interrupted access for residents/ businesses, or other expected community disruption.
- Participate in quarterly employment opportunity sessions, at least two meet the buyer events, and a minimum of two education outreach days per year
- Cooperate with YPL in media events and provide information to YPL for publications, the website, newsletters, etc.
- Adherence to YPL communications protocols and guidelines.
- Attend the liaison groups, parish/town council meetings and assisting YPL as required.
- Ensure that all sub-contractors comply with stakeholder and community relations requirements.

## Appendix 1 – Construction Events

## Appendix 1 - Construction Events

The following provides a list of construction events which would trigger the requirement for pre-briefing activities, as outlined in section 4.2. The list is not exhaustive and there may be other events or activities not listed here that could be classified as construction events as a result of discussions between the Company and its contractors.

The construction events for the purposes of this Framework are:

- Any significant geotechnical investigation or drilling works
- Highways works
- Any site preparations
- Commencement of the MTS works
- Mine site shaft sinking
- MHF construction
- Harbour construction
- Overground conveyor construction (if not included with above)
- Temporary Park and Ride construction
- Any road closures
- Requirement to bring in abnormal loads

## Appendix 2 – Engagement Activities Summary

## Appendix 2 - Engagement Activities Summary

The table below provides an ‘at a glance’ overview of the main community and stakeholder engagement activities, together with the respective roles of YPL and the construction contractors in delivering them.

	Pre-briefing activities	Ongoing management	Community benefit initiatives
<b>York Potash</b>	<ul style="list-style-type: none"> <li>Establish Liaison Group Forum and Traffic Management Liaison Group</li> <li>Project update newsletter</li> <li>Media, website update, social media</li> <li>Briefings with site neighbours, landowners, community representatives and other key stakeholders as identified</li> <li>Produce leaflet detailing upcoming construction activities</li> <li>Send letters to stakeholders likely to be immediately affected</li> <li>Hold public open days / exhibitions</li> </ul>	<ul style="list-style-type: none"> <li>Chair Liaison Group Forum and Traffic Management Liaison Group</li> <li>Manage 24-hour community helpline and</li> <li>Attend parish and town council meetings quarterly</li> <li>Regular updates to site neighbours, landowners, community representatives and interest groups</li> <li>Media, website update, social media</li> <li>Manage complaints procedure</li> </ul>	<ul style="list-style-type: none"> <li>Careers talks and events</li> <li>S106 training targets and promote initiatives funded by the S106</li> <li>Promote activities of the York Potash Foundation</li> </ul>
<b>Construction contractor</b>	<ul style="list-style-type: none"> <li>Install information board and signage at construction sites / transport routes</li> <li>Provide information to YPL to be used in leaflets, letters, web content, etc., as required</li> <li>Attend public open days/exhibitions and meetings with stakeholders as required</li> </ul>	<ul style="list-style-type: none"> <li>Attend liaison groups, parish council and other meetings as required</li> <li>Provide information to support on-going community and stakeholder relations</li> <li>Participate in media events as required</li> <li>Adherence to complaints procedure, media protocol and crisis response procedure</li> </ul>	<ul style="list-style-type: none"> <li>Hold meet the buyer events</li> <li>Attend quarterly employment opportunity sessions</li> <li>Education outreach programmes</li> </ul>



# NYMNPA 94 - Construction Method Statement (Phase 6)

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Document Verification					
Revision	Date	Prepared by	Checked by	Approved by	Reason for Issue
0	13/06/2018	RF	RS	RS	Issued for Information

## NYMNPA 94 - Construction Method Statement (Phase 6)

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## NYMNP 94 - Construction Method Statement (Phase 6)

### 1 Introduction

#### 1.1 The purpose of this document

This document forms the Construction Method Statement (CMS) for the Phase 6 Works at Woodsmith Mine. This CMS is required to partially discharge condition 94 of the North York Moors National Park Authority (NYMNP) planning permission NYM/2017/0505/MEIA.

#### 1.2 Compliance with Condition NYMNP 94

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 Planning Condition 94**

NYMNP Condition 94	Compliance with Condition 94
Prior to the commencement of each phase of the development at Dove’s Nest Farm or Lady Cross Plantation in accordance with the approved Phasing Plan, 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. The Statements shall provide for:	This CMS is provided for the Phase 6 Works at Woodsmith Mine only.
(i) The parking of vehicles of site operatives and visitors clear of the highway;	Section 2.1
(ii) Loading and unloading of plant and materials;	Section 2.2
(iii) Storage of plant and materials used in constructing the development;	Section 2.3
(iv) Erection and maintenance of security fencing;	Section 3.1 and Section 3.2
(v) Wheel washing facilities;	Section 2.5
(vi) An outline construction method for sub-surface works including adherence to the ‘rack and pillar’ method of mining described in the SEI (14th February 2015) and the SRK Subsidence Memorandum (15th May 2013);	Not applicable to Phase 6.
(vii) Buildings and structures associated with the mine and tunnel shafts;	Section 1.4
(viii) Welfare/office building and security gatehouse;	Section 1.4 and Section 3.4
(ix) Screening bunds;	Section 3.1 provides details of SSU bund.
(x) Hardstandings;	Sections 3.1, 3.2 and 3.3
(xi) Shuttle Bus terminal;	Not applicable to Phase 6
(xii) Park-and-Ride layby;	Not applicable to Phase 6
(xiii) Emergency helipad;	Not applicable to Phase 6

NYMNP 94	Compliance with Condition 94
(xiv) Lighting columns;	No permanent lighting will be installed during Phase 6
(xv) Internal access and haul roads;	Section 3.1 and Section 3.2
(xvi) Domestic wastewater (foul sewage) treatment plant;	Not applicable to Phase 6
(xvii) Non-domestic wastewater treatment plant and settlement tanks;	Not applicable to Phase 6
(xviii) Surface water attenuation ponds, settlement ponds, swales and wetland areas;	Not applicable to Phase 6
(xix) Temporary spoil and Polyhalite storage areas;	Not applicable to Phase 6
(xx) Road widening and provision of right hand turn areas;	Not applicable to Phase 6
(xxi) Removal of any temporary structures; and	Not applicable to Phase 6
(xxii) Formation of spoil mounds and the establishment of vegetation on them.	Not applicable to Phase 6
The CMS shall contain a construction timetable and order of works noting any construction dependencies, refer to any inherent mitigation measures required to address adverse impacts identified in the EIA and cross refer to the CEMP in relation to any additional avoidance or mitigation measures	Section 3.5

### 1.3 Compliance with other relevant Planning Conditions

This CMS provides detail, in addition to that required by Condition 94, relating to the partial satisfaction of the following conditions of planning permission NYM/2017/0505/MEIA.

**Table 2: Details of NYMNP Planning Condition 64**

NYMNP 64	Compliance with Condition 64
Prior to the commencement of each Phase of Construction requiring temporary fencing, full details of the proposed temporary boundary treatment to the Dove’s Nest Farm site, including any walls or security fences and the timetable to implement them, shall be submitted to and approved in writing by the MPA. The temporary site boundary works shall then be implemented in accordance with the approved details and maintained for the period of construction.	<p>Temporary fencing, 1.8m high, will be required for the Secure Storage Unit (SSU). Temporary fencing to electrical infrastructure will be 2.2m high palisade. Refer to Sections 3.1 and 3.3.</p> <p>Temporary fencing to the additional concrete platform is to be the same as the existing 2.4m high Construction Phase 2 security fence. Refer to Section 3.2.</p> <p>The acoustic fence around the perimeter of the Woodsmith site will be re-aligned in order to accommodate the NPG kiosk.</p>

**Table 3: Details of NYMNPA Planning Condition 68**

NYMNPA Condition 68	Compliance with Condition 68
<p>Final details of all temporary structures, including samples of materials proposed including colour shall be submitted to and approved by the MPA prior to their construction. The temporary structures as approved shall be implemented in complete accordance with the details agreed.</p> <p>For avoidance of doubt this also includes colours of the generator stacks.</p>	<p>The Welfare building, electrical infrastructure building (sub-stations, transformers, switchrooms, etc) and Secure Unit Store (SSU) will have external colour RAL6008.</p> <p>Refer to Appendix A for GA drawing of Welfare building.</p>

**1.4 Scope of Work for Phase 6**

- Reticulation of mains power from Northern Powergrid kiosk
- Construction of temporary Secure Storage Unit;
- Civils work to construct an access road, pad and associated drainage in a previously cleared area within Haxby Plantation;
- Second level of Welfare building.

**2 Construction Logistics Method Statement**

**2.1 Parking of cars**

For Phase 6, cars will be parked within the designated parking area shown on drawing 40-ARI-WS-7100-CI-18-01000, which has capacity for 58 cars. All visitors to the site will park within the designated car parks, and no parking will be permitted on the public highway.

**2.2 Unloading and loading of material**

**2.2.1 Unloading**

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

The principle materials to be delivered and unloaded during Phase 6 comprise:

- Reinforcement for equipment bases using a telehandler;
- Fresh concrete from the site batching plant using conventional concrete trucks;
- ‘Site Won’ acceptable material from existing stockpiles on site using dumper trucks or articulated hauler vehicles;
- Road construction material using off-site haulage vehicle, including Type 1 aggregate and bituminous surfacing material;

- Topsoil from site stock pile using dump truck or articulated hauler vehicle;
- Security fencing and gate using offsite 7.5 Tonne flat bed vehicle;
- Small electrical equipment using off-site transit van;
- Steel container weighing 4.5 Tonne using off-site 7.5 Tonne flat bed vehicle;
- Electrical infrastructure, including substations, switchrooms and associated cabling and cable support stands.

### 2.2.2 Loading

Material requiring loading will be fresh concrete for internal site transportation from the batching plant to the working area, and wastes that require disposal off site. Concrete will be discharged directly from the concrete batching plant into conventional concrete trucks.

Other materials requiring loading onto site transport will generally be handled using all terrain forklifts 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 40-RHD-WS-70-EN-PL-0028.

## 2.3 Storage of Plant and Materials

Plant and materials will be stored in accordance with the approach established for Phase 4a.

## 2.4 Mobilisation

All equipment will be delivered to site via the consented routes, namely the A171 from Teesside. All HGVs will drive directly into the site and are not permitted to stop/wait on the public highway.

The contractor will utilise the existing welfare arrangement established under Phase 3 and all contractor's personnel will travel to the site in accordance with the most recent Construction Traffic Management Plan that was submitted as part of Phase 5 (ref.40-RHD-WS-70-CI-PL-0008).

## 2.5 Wheel Wash

The site wheel wash will be used in Phase 6 as in previous phases.

## 2.6 Plant

In addition to site based equipment referred to in Section 2.2, the Phase 6 works will require a mobile 60 Tonne crane with maximum jib height 13m for a duration of one week.

## 2.7 Personnel

The personnel associated with this methodology on each 12-hour shift are:

- 1 No Foreman;
- 1 No all-terrain telehandler operator;

- 1 No 360° excavator operator;
- 1 No dumper driver;
- 1No joiner;
- 1No steel fixer;
- 1 No roller operative and;
- 3 No general operatives.

### 3 Construction Method Statement

#### 3.1 Construction of the Secure Unit Storage (SSU)

The construction of the Secure Storage Unit (SSU) will be in accordance with approved specifications and drawings. Refer to Phase 6 masterplan drawing 40-ARI-WS-7100-CI-18-01000 for location.

The following method statement outlines the principal construction activities:

1. The footprint of the SSU will initially be excavated to a depth of approximately 0.5m below existing ground level using a 360° excavator to remove existing top and sub soil;
2. Within proposed hardstanding areas, acceptable 'site won' material will then be placed and compacted to the agreed formation level to form the foundation to the pavement construction above;
3. The concrete support base for the SSU will then be cast, following fixing of formwork and placement of reinforcement mesh to the correct levels. The concrete slab will then be cast using concrete supplied from the on-site batching plant.
4. Ducting and a filter drain will then be constructed around the perimeter of the internal concrete slab and access road. The filter drain will outfall adjacent to the SSU into the existing site drainage network constructed during previous construction phases.
5. Site infrastructure will then be provided to connect the SSU to an existing Mains Distribution Unit (MDU) and to the Main Gate Security Office. This will include the provision of underground ducts, including duct trenching and backfilling;
6. Complete construction of the bituminous access road within the SSU compound to final level;
7. The surrounding bunding will be formed using site won material. This includes grading, placing, and compacting granular site won material to approximately 3m above existing ground level using a 360° excavator and dumper. On completion of the bund, the bund will be topsoiled and seeded;
8. Install SSU container using a loader crane arm on the delivery vehicle;

9. Install chain link security fence (1.8m high) and gate using telehandler off-loading from delivery vehicle;
10. Install 240V power cable and equipment cabling for single CCTV, alarm, and low level lighting systems;
11. Install, test and commission low level lighting;
12. Connect CCTV and alarm signal cabling to Main Security Gate Office;
13. Test and commission CCTV and alarm systems.

### **3.2 Construction of an additional temporary concrete platform**

The construction of the temporary concrete platform will be in accordance with approved specifications and drawings. See drawing 40-ARI-WS-7244-CI-18-01002 for general reference.

The following method statement outlines the principal construction activities:

1. Install security fence around temporary concrete platform to match existing perimeter fence using telehandler off-loading from 7.5 Tonne flatbed delivery vehicle;
2. Initial excavation of soft material to a depth of approximately 1.0m below existing ground level using a 360° site excavator. This includes removal of all existing tree roots. Excavated material is to be placed within existing temporary storage mounds located close to the existing site security cabin;
3. Place and compact acceptable 'site won' fill to platform and road construction areas to agreed formation level using a 360° excavator off-loading from site articulated hauler vehicle;
4. An existing drainage watercourse that runs under the proposed platform is to be diverted into an existing water course with runs parallel to the access road. This will consist of an open ditch with a culverted section under the access road;
5. Form the groundwater reinfiltration trench (including trench excavation and backfill with granular material) along the northern side of the platform and install associated 150mm diameter connector pipes to the reinfiltration trench on the southern platform side. This will be formed as an open ditch with overflow points to adjacent watercourses;
6. Fix formwork around the perimeter of concrete platform and fix reinforcement within this to the correct levels;
7. Fix service ducts within platform area;
8. Cast the platform concrete slab, off-loading from site concrete trucks;
9. Construct the surface water drainage system, including constructing and lining (using concrete canvas or similar) the ditch to southern platform extents, installing the ditch outfall/orifice plate and installing the hydrocarbon interceptor prior to outfall.



10. Reconfigure the existing site main access road drainage ditch to accommodate the platform access road junction. This includes excavating and installing a culvert under the site entrance road using a 360° site excavator;
11. Complete construction of the bituminous access road to final level using 360° excavator off-loading from site articulated hauler vehicle.

### 3.3 Reticulation of Mains Power from NPG Kiosk

Electrical power for construction is to be distributed around the site via a series of cables, transformers and switch rooms that will connect to the main Northern Power Grid (“NPG”) substation. An overview of the electrical power infrastructure arrangements is shown on drawing 40-ARI-WS-7231-CI-18-01000 and comprises the following key elements:

1. (11KV) High Voltage Compound (incorporating the Main Switch Room) - The High Voltage (“HV”) Compound will be installed within the central area of the Woodsmith site and will contain the main switchboard area.

Located within the HV compound, will be a transformer (with its own concrete bund, incorporating Neutral Earth Resister and Pre-Insertion Resister equipment) as well as the Woodsmith Main Containerised Switch Room comprising a 22 m x 4 m x 5.2 m pre-fabricated building, coloured RAL 6008. This will sit on top of a pre-fabricated concrete basement of approximate depth 3m below finished surface level.

In addition, a small Low Voltage Alternating Current (AC) Package substation with pad mount is proposed to be located to the east of the HV Compound area.

The entirety of the HV Compound will be secured by way of a 2.2 metre high palisade perimeter fence (coloured RAL 6008), with a gated access road running from south to north within the centre of it.

2. Siemens Switch Rooms - In addition to the Woodsmith Main Containerised Switch Room, smaller switch rooms are proposed at the following three locations:

- to the south west of the Service Shaft platform;
- to the north west of the Production Shaft platform; and
- to the north east of the site, adjacent to the MTS Shaft.

Each of the switch rooms will comprise a 13 m x 4 m x 5.2 m pre-fabricated building coloured RAL 6008. Each switchroom will sit on top of a pre-fabricated concrete base of an approximate depth of 3m below finished surface level.

3. Surface Substations - As shown in drawing ref. 40-ARI-WS-7231-CI-18-01000, four surface substations are proposed at various locations within the site. The ‘Central Surface Substation’ and ‘South Surface Substation’ will extend to 11.2 m x 3.96 m x 4 m, with the ‘VSM Surface

Substation' and 'North Surface Substation' extending to 12.4 m x 3.96 m x 4 m. Each of the substations will be pre-fabricated buildings, coloured RAL 6008.

4. Site Wide Utility Cable Management System - power will be distributed around the site via a series of surface and sub-surface cables. These will either be accommodated in below ground ducts or box culverts or installed on an above ground cable management system. This system will mainly be provided around the edge of the main construction platforms to distribute HV surface cables and will consist of concrete pad mounted stands and connecting cable trays of approximate 1.6m height.

### **3.4 Construction of the Second Level Welfare Building**

There are no construction activities associated with this task except for offloading and placing prefabricated building units from a delivery vehicle using a 60 Tonne mobile crane. Refer to Appendix A for GA drawing of Welfare building.

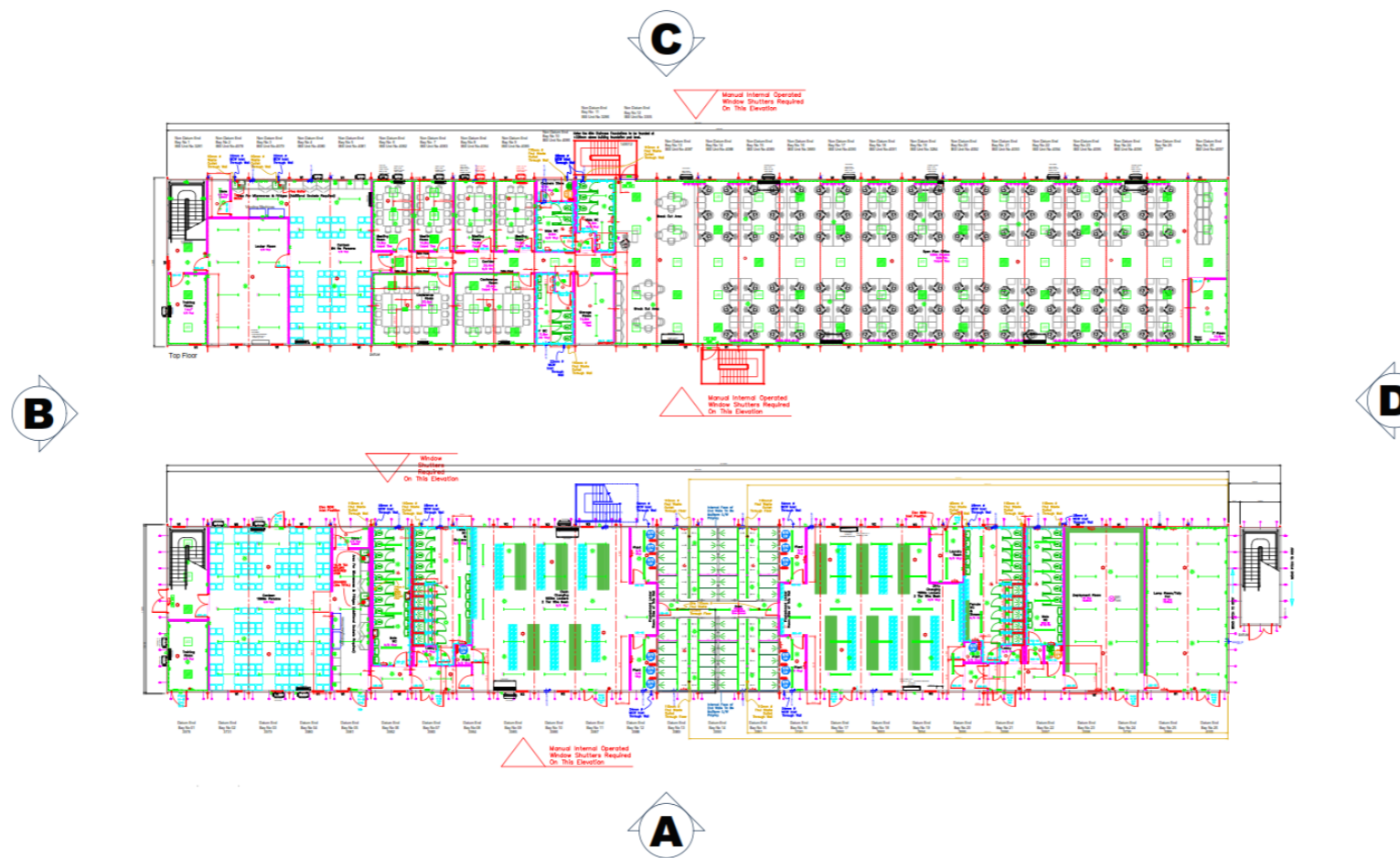
### **3.5 Construction timetable and sequence of work**

The Phase 6 Works described in this CMS are scheduled to occur during September to November 2018. The sequence of work is as set out in the scope provided in Section 1.4 of this document.

**Appendix A - Second Level of Woodsmith Welfare Building**

**40-PML-WS-7211-FC-22-00002**

DO NOT SCALE.  
IF IN DOUBT ASK.



ELEVATION A



ELEVATION B



ELEVATION C



ELEVATION D

NOTES

Rev	By	Description	Date
P1	ZJM	Staircase Added	20/02/18
PG	MJ	First Issue	20/02/18



**HEAD OFFICE**  
PREMIER MODULAR LIMITED, CATFOSS LANE,  
BRANDESBURTON, DRIFFIELD  
EAST YORKSHIRE YO25 8EJ



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Client: Sirius Minerals.

Project: ITT Site Offices & Welfare.

Title: Elevations Option B  
Additional First Floor Office & Ground Floor Alterations

Scale (at A1):	Drawn:	Date:	Checked:
1:150	MJ	20/02/18	
Drawing No.:	Rev		
17343-PIW-B1-ZZ-DR-A-0061B	P1		