

Sirius Minerals Plc

**Woodsmith Mine, Phase 3 Works**

**NYMNPA 94 - Construction Method  
Statement**

40-ARI-WS-71-PA-MS-1050

Issue Rev 0 | 3 April 2017

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 234376

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# 1 Introduction

## 1.1 Purpose and scope of document

This document has been prepared on behalf of Sirius Minerals Plc and details the Construction Method Statement (CMS) for Phase 3 Site Establishment 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/2014/0676/MEIA, and has been prepared in accordance with current good practice.

This CMS details the works to be undertaken during the Phase 3 Site Establishment Works at Woodsmith Mine only. Further construction method statements will be submitted to discharge condition NYMNP 94 for subsequent phases.

The CMS will remain a live document, being reviewed, and updated as required. The CMS will be updated and re-submitted for approval before each new Phase of the works commences.

## 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 1.1 below:

**Table 1.1: 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 Phase 3 Site Establishment Works at Woodsmith Mine only. Other phases will have bespoke CMS documents.
(i) The parking of vehicles of site operatives and visitors clear of the highway;	Section 2.6
(ii) Loading and unloading of plant and materials;	Section 2.7
(iii) Storage of plant and materials used in constructing the development;	Section 2.8
(iv) Erection and maintenance of security fencing;	Section 2.9
(v) Wheel washing facilities;	Section 2.12

<b>NYMNP Condition 94</b>	<b>Compliance with Condition 94</b>
(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);	This type of work is not required in Phase 3.
(vii) Buildings and structures associated with the mine and tunnel shafts;	This type of work is not required in Phase 3.
(viii) Welfare/office building and security gatehouse;	Section 2.5
(ix) Screening bunds;	Section 3.3 and Appendices B and C set out the details of environmental barriers to be installed as part of Phase 3
(x) Hardstandings;	Section 3.3 and 3.4 and Appendix B and C set out details of hardstanding and access roads to be constructed in Phase 3 and relevant control measures.
(xi) Shuttle Bus terminal;	This type of work is not required in Phase 3.
(xii) Park-and-Ride layby;	This type of work is not required in Phase 3.
(xiii) Emergency helipad;	This type of work is not required in Phase 3.
(xiv) Lighting columns;	No permanent lighting is to be installed during Phase 3. Section 2.10 sets out measures to control light pollution from any construction phase lighting required during Phase 3.
(xv) Internal access and haul roads;	Section 3.4 and Appendix A and B set out details of hardstanding and access roads to be constructed in Phase 3 and relevant control measures.
(xvi) Domestic wastewater (foul sewage) treatment plant;	No plant to be installed in Phase 3. Section 2.11 sets out measures for management of domestic wastewater.
(xvii) Non-domestic wastewater treatment plant and settlement tanks;	This type of work is not required in Phase 3.
(xviii) Surface water attenuation ponds, settlement ponds, swales and wetland areas;	Section 3.2 and 3.3 and Appendices B and C set out the details of surface water management works to be undertaken as part of Phase 3.
(xix) Temporary spoil and Polyhalite storage areas;	Preparation of a temporary spoil storage area for non-hazardous non-inert spoil is set out in section 3.3. Temporary soil mounds are covered in Sections 2.13 and 3.3.
(xx) Road widening and provision of right hand turn areas;	Not applicable to Phase 3.
(xxi) Removal of any temporary structures; and	No removal of temporary structures required in Phase 3.
(xxii) Formation of spoil mounds and the establishment of vegetation on them.	Sections 2.13 and 3.3 and Appendix C set out details of spoil mounds to be formed as part of Phase 3. Details of soil management and establishment of vegetation are provided in the CEMP (Planning Condition 93).

<b>NYMNP Condition 94</b>	<b>Compliance with Condition 94</b>
<p>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</p>	<p>The CMS relates to the completion of the Phase 3 Site Establishment Works at Woodsmith Mine only, and any dependencies between the activities described are identified within the text. All required mitigation has been included in a Construction Environmental Management Plan (CEMP), which is required to discharge condition 93. References have been made to the CEMP within the CMS.</p>

## 2 Project overview and description of the works

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### 2.1 Project overview

Sirius Minerals Plc is developing a new mine surface development south of Whitby in North Yorkshire to extract polyhalite and transfer it to a processing and port facility on Teesside (the port facility is covered by a separate consenting regime). A full and detailed description of the project can be found in the Environmental Statement.

This CMS relates to the Phase 3 Works at Woodsmith Mine only. This document builds on the CMS documents produced for Phase 1, Highway Improvement Works (REP-P10-XXX-PLN-002, Arup 2016) and Phase 2 Site Preparation (REP-P10-XXX-PLN-003 Arup 2017), and further versions of this live CMS will be produced for subsequent phases as outlined in Section 1.1.

### 2.2 CMS overview

The CMS provides an overview of the resource requirements and the plant and materials that are anticipated to be used during the Phase 3 Works. It includes the measures to be taken to ensure that the works are carried out in accordance with the requirements of both the planning permission and of Sirius Minerals Plc and, above all, are carried out safely and in compliance with all statutory obligations.

The works described in the method statement will be executed by three contractors:

- North Midland Construction Plc (NMC), Principal Contractor for site preparation works;
- Associated Mining Construction UK Ltd, (AMC) Principal Contractor for shaft sinking; and
- WJ Groundwater Ltd (WJG), specialist contractor for installation of shallow groundwater dewatering wells.

The scope of each contractor is defined in section 2.3.

WJ Groundwater will operate under the management of NMC.

Each Principal Contractor has prepared its own Project Management Plan (PMP) in accordance with its quality management procedures. The PMP documents will be the main tools used by the contractors to manage the safety, health and environmental (SHE) aspects of the delivery of the works, including resource and materials use. The PMPs for the Phase 3 Works are included as **Appendix A** (AMC UK), **Appendix B** (NMC). In order to avoid duplication with the PMP documents, this CMS acts as a signposting document to highlight where in each PMP the relevant information is located (rather than acting as a standalone management document).



In addition, and as specified in the PMP documents, each contractor develops Risk Assessment and Method Statements (RAMS) for each of the individual activities associated with an area of work. These provide a more detailed appraisal of the resource, plant and materials required, and specific control measures relating to that work activity. RAMS documents have been produced by both NMC and AMC for their respective areas of work. The NMC RAMS document is included as **Appendix C**, the AMC RAMS as **Appendix D** and the WJG RAMS as **Appendix E** to this document.

## 2.3 Description of works

The works to be executed during Phase 3 as summarised below. The contractor responsible for each element is identified in parenthesis:

- General site clearance including demolition of all farm buildings and sheds, and localised tree and scrub clearance, as shown on Arup drawing 40-ARI-WS-71-CI-DR-1051 (NMC).
- Excavation and construction of the south western extension of the upper tiered working platform at around 203m AOD, as shown on drawing 40-ARI-WS-71-CI-DR-1053 (NMC).
- Excavation and construction of the Platform for the Construction Welfare Facility, Parking Area and Concrete Batching Plant, as shown on drawing 40-ARI-WS-71-CI-DR-1053 (NMC).
- Construction of temporary and permanent soil mounds, including the basal liner for a future storage facility in the northeast corner of the site for non-hazardous non-inert spoil and three topsoil, subsoil and inert material storage bunds in the southwestern area of the site, as shown on drawings 40-ARI-WS-71-CI-DR-1053 and 40-ARI-WS-71-CI-DR-1055, with earthworks volumes presented in 40-ARI-WS-71-CI-DR-1054 (NMC).
- Construction of surface water drainage, a temporary surface water attenuation pond and temporary wetland in the southern area, and two permanent attenuation ponds and two wetland areas in the north eastern area, as shown on Arup drawing 40-ARI-WS-71-CI-DR-1050 (NMC).
- Construction of a spring and groundwater drainage layer in the north eastern area, discharging into a wetland area, as shown in drawing 40-ARI-WS-71-CI-DR-1080 (NMC).
- Installation and commissioning of temporary dewatering as shown in drawing 40-ARI-WS-71-CI-DR-1058 (WJG).
- Erection on site of the Concrete Batching Plant as shown in drawing 40-ARI-WS-71-CI-DR-1050, complete with reticulated water supplies and tanks (AMC).
- Construction of the drilling platform and temporary saline lagoon area for the groundwater reinjection well as shown in drawing 40-ARI-WS-71-CI-DR-1057.

- Establishment of construction welfare and security facilities - complete with hook-up of power, communications & water supplies and new waste water collection facilities as shown on drawing 40-ARI-WS-71-CI-DR-1050 (NMC).

## 2.4 Management and control of the works

The contractor's arrangements for management and control of the works are defined in the Principal Contractor's PMPs as identified in table 2 below.

Table 2: Management and control of the works

Aspect	AMC	NMC
Staff roles and responsibilities	<b>Appendix A</b> , PMP Section 2.1	<b>Appendix B</b> PMP Section 2(a)
How staff roles and SHE requirements are embedded within the Contractor's supply chain	<b>Appendix A</b> , PMP Section 2.3.7	<b>Appendix B</b> PMP Section 2(c)(vi)
SHE auditing arrangements	<b>Appendix A</b> , PMP Section 3.1.9	<b>Appendix B</b> PMP Section 3A(x)
Welfare and first aid facilities, project specific SHE workforce training arrangements	<b>Appendix A</b> , PMP Section 2.4, 2.3.12 and 2.3.13	<b>Appendix B</b> PMP Section 2(c)(ix to xi)
Preparation and communication of RAMS, site specific risk assessments, and Environmental Aspects and Impacts Assessment (EAIA)	<b>Appendix A</b> Section 2.6 and Section 3.3.17	<b>Appendix B</b> Section 2(c)(xiii)

Risk Assessment and Method Statements (RAMS) for the Phase 3 works can be found at **Appendix C** (NMC RAMS), **Appendix D** (AMC RAMS) and **Appendix E** (WJG RAMS). These documents identify potential hazards associated with the works and relevant information related to the scheme. Each RAMS will be disseminated to the relevant construction workforce one week prior to the works being undertaken. The construction workforce will be fully briefed as to the content of the RAMS documents.

## 2.5 Contractor's offices/compounds

NMC will continue to occupy the contractor's compound established during Phase 2. Refer to compound layout drawing 40-NMC-WS-70-FC-DR-0002, included in **Appendix G**. The facilities will be shared with WJ Groundwater.

AMC will establish separate temporary offices and welfare facilities, refer to general arrangement drawing 40-ARI-WS-71-CI-DR-1050.

During this phase Sirius will also establish shared office and welfare facilities which will be occupied by themselves and the contractors during subsequent

phases. The layout of the facilities is shown on drawing 40-ARI-WS-72-CI-DR-1050.

The facilities to be established are summarised below.

### Shared Facilities

- Office block with 61 work stations, 6 meeting rooms, IT room, kitchen and toilet facilities;
- Shower/changing/toilet block with separate facilities for visitors (5 showers, 5 toilets), male workers (48 showers, 17 toilets), and female workers (5 showers and 5 toilets) and laundry room;
- Medical centre with 3 consultation rooms, treatment room, recovery room toilets, showers and kitchenette;
- Canteen and kitchen;
- Deployment room/tally room/lamp room;
- Mine rescue room;
- Domestic wastewater storage tank;
- Car park for 58 cars;
- Bus drop-off area.

Typical details and floor plans are shown on the drawing provided with the response to planning condition NYMNP 68.

### AMC Facilities

For the concrete batch plant:

- 1 x site office with 6 work stations
- 1 x site office with 2 work stations/ meeting room for up to 12 people/ kitchenette;
- 1 x canteen with kitchenette for up to 12 people;
- 1 x toilet block (with male toilets x 3 and female toilet x 1);
- washing facilities with hot running water within toilet block and kitchenettes;
- 1 x drying room;
- 1 x generator for welfare facility power.

For the shaft sinking contractor:

- 1 x site office with 4 work stations/ planning area;
- 2 x canteen with kitchenette for up to 12 people;
- 1 x toilet block (with male toilets x 3 and female toilet x 1);
- washing facilities with hot running water within toilet blocks;
- 1 x drying room;
- 1 x generator for welfare facility power.

Typical details including floor plans are included in the RAMS (**Appendix D**) Part 9.

## NMC Facilities

The following facilities, established during Phase 2 will remain on site, occupied by NMJ and WJG:

- 4 x Site office buildings comprising 20 work stations (9.8m x 3.1m x 2.5m tall)
- 1 x Meeting room for up to 20 people (9.8m x 3.1m x 2.5m tall)
- 1 x split toilet-kitchen unit (9.8m x 3.1m x 2.5m tall)
- 1 x Canteen with kitchenette for up to 20 people each (9.8m x 3.1m x 2.5m tall)
- 1 x split drying room - toilet block with male and female toilets (9.8m x 3.1m x 2.5m tall)
- Washing facilities with hot running water within toilet blocks and canteen
- 1 x Storage container (6.1m x 2.5m x 2.5m tall)
- 1 x Bunded COSHH store (6.1m x 2.5m x 2.5m tall)
- 2 x Static fuel bowsers (2000 litre)
- 1 x Towable fuel bowser (6000 litre)
- Laydown areas for materials (10x10m + 10x10m + 15x7m + 10/13m – drawing 40-NMC-WS-70-FC-DR-0002)
- Car parking for up to 34 vehicles

Typical details of the welfare facilities, including floor plans, are included in the PMP **Appendix B** Section 2(c)(xi).

## 2.6 Parking of vehicles

Initially, construction worker's cars will be parked within the designated parking area at the NMC site compound, see drawing 40-NMC-WS-70-FC-DR-002 (**Appendix G**). On completion of the main construction phase vehicle parking area shown on drawing 40-ARI-WS-72-CI-DR-1050 (**Appendix G**), all construction worker's cars and buses will be parked in the main construction phase vehicle parking area which, as noted in Section 2.5 will have 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.

## 2.7 Loading and unloading of materials

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

Measures to ensure the effective management of the unloading, storage and distribution of materials are set out in the PMPs (**Appendix A** Sections 3.1.4 to 3.1.7, 3.2.4 and 3.2.7, and **Appendix B** Section 3B(vi)). Details are included in the RAMS documents (Part MS3) at **Appendix C** and **Appendix D**.

Where bulk materials can be used immediately on site, such as aggregates, deliveries will be directed to the working location, with a suitable haul road / route made available for the delivery vehicle. Where materials are not to be used immediately, they will be directed to the appropriate storage area for unloading.

## 2.8 Storage of plant and materials

The Contractors will ensure that suitable and sufficient provisions for the storage of plant, equipment and materials have been established, in a safe manner to protect the public and environment, and secure from trespass by unauthorised persons.

Details of locations for storage of plant and materials and measures to ensure no nuisance arises as a result of materials storage are provided in the PMPs **Appendix A** Section 3.2.12 and **Appendix B** Section 3B(xx).

The materials storage location to be used by NMC and WJG is shown on drawing 40-NMC-WS-70-FC-DR-002 (**Appendix G**).

The scope of work to be executed by AMC during Phase 3 will not give rise to the need to store significant amounts of plant or materials. The scope includes establishing storage bins for aggregates and silos for cement and concrete within the concrete batching plant. The locations of these are shown on drawing 40-ARI-WS-71-CI-DR-1050 (**Appendix G**).

The areas for storage, including those being established for use in future phases, have been planned to prevent excessive handling of material and to facilitate loading and unloading.

The nature of the materials being held on site will dictate the storage methodology adopted. For materials that have the potential to cause harm to the environment, the following principles will be adopted by all contractors working on the site:

Chemicals and fuel will be stored in sealed containers on a suitable bunded, impervious hardstanding. Bunds will be capable of holding 110% of the total capacity of all containers stored within the bunded area. The chemical and fuel storage areas will be located as far from all drains and watercourses on the site as possible. No materials will be stored on land within a Site of Special Scientific Interest / Special Area of Conservation (SSSI/SAC).

Spill kits will be stored adjacent to the storage areas as well as at other key locations around the site. Personnel trained in the deployment of spill kits will be present on site at all times during working activities. The handling of materials on site will be controlled to protect land and water through the PMPs as set out in **Appendix A** Section 3.3.18 and **Appendix B** Section 3C(xi).

## 2.9 Erection and maintenance of security fencing

The majority of the construction phase boundary fencing is to be erected during the Phase 2 Site Preparation Works. New boundary fencing to be erected during Phase 3 is limited to a short length on the eastern boundary following clearance of existing trees as shown on Arup drawing 40-ARI-WS-71-CI-DR-1056.

The method of erecting the construction phase boundary fence is described in the NMC RAMS (**Appendix C**) Part MS3.

Perimeter fences will be inspected on a daily basis. Should any breaches be identified, temporary measures to secure the boundary will be made immediately and a permanent repair will be implemented as soon as practicable.

## 2.10 Lighting

Measures and controls to reduce light pollution are provided in the AMC PMP (**Appendix A**) Section 3.3.15 and in the NMC PMP (**Appendix B**) Section 3C(xvi). In summary:

- works in areas close to sensitive locations will be undertaken during daylight hours, as far as practicable; or
- when illumination is required:
  - directional lighting will be used, with lights directed downwards;
  - lights will be switched off when not in use;
  - task lighting will be used where appropriate;
  - lighting will comply with the lowest recommended criteria; and
  - lighting will comply with the Interim Guidance on minimising the impact on wildlife.

## 2.11 Domestic wastewater

Domestic wastewater will be collected in sealed tanks and will be removed from site on a regular basis via tanker, and disposed of to a suitably permitted facility (See AMC PMP, Section 3.3.9 at **Appendix A** and NMC PMP, Section 3C(viii) at **Appendix B**).

## 2.12 Wheel cleaning facilities

Wheel cleaning facilities (Rhino Ecowash Excel or similar) will be installed on the access road in the location shown on drawing 40-ARI-WS-71-CI-DR-1050. Wheel cleaning facilities are detailed in Section 3.3.14 of the AMC PMP (**Appendix A**) and Section 3C(xv) of the NMC PMP (**Appendix B**). The wheelwash will be self-contained with water re-used and periodically removed off-site as required. An example of the type of wheel wash proposed is provided at **Appendix F**.

## 2.13 Management of spoil

Phase 3 includes earthworks as described in Section 3 below. The procedures to be employed during the earthworks to protect both the soil and the surrounding watercourses are set out in the NMC PMP, **Appendix B** at Section 3C(viii) and the RAMS, **Appendix C** Part MS3. A full Soil Management Plan has been prepared and submitted to NYMNP 94 to comply with planning condition 76.

## 3 Phase 3 Works

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### 3.1 General site clearance

The Phase 3 works include demolition of all farm buildings and sheds, and tree and scrub clearance, as shown on drawing 40-ARI-WS-71-CI-DR-1051. The method of works and mitigation measures required to address adverse impacts identified in the Environmental Statement are described below.

#### Nesting birds, reptiles and other protected species

The Environmental Statement that supported the original planning application concluded that if appropriate mitigation and enhancement activities were undertaken, the impacts on protected species would not be considered significant.

The following mitigation measures will be implemented during the Phase 3 Works:

- dust minimisation methods will be employed (**Appendix A**, AMC PMP, Section 3.3.10 and **Appendix B**, NMC PMP Section 3C(x));
- construction lighting will be directed away from adjacent areas of retained habitat wherever possible (refer to Section 2.10 of this CMS);
- pollution prevention controls will be adhered to at all times (**Appendix A**, AMC PMP, Section 3.3.11 and **Appendix B**, NMC PMP Section 3C(xvi));
- all excavations that could trap animals will be covered every night to reduce the risk of protected species falling into the excavation and becoming stranded, or a means of enabling their escape will be provided;
- where required, all tree and vegetation clearance will be undertaken under the supervision of a suitably qualified ecologist to prevent disturbance to nesting birds and other protected species; and,
- where vegetation clearance is being carried out in teams, each team will be accompanied by a suitably qualified ecologist.

**Protected Species Management Plans** submitted to partially discharge planning condition 56, document references 40-RHD-WS-70-EN-PL-0010, 40-RHD-WS-70-EN-PL-0011, 40-RHD-WS-70-EN-PL-0012 and 40-RHD-WS-70-EN-PL-0013 outline precautionary methods of working which will be implemented to protect reptiles, badgers, birds, and bats which may be present on site.

**The Arboricultural Method Statement**, submitted to partially discharge planning condition 70, document reference 40-RHD-WS-70-EN-MS-0002 describes precautionary measures to be taken when removing trees.

#### Approach to site clearance

Tree, hedge and scrub clearance will be carried out adopting the precautionary methods of working described in the Protected Species Management Plans referred to above. Tree removal will be carried out in accordance with the Arboricultural Method Statement referred to above.



Management of vegetation removed as part of site clearance is set out in the NMC PMP (**Appendix B**) at Section 3C (viii) and in the RAMS (**Appendix D**) Part MS3. Further details about the procedures to be followed are found in the Arboricultural Method Statement. Vegetation removed as part of site clearance will be shredded and spread at an adjacent wooded area. All trees that are felled will be logged and removed from site by the felling contractor. Further details about the procedures to be followed can be found in the arboricultural method statement.

## Demolition of buildings

The existing farm buildings will be demolished in accordance with the NMC RAMS (**Appendix C**) Part MS3, by a competent demolition contractor, who will produce a detailed demolition method statement ahead of works starting.

Demolition of the main farmhouse will also be carried out in accordance with the Protected Species Management Plan for bats submitted in accordance with the requirements of planning condition NYMNP 52 (document reference 40-RHD-WS-70-EN-PL-0013).

An asbestos survey has identified cement bonded asbestos sheeting in some farm buildings. Asbestos will be removed by a licenced contractor, and disposed of at a licenced asbestos tip.

Buildings will be demolished using an excavator with suitable demolition attachments – this will be detailed within the specialist contractor’s method statement. An exclusion zone will be established around the demolition areas as works progress. Hard arisings (bricks, concrete, etc.) will be removed to a waste treatment facility for recycling.

All waste arising from demolition will be managed in accordance with the Site Waste Management Plan as described in the NMC PMP (**Appendix B**) Section 3 C (viii).

## 3.2 Surface water management

The Phase 3 Works include construction of further surface water drainage, ditches and swales, oil interceptors, and attenuation ponds, as shown on drawing 40-ARI-WS-71-CI-DR-1070. The construction of the surface water management system will be undertaken by NMC.

The NMC RAMS (**Appendix C**) Part MS3 sets out the specific sequence of surface water drainage works to be implemented and the construction methods to be employed.

Silt fences around earthworks and check-dams within ditches and swales will be provided to control silt run-off. The NMC PMPs (**Appendix B**), sets out detailed requirements for the protection of water at Section 3C(xi).

The Phase 3 surface water drainage works will be commenced immediately on completion of the Phase 2 drainage works, to ensure sufficient capacity for runoff from all earthworks areas is available via the onsite facilities. If necessary,



additional separation facilities such as Siltbuster settlement units (<http://www.siltbuster.co.uk/siltbuster-products/settlement-units> or similar) will be used during construction to ensure that water discharged from the site complies with the control levels set in the Groundwater and Surface Water Monitoring Scheme (1433DevOR29, FWS Consultants Ltd.) submitted to partially discharge condition NYMNP 46 .

Daily monitoring of the effectiveness of these measures is to be implemented and recorded on the daily inspection sheets and on-site inspection records by the Environmental Manager or Co-ordinator at each site.

### 3.3 Earthworks

The Phase 3 works include:

- Excavation and construction of mechanically stabilised working platforms using imported aggregate reinforced with geogrids;
- Construction of temporary and permanent soil mounds;
- Construction of surface water drainage including attenuation ponds, wetlands, swales and ditches;
- Construction of a spring and groundwater drainage layer;
- Construction of a High Density Polyethylene (HDPE) lined saline water storage lagoon;
- Preparation of the basal clay liner for a temporary storage facility for non-hazardous non-inert waste.

Where the working platforms are founded on rock, or where there is less than 0.5m of clay underlying the working platform, the platform build up will include a fully welded 1mm Linear Low Density Polyethylene (LLDPE) geomembrane for groundwater protection. The membrane will be protected by geotextile fleeces. The membrane will be deployed using a back-acter fitted with a spreader bar to prevent damage during installation. Geotextile fleeces will be deployed by hand without plant traversing the membrane.

These works will be executed by NMC.

Phase 3 also includes the preparation of a temporary storage area for non-hazardous non-inert spoil in the northeastern corner of the site as shown on drawing 40-ARI-WS-71-CI-DR-1050. This will include excavation of in-situ soils and relaying and compaction of selected soils in layers to form a low permeability liner.

Bulk earthworks at each location will only commence following the implementation of the surface water drainage measures described above at that location.

The NMC RAMS (**Appendix C**) Part MS3 details the plant, equipment and working methods that will be employed in executing earthworks.

Specific health and safety measures in relation to excavations are set out in the NMC PMP Section 3B(xv) at **Appendix B**. Measures regarding working near water are set out in Section 3B(xvii) in the NMC PMP. Avoidance of buried underground services is set out in the NMC PMP documents (Section 3B(vii)), and measures to be implemented in the event that unexpected contamination is encountered are set out in Section 3B(vii) of the NMC PMP.

The Soil Management Plan, submitted in accordance with the requirements of planning condition NYMNP 76, sets out the detailed requirements in relation to soil handling and storage in order to protect the soil quality and the surrounding environment.

The NMC RAMS (**Appendix C**) also includes specific risk management controls to be implemented during Phase 3 Works. This includes the process for issuing a Permit to Excavate ahead of all mechanical excavation work. The permit will detail all known underground utilities and stipulate a safe system of work for excavation, including CAT scanning and trial holes to locate all known services.

### 3.4 Construction of foundations

The Phase 3 works include the construction of plant foundations and ground bearing slabs. The construction methods, plant to be used and mitigations to protect the environment during construction are described in the AMC RAMS (**Appendix D**) Part 9.

Construction of the slabs and foundations will commence on completion of earthworks to prepare the batching plant platform and associated drainage.

In summary, the following activities will be undertaken:

- Set out the excavations for concrete slabs and the wedge pit. This will include concrete works for the batch plant, silos, aggregate bins, conveyors, and concrete reclaimer;
- Excavate for the concrete works;
- Form the slabs while installing reinforcing bar / wire mesh;
- Install anchor bolts and inserts which will be cast in the concrete;
- Install services conduits;
- Cast the concrete;
- Strip the concrete forms after sufficient curing;
- Backfill and compact around the slabs.

Excavations and construction of foundations in the mechanically stabilised platform will take into consideration the presence of geogrid reinforcement. Where foundations are constructed below the platform surface, the capacity of foundations will be based on the properties of the soils underlying the platform. The integrity of geogrid reinforcement will be maintained by replacing any geogrids penetrated by excavations and overlapping the adjacent geogrids in accordance with designer's recommendations.

The construction of any foundations outside the area of the batching plant slab, in areas where spillages of potentially harmful materials could occur, will also take into consideration the need to maintain the integrity of groundwater protection. This will include:

- Checking that  $\geq 0.5\text{m}$  of clay remains below foundations if no groundwater protection membrane is present (refer to Groundwater Management Scheme, report reference 40-FWS-WS-70-WM-PL-0004 submitted in accordance with the requirements of planning condition NYMNP 74).
- Reinstating the LLDPE geomembrane to maintain its integrity in areas where a geomembrane is present.

### 3.5 Erection of concrete batching plant

The Phase 3 works include the erection and commissioning of the concrete batching plant and associated site cabins. The construction methods, plant to be used and mitigations to protect the environment during construction are described in the AMC RAMS (**Appendix D**). Inherent mitigation, for the protection of groundwater and surface water, built into the design of the batching plant, comprises a sealed concrete slab draining to a blind sump (the “wedge pit”) as shown on drawing: 40-AMC-WS-72- SW-DR-0005, included in Appendix C to the AMC RAMS.

### 3.6 Installation of shallow groundwater dewatering system

The Phase 3 works include the installation of an array of shallow dewatering wells with associated pipework and power distribution to temporarily lower the groundwater level in the near surface Moor Grit for subsequent construction of the winder-house substructures. The general arrangement is shown on drawing 40-ARI-WS-71-CI-DR-1058.

Installation of each well will follow completion of the working platform construction in the relevant area. The sequence of works for installation of the dewatering system is summarised in section 2 of the WJG RAMS (**Appendix E**).

In summary, the works comprise:

- Rotary drilling of the dewatering wells;
- installation of well liners and gravel packs;
- development of the wells to remove drilling fluid/fine sediment;
- installation of submersible pumps;
- installation and commissioning of electrical system
- installation and commissioning of the dewatering discharge pipeline.

The construction methods, plant to be used and mitigations to protect the environment during construction are described in the WJG RAMS.

Health, safety and environmental risks associated with the installation of the dewatering system have been assessed and mitigations identified. The risk assessment and mitigations are presented in sections 8, 9.7, 10.7, 11.5 and 12.5 of the WJG RAMS.

## 3.7 Traffic management

### 3.7.1 Deliveries, loading and unloading

The approach to traffic management is set out in the PMP documents, **Appendix A and B**. The traffic management is being planned to comply with the requirements of planning condition NYMNP 94) and planning condition NYMNP 34 (Construction Traffic Management Plan). Details incorporated in the PMPs include:

- Measures to manage deliveries by Heavy Goods Vehicles (HGVs) including routing and timing for deliveries (**Appendix A** AMC PMP, Section 3.2.4, **Appendix B**, and NMC PMP, Section 3B(vi)).
- Details of the penalty system for breaches of the agreed control (**Appendix A**, AMC PMP Section 3.2.4, **Appendix B**, and NMC PMP, Section 3B(vi)).
- A scheme for parking, loading and unloading during Phase 3 (**Appendix A**, AMC PMP, Section 3.1.4, and **Appendix B**, NMC PMP Section 2 viii; xi and; xx).

### 3.7.2 Temporary Traffic Regulation Orders

Temporary Traffic Regulation Orders (TRO's) are already in place establishing a 40mph speed limit and clearway on the B1416 adjoining the site. This will continue to be in force throughout the Phase 3 Works.

### 3.7.3 Temporary traffic and pedestrian management

No traffic management on highways is proposed as part of the Phase 3 Works. The NMC PMP at **Appendix B** sets out at Section 3B(viii) measures to be implemented should any road closures or restrictions to access be required.

## 4 Method Statements

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The Risk Assessment Method Statement (RAMS) for batching plant set up is included in **Appendix C** of this document, RAMS covering site clearance/demolition, earthworks and drainage (site preparation works) is included in **Appendix D** and the RAMS for installation of the shallow groundwater dewatering system is included in **Appendix E**.

The RAMS documents address the aspects described below.

### 4.1 Description and sequence of work

The RAMS documents identify the specific tasks required to deliver the work packages. The sequence of works, methods and relevant specifications required to deliver the work package are detailed in the RAMS.

The NMC RAMS document for site preparation works (**Appendix D**) addresses the following items:

- Site clearance;
- demolition;
- bulk excavation;
- bulk filling;
- membrane installations;
- placement and compaction of aggregates; and
- reinforced concrete works.

Additional task specific method statements will be prepared by sub-contractors for the following tasks:

- earthworks (including tree removal);
- demolition; and
- provision of water supply tanks / pumping facilities.

Works undertaken by specialist contractors will be subject to separate Method Statements covering each element of the above works.

The AMC RAMS for the concrete batch plant set up (**Appendix C**) addresses the following work items:

- Installing offices and welfare facilities;
- installing concrete batching plant slabs;
- installing a wedge pit/sump;
- erecting the concrete batching plant;
- installing concrete recycling equipment;
- installing temporary generators; and
- installing water storage tanks.

The WJG RAMS for installation of the shallow groundwater dewatering system (**Appendix E**) addresses the following work items:

- Rotary drilling of the dewatering wells;

- installation of well liners and gravel packs;
- development of the wells to remove drilling fluid/fine sediment;
- installation of submersible pumps;
- testing and monitoring of the wells;
- installation and commissioning of electrical system; and
- installation and commissioning of the dewatering discharge pipeline.

## 4.2 Control of risks

Each RAMS includes an assessment of the safety, health and environmental risks associated with the activities covered by the RAMS. Where unmitigated risks are unacceptable, the RAMS identifies the mitigation measure that will be implemented to reduce the risk to an acceptable level.

## 4.3 Resources

Each RAMS identifies the resources to be deployed for the activities covered by the RAMS, together with the competencies/qualifications required, for example CSCS (Construction Skills Certification Scheme) cardholder or CPCS (Construction Plant Competence Scheme) cardholder.

## 4.4 Plant

Each RAMS identifies the plant to be deployed to undertake the activities covered by the RAMS. The anticipated plant that will be in use on the site during Phase 3 is summarised below. All operatives and drivers operating plant will be suitably qualified and hold the required training and certification.

### Batch Plant set up:

- Mobile cranes;
- front end loader;
- telehandler;
- excavator;
- man lift;
- concrete trucks; and
- bowsers.

### Site clearance/demolition, earthworks and drainage :

- Excavators;
- dozers;
- tractors;
- small dumpers (e.g. 9 tonnes);
- large, all terrain dumpers (up to 30 tonnes);
- single-drum rollers;
- vibrating rollers;
- wheel wash;
- bowsers; and

- delivery lorries.

## Installation of the shallow groundwater dewatering system

- Rotary drilling rig;
- flush circulation pump;
- flush suction pump;
- compressors;
- rough terrain forklift or similar;
- water flush recirculation skips;
- bunded fuel tank;
- duty and standby generators.

## 4.5 Materials

Each RAMS identifies the materials expected to be used for the Phase 3 Works.

Materials identified in the AMC RAMS (**Appendix C**) consist mainly of:

- Form work;
- rebar/ mesh reinforcement;
- concrete;
- grout;
- aggregate;
- piping;
- electrical cables; and
- precast barriers.

The batch plant itself comprises the following elements:

- Mixing plant;
- hoppers;
- conveyors;
- weigh scales;
- control room;
- silos;
- compressor;
- stairs, ladders and landings;
- cladding;
- concrete reclaimer;
- generators;
- storage containers; and
- welfare facilities.

Materials expected to be used for the Phase 3 Works described in NMC RAMS (**Appendix D**) consist mainly of:

- Type 3 granular fill;
- type 1 road stone;

- 6F2 granular fill;
- geogrids;
- geo-membranes;
- sand;
- cement / lime;
- reinforcement bar;
- ready mixed concrete;
- tanks and pipework for water storage and pumping; and
- gas oil.

Materials and equipment expected to be used for the installation of the shallow groundwater dewatering system described in WJG RAMS (**Appendix E**) consist mainly of:

- uPVC well screen and casing;
- pea gravel;
- sand;
- bentonite pellets;
- electrical cables;
- submersible pumps;
- headworks and control valves;
- support ropes;
- rigid discharge pipe;
- v-notch discharge tank; and
- flexible hose.

## 4.6 Personal protective equipment

Each RAMS provides details of the personal protective equipment (PPE) to be used by personnel working on the site. The minimum standard of PPE will comprise:

- Hard hat;
- safety boots;
- high visibility clothing; and
- gloves.

Each RAMS identifies additional task specific PPE, which will include:

- Ear protection;
- eye protection;
- fire resistant overalls; and
- dust mask and overalls.



## 4.7 Permits

Each Principal Contractor (NMC and AMC) will implement a permit system to ensure a safe, controlled system of work is employed for various tasks to be undertaken, these tasks must NOT be undertaken without a valid, signed permit and the permit signatory / holder being on site. All permits issued will be signed off upon completion of the work.

The permits required during the course of the phase 3 works are identified in the NMC RAMS (**Appendix C**) Part MS4 and AMC RAMS (**Appendix 4**) Part 4 and are summarised in table 4.1 below:

**Table 4.1: Details of Permits Required**

Permit type	Required	Duration	Activity / Location
Permit to Work	No	N/A	N/A
Hot Work Permit	Yes	Duration of work	Any hot works
Permit to Dig	Yes	Weekly	Ground excavation
Electrical Work Permit	No	N/A	N/A
Confined Space Permit	No	N/A	N/A
Client Issued Permit	No	N/A	N/A
Lift Plan / Permit to Lift	Yes	Weekly	Mechanical lifting

Details of permits and consents can be found in the AMC PMP (**Appendix A**) at Section 3.2.3 and the NMC PMP (**Appendix B**) at section 2(c)(iv) and 3B(iii).

## 4.8 Inspection and Test Plans

Regular site safety, quality and environmental monitoring will be carried out.

The frequency and type of inspection/testing required is included in the Inspection and Test Plan (ITP) as discussed in Section 3.1.9 of the AMC PMP (**Appendix A**) and Section 3A(x) of the NMC PMP. The ITP takes account of relevant product standards, the clients' requirements and level of risk. Testing is described in sections 10.5 and 12.5 of the WJG RAMS (**Appendix E**).

## 4.9 Plant and machinery movements

All plant and machinery will remain within the designated work area and use appropriate access routes. Any access issues will be communicated during daily briefings and interface with other contractors will be managed when planning daily activities. The works areas will have exclusion zones in place where only plant is allowed. This will ensure that safe routes and traffic marshals are in place when vehicles/plant are entering the works areas.

## 4.10 Emergency arrangements

Environmental Emergency Preparedness Plans (EEPP) have been prepared by the Principal Contractors (NMC and AMC) and must be followed in the event of an environmental emergency or breaching the measures set out in the Environmental Action Plan. The EEPPs will be displayed on site notice boards. The Contractor's Environmental Managers and Client's Environment Manager will be notified of environmental incidents.

In the event of a pollution incident, the relevant Principal Contractor's EEPP must be followed. The Client's Project Manager, Contractor's Project Manager and Operations Manager will be informed immediately and immediate steps taken to minimise the impact of the incident. Each Principal Contractor will brief all site personnel under their management on their EEPP at their site induction and throughout the project. The AMC EEPP is included as Appendix C to the Environmental Management Plan which forms Appendix B to the PMP (**Appendix A**). The NMC EEPP is included in Appendix A to the NMC PMP (**Appendix B**).

Key contacts in the event of an emergency have been set out in AMC EEPP Sections 2.2 to 2.5, and on page 2 of the NMC EEPP.

## 4.11 Interfaces

The works of other contractors and interfacing activities will be detailed in the daily activity briefings given by the Principal Contractors. If any interface issues occur during the shift, the site operatives will stop work and inform their supervisor who will report the issue to the respective Site Agent and Contract Manager.

## 4.12 Welfare

Details of welfare facilities to be used during the Phase 3 works are set out in the AMC PMP, **Appendix A**, at Section 2.4 and in the NMC PMP, **Appendix B** at Section 2 c (xi).

The proposed layout of shared facilities that will be established during Phase 3 for use by Contractors and Sirius Minerals staff during subsequent phases is shown on drawing 40-ARI-WS-72-CI-DR-1050 (**Appendix G**).

## 4.13 Briefing arrangements

Managers/supervisors will communicate daily to the operatives they are responsible for. As part of the communication and the documented monitoring process, all operatives will be asked to communicate any health, safety or environment issues.

Detailed information regarding consultation with the workforce is contained in Section 2.3.3 of the AMC PMP (at **Appendix A**) and Section 2(c) (ii) of the NMC PMP (at **Appendix B**).

All environmental issues will be communicated to all staff on site via a series of tool box talks which will be given prior to works starting on site and periodically during the course of the works. The tool box talks will be site specific as well as containing general information where required.

Each Contractor's Project Manager and team will receive briefing from their Environmental Manager to ensure that they are aware of the environmental requirements identified in the Environmental Aspects and Impacts Assessment, EAIA (Section 3.3.17 of the AMC PMP, **Appendix A** and Section 3C(xix) of the NMC PMP **Appendix B**). The briefings will also ensure that they are able to assess whether the environmental requirements are being implemented properly. Further detail can be found in the AMC PMP (**Appendix A**), Section 3.4 and NMC PMP Section 3C (**Appendix B**).

## **Appendix A**

### **AMC UK Project Management Plan**

## **Appendix B**

### **North Midland Construction Project Management Plan**

## Appendix C

### North Midland Construction RAMS

## Appendix D

AMC UK RAMS

## **Appendix E**

### **WJ Groundwater RAMS**



## **Appendix F**

### **Proposed Wheelwash**

## **Appendix G**

### **Drawings**