

# Community and Stakeholder Engagement Framework

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## Community and Stakeholder Engagement Framework

### 1 Purpose and Scope

#### 1.1 Background

The Company takes its responsibility to the local area very seriously and is committed to taking an active and positive role in the local community. This means minimising the potential adverse impacts on people living and working in the area, making a meaningful contribution to the social and economic well-being of the area, keeping the community informed as the project develops and responding quickly to questions and concerns.

There is widespread interest in the Company's Woodsmith Project (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 and at Company events.

Anglo American (the Company) successfully engaged the community and other key stakeholders during the planning period and has continued to do so beyond, 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. Stakeholders have been identified as those groups in the local area who have the potential to be impacted by construction, and as such does not include wider corporate stakeholders such as investors or customers.

The Framework sets out the roles and responsibilities of the Company and the principle construction contractors for implementing and managing its delivery.

#### 1.4 Standards and compliance

The Framework is in compliance with planning obligations relating to community and stakeholder engagement including: producing a communications plan; the establishment of the Liaison Group Forum and Traffic Management Liaison Group; notification to neighbours of construction activities, particularly in relation to noise; dealing with complaints and initiatives to promote local benefits.

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.

## 1.5 Document review

The Company is committed to regularly reviewing its approach. This is the fifth time this document has been updated since the off-site highways improvement works were undertaken on the main transport route and construction started at Woodsmith, Ladycross Plantation, Lockwood Beck and Wilton. The principles of the Framework therefore remain unchanged, with the addition of the good practice learnt over the last five years.

The Framework will be reviewed on annual basis by the General Manager External Affairs and Corporate Relations Director, in consultation with the land, environment and planning team, and updated as necessary. It will be distributed to the list shown in section 1.6. Lessons learnt will be adopted into the working practices of the social performance team under the direction of the Corporate Relations Director.

## 1.6 Distribution list

- North York Moors National Park Authority
- North Yorkshire County Council
- Principle contractors

# 2 Engagement Strategy

## 2.1 Rationale

The strategy is based on the principle that the local community and key stakeholders should be kept informed of developments and in advance of them occurring. The failure to communicate often leads to a communications vacuum and this in turn leads to misinformation and rumours which is unhelpful for all stakeholders.

Similarly, providing channels for feedback to the Company in the first instance, including direct contact with the community relations team, allows local people or spokespeople to be engaged in matters that might affect them. Since construction started on the off-site highways works over five years ago, the vast majority of questions or concerns about the Project have come directly to the Company. This demonstrates the importance of developing and maintaining relationships 'on the ground'.

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 were not aware of. It also enables a channel to 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 are designed and drafted in a manner that promotes the understanding of works or issues in as clear and straightforward manner as possible.

## 2.2 Approach

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

Providing clear information before each phase of works commences at the Project sites detailing what construction will involve, when it will take place and the measures to limit impacts. Since

construction started this has included newsletters, mailouts, direct face-to-face meetings, drop-in events, public meetings, press releases and notices in the local media.

## **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. These have worked well since construction started. The Company also operates a 24-hour community helpline.

## **3. Community benefit initiatives**

Undertaking and promoting regular initiatives that deliver community benefits such as education schemes and employment and business opportunity information sessions. These have been ongoing since construction started and have been well received by the community.

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:

### **1. Site neighbours**

Residential neighbours and/or landowners, businesses and organisations close to the individual construction sites. This also includes those directly affected in other areas such as those living close to key transport corridors or junctions. Approximately 70 households have been identified as 'site neighbours' to the Woodsmith, Ladycross Plantation and Lockwood sites and regular contact has been maintained since construction commenced. In addition, links with the neighbourhood of Dormanstown have been established since construction commenced at the Wilton site.

### **2. Community representatives**

This group includes elected representatives of the community including parish and town councils, local authority officers and councillors, and local MPs.

### **3. Interest groups**

Business networks, environmental bodies, other local clubs and groups.

### **4. Education Institutions**

This includes local schools, colleges, universities and other training providers.

### **5. Media**

A wide range of online, print and broadcast outlets and journalists are considered key stakeholders.

### **6. General public**

The wider public as accessed through media channels, the website, social media or site signage etc.

A register has been developed for each Project site for of these broad groups, which is reviewed and updated. Stakeholder engagement takes into account the needs of vulnerable and disadvantaged groups, making sure that information about the Project is accessible and people are able to contact the

Company and receive a prompt response. This is ensured by utilising a broad range of engagement channels, as set out in section 4, and holding public events in accessible venues.

## 4 Engagement Methodology

This section sets out how community and stakeholder communications will be handled.

### 4.1 Identify stakeholders

The broad stakeholder groups have been identified, together with specific stakeholders relevant to each of the construction sites that are most likely to be impacted by the works. This includes landowners and local residents in close proximity to the sites.

### 4.2 Pre-briefings for key events

Before each phase of construction starts, or before a specific construction activity that has the potential to impact stakeholders, 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). Each construction event triggers the requirement for pre-briefing activities. The level of pre-briefing activity will vary, taking into account the extent of the local impact anticipated.

The pre-briefing information will include details about what construction will involve and how people can contact the Company if they have questions or concerns. 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. 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.
- Visits and phone calls – In addition to letters, affected households and businesses will be visited, or at the very least receive a telephone call.

For construction activities that are more significant, in terms of their potential for stakeholders to be affected, the Company will use the following pre-briefing methods. The precise details and extent of pre-briefing will be a matter of judgement and as a result of discussions between the contractor and the Company and, where appropriate, the planning authorities. Activities may include:

- Newsletter / Leaflet – A short summary newsletter or leaflet about the works will be made distributed, including local noticeboards and community facilities.
- Exhibitions / Open days – In the case of certain key events, such as the main shaft sinking, it will be appropriate to inform local residents and the wider general public through open days prior to works starting. This includes further information on exhibition boards and will be attended by key personnel from the Company and contractors, who are be able to respond to queries and provide reassurance on potential concerns. Ten of these sessions have taken place since construction started.

- **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. Any press release needs to be signed off by the Company in a timeframe that makes sure newspaper deadlines are met. Where possible, coverage should always appear in the week prior to the proposed activities beginning. The local media has been particularly useful in instances where the community beyond the immediate site neighbours could be affected, such as public highways disruption.
- **Website updates** – Details of key events are uploaded to the Company website. Some works may also require more detailed information and documents to be uploaded.
- **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 specific stakeholders will be individually briefed to inform them of key events. This may include elected representatives, local authority officers or interest groups. The Company will take the lead on such matters and will involve contractors where appropriate.

### 4.3 Ongoing management

Local residents and stakeholders will continue to be engaged throughout construction (i.e. general updates in addition to 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 to respond to these.

#### 4.3.1 Liaison Group Forum

The Liaison Group Forum (LGF) was established prior to the commencement of construction and has met quarterly. It is chaired by the Company and its membership includes representatives from the National Park Authority, parish and town councils and wider community stakeholder representation as appropriate. The meetings take place in community venues, such as village halls, close to the Woodsmith site and are open to the general public to attend and to ask questions.

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.

#### 4.3.2 Industrial Business Group

The Industrial Business Group (IBG) was established to facilitate liaison between the businesses based at Wilton International and residents from the neighbourhoods in close proximity of the site.

Meetings are held bi-monthly and attended by the major businesses on the site, local councillors and residents. The Company joined the group once construction started on the Wilton site.

### 4.3.3 Traffic Management Liaison Group

The purpose of this group is to facilitate liaison between local authorities and other interested stakeholders in regard to construction traffic. The group, which meets quarterly, oversees the management and monitoring of the Construction Traffic Management Plan (CTMP) and is chaired by the Company. The meetings take place after the LGF meetings, on the same day and venue, with traffic issues raised by the LGF addressed by the group.

There is representation from the National Park Authority, highways authorities, local authorities, the police and other stakeholders as invited.

### 4.3.4 24-hour community helpline

To ensure that there are accessible points of contact for the local community and wider stakeholders a 24-hour community helpline has been established, which is delivered by a specialist contractor. In addition there is a community email address, which is managed by the Company.

### 4.3.5 Regular briefings and updates

Key individuals and organisations are regularly briefed and updated. Similarly to pre-briefings for key events, updates are communicated through the following channels:

- Public meetings and presentations – Parish council and town council meetings are regularly attended, together with presentations to local interest groups.
- Site visits and meetings – visits to the Project sites for key stakeholders have been an effective way to communicate site activity and progress. In addition, drone footage of the project sites is regularly used to show progress and is used in Project presentations and on the Company's website.
- Press releases – the print and broadcast media are 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. Videos, including footage of the sites and interviews with key Project personnel have also been an effective tool.

## 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 activities and initiatives, some 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 S106 agreement - take on 50 apprentices, recruit 15 local students on the Company's Undergraduate Programme and train 300 adults.
- Quarterly employment opportunity sessions to promote job opportunities to local people and meet the buyer events for local businesses.
- Education outreach initiatives, careers events and presentations.
- Funding community projects through the Woodsmith Foundation.

#### 4.5 Dealing with complaints

The Company aims to respond promptly to complaints and concerns, ensuring that issues are investigated and resolved as quickly as possible. The Company's approach is detailed in its Complaints Procedure – see Appendix C.

### 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 all community and stakeholder engagement during construction, supported by each construction contractor as required.

#### 5.1 Anglo American

The Company will be responsible for:

- Identifying key stakeholders likely to be impacted by the works.
- Undertaking pre-briefing activities before construction starts such as:
  - Open Days / exhibitions as appropriate.
  - Producing information outlining what is involved, impacts and mitigation, contact information, etc.
  - Direct correspondence with neighbours and landowners about construction events
- 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.
- Producing project newsletters, social media and updating the website.
- Direct engagement and briefings with key stakeholders including local residents, community representatives and interest groups.

### 5.1.1 Social performance team

The Company's social performance team is responsible for implementing the Framework in liaison with others in the Company as appropriate.

The Company's Corporate Relations Director has overall responsibility for all company communications and external relations. The Corporate Relations Director chairs the Liaison Group Forum.

The General Manager External Affairs, reporting to the Corporate Relations Director, manages the implementation of the approach detailed in the Framework. The Local Liaison Officer, Social Programmes Manager and Education Programme Manager report to the GM External Affairs, and are further supported by the EA to the Corporate Relations Director.

The social performance team work closely with other departments in the Company in the implementation of the Framework, particularly the land, environment and planning team as well as the project development team. They assist in providing relevant information, investigating and resolving complaints, and attending Company events and public meetings as required. The Company's Logistics Manager chairs the Traffic Management Liaison Group.

## 5.2 Construction Contractors

Having developed and maintained positive relationships with key local stakeholders since the Project was launched in 2011, Anglo American takes the lead role in all community and stakeholder engagement. 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 where required.
- 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 employment opportunity sessions, meet the buyer events, and education outreach events as required.
- Cooperate with Anglo American in media events and provide information to the Company for publications, the website, newsletters, etc.
- Adherence to Anglo American's communications protocols and guidelines.
- Attend the liaison groups, parish/town council meetings and assisting Anglo American as required.
- Ensure that all sub-contractors comply with stakeholder and community relations requirements.

## Appendix A – Construction Events

The following provides a list of construction events which 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
- Main Woodsmith Mine shaft sink
- Main Lockwood Beck shaft sinking
- Main Ladycross Plantation shaft sinking
- MHF construction
- Harbour construction
- Other construction activities with the potential to affect stakeholders including site neighbours or road users in regard to noise, light, disruption to the public highway, etc. Examples include an abnormal load arriving to site or a short period of piling.

## Appendix B – 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 Anglo American and contractors.

	Pre-briefing activities	Ongoing management	Community benefit initiatives
<b>Anglo American</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>Attend the Industrial Business Group</li> <li>Manage 24-hour community helpline and <a href="mailto:cropnutrients.info@angloamerica.com">cropnutrients.info@angloamerica.com</a></li> <li>Attend parish and town council meetings quarterly</li> <li>Regular updates to site neighbours, landowners, community representatives and interest groups</li> <li>Site visits</li> <li>Media, website update, social media</li> <li>Manage complaints procedure</li> </ul>	<ul style="list-style-type: none"> <li>Training targets and promotion of initiatives funded by the S106</li> <li>Promote activities of the Sirius Minerals Foundation</li> <li>Organise meet the buyer events</li> <li>Organise regular employment opportunity sessions</li> <li>Deliver education outreach programmes</li> </ul>
<b>Construction Contractor</b>	<ul style="list-style-type: none"> <li>Provide information to Anglo American 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 ongoing 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>Involvement in community benefit initiatives as required</li> </ul>

Community engagement is tracked across these three elements. Activities and complaints are reported in the Company’s annual Responsible Business Report. Minutes of the Liaison Group Forum, which includes community engagement as a standing agenda item, are published on the Company’s website.

By being proactive in building and maintaining relationships in the community, the Company is always receiving feedback about its performance. This helps to inform the Company on what it could be doing better, enables it to respond quickly to concerns and pre-empt them in the future and is an important part of annual review of the Framework.

## Appendix C – Complaints Procedure

This procedure outlines the Company's standards in handling complaints and the process of managing complaints from receipt through to resolution. The procedure has been updated to take into account the lessons learnt during the first two years of construction.

### 1 Standards for Handling Complaints

- All complaints will be treated seriously, fairly and with courtesy;
- Complaints will be responded to quickly – we will acknowledge a receipt of a complaint straight away wherever possible;
- We will investigate and aim to resolve complaints within a maximum of three days, making sure that initial feedback is provided within one day; and
- We publish information about complaints, with the identity of the complainant kept confidential, to the Liaison Group Forum and in the Company's annual Responsible Business Report.

### 2 Stages of the Complaints Procedure

#### 2.1 Receipt of complaint

The vast majority of complaints are received directly by the Anglo American community relations team through a variety of channels, e.g. directly to a team member, via the general [cropnutrients.info@angloamerican.com](mailto:cropnutrients.info@angloamerican.com) email, social media, parish council meetings or the 24-hour community helpline. Relationships with the regulatory authorities are well established and complaints received by them are forwarded to the Company's community relations team to investigate.

The team aim to acknowledge a complaint straight away and ascertain the relevant details as soon as possible.

Occasionally a complaint is made directly to a Project site. In this instance the community relations team will be informed and further communication with the complainant managed by them.

#### 2.2 Investigation

In all cases the community relations team will notify the Anglo American site manager, the environment team and the logistics team (where complaints are related to traffic). The site manager will lead the investigation, delegating where appropriate and liaise with the relevant contractor. All relevant personnel will be kept updated.

If remedial action is required this will be implemented as quickly as possible in consultation with the environment and planning team, community relations team and others as appropriate.

#### 2.3 Feedback

The community relations team will feedback to the complainant within a maximum of three days, with initial feedback given within one day. Further details will be sought from the complainant if required.

The complainant will be given the details of any remedial action taken and have the opportunity to discuss the outcome of the investigation with the community relations team, who will involve others as appropriate. If further relevant information comes to light, the complaint will be investigated again.

## **2.4 Log and Review**

Complaints are logged and reported to the next Liaison Group Forum (LGF) meeting. The minutes of LGF meetings are published on the Company's website.

Complaints are reviewed to establish whether action can be taken to reduce the likelihood of similar complaints in the future, and whether the way in which the complaint was dealt with could be improved.



NYMNPA  
13/12/2022

Project Title / Facility Name:  
**Woodsmith Project**

Document Title:  
**PHASE 17 - NOISE AND VIBRATION MANAGEMENT PLAN**

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# REPORT

## Phase 17 - Woodsmith Mine Noise and Vibration Management Plan

### Woodsmith Mine Phase 17 - NVMP

Client: Anglo American Woodsmith Ltd

Reference: 40-RHD-WS-70-EN-PL-0058 Rev 1

Status: 00/Final

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Classification

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## INTRODUCTION

### 1.1 Purpose of this Report

- 1.1.1 In 2014 a planning application (reference NYM/2014/0676/MEIA) was submitted to North York Moors National Park Authority (NYMNPA) 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 document has been prepared on behalf of Anglo American Woodsmith Ltd (Anglo American) and details the requirements with respect to noise and vibration management for the Phase 17 Works (see Paragraph 1.1.6 below) at Woodsmith Mine.
- 1.1.3 This document is required to partially satisfy the requirements of Condition 18 of the NYMNPA planning permission. This planning condition states that:

Table 1-1: Condition NYMNPA-18 Noise and Vibration Management Plan

NYMNPA 18	Compliance with Condition NYMNPA-18
Prior to the commencement of each Phase of Construction at Dove's Nest Farm or Lady Cross Plantation, a Noise and Vibration Management Plan (NVMP) for the control, mitigation and monitoring of noise and vibration for both construction and operational phases at the two sites shall be submitted to and approved in writing by the MPA in consultation with the SBC EHO. The scheme shall set out the following:	This document addresses Phase 17 Works at Woodsmith Mine. Works at Lady Cross Plantation are not addressed in this Plan.
Noise-sensitive receptors for which predictions shall be made and at which the noise and vibration limits shall apply and which shall include recreational receptors.	Section 3.1
Predicted noise levels at the noise-sensitive receptors from noise and vibration generated at the DNF and LCP sites for the key construction phases during the forthcoming year including any periods in which the higher daytime limit of 70 dB L <sub>Aeq</sub> shall apply (permitted 56 days for temporary works to create noise-reducing bunds and/or barriers as per Conditions 20 and 22).	Section 3, and Appendix C
The best practicable means which will be used to control noise and vibration levels on site including such measures proposed in the Environmental Statement (September 2014 as updated by the Supplementary Environmental Statement dated February 2015) and the Supplementary Environmental Statement dated July 2017 (updated by further information dated October and November 2017) as relevant. Such measures shall include, but are not limited to: the use of the quietest available plant, equipment and techniques; the regular maintenance and inspection of such plant and equipment; the use of cladding, attenuators and barriers to reduce noise levels from noisy plant and operations; the specification of appropriate reversing alarms to minimise annoyance; and, measures to reduce vibration and air overpressure during blasting.	Section 5
Details of the noise and vibration monitoring system to be installed around the DNF and LCP sites to continuously log noise levels during construction and operation. The system shall include at least six noise monitors installed around the boundary of the Dove's Nest site and at least four monitors at key residential receptors near the Dove's Nest site and at least four noise monitors around the Lady Cross Plantation Site and at least three monitors at key residential receptors near the Lady Cross Plantation site.	Section 4

NYMNPA 18	Compliance with Condition NYMNPA-18
The precise number and location of noise monitors shall be set out in the NVMP. The developer shall use reasonable endeavours to obtain access to the residential receptor properties for the installation of noise monitors and only if access cannot be obtained the number or location of noise monitors may be reduced. The MPA and the SBC EHO and/or their advisers shall be granted access to inspect the noise and vibration data whenever required, records of the data should be kept for a reasonable period and these records should be accessible by the public.	Section 3, Section 4 and Figure B.1
Details of the procedure to be followed in the event that the noise predictions detailed in the NVMP or the noise limits detailed in conditions 20 to 23 are exceeded. Such procedures shall require the investigation of the reasons for the breach of the limits and the cessation of the activity causing the breach until such a time as additional mitigation can be provided.	Section 5.4
Details of how the residents will be informed and consulted about the site operations and progress, particularly in regard to blasting and especially noisy operations including details of complaints logging and management procedures and a 24-hour telephone incident hotline. Details of the procedure for investigating complaints and informing complainants of the results of such investigations and of any actions resulting from them.	Section 5.4 and Scheme for the Prior Notification of Blasting (40-SMP-WS-1000-PA-PL-00001)
The NVMP shall be adhered to at all times unless agreed previously in writing by the MPA.	
The NVMP shall be updated and agreed whenever appropriate to reflect changes in the programme during construction and operation and at intervals not less than 6 months after the initial start on site and thereafter annually.	Section 1

- 1.1.4 This NVMP relates to the Phase 17 Works at Woodsmith Mine and does not include any activities at Ladycross Plantation.
- 1.1.5 Some of the Phase 9 to 16 activities will continue past the start date of Phase 17. Phase 8 activities included the construction of permanent buildings and are subject to separate, higher noise limits, as specified in condition NYMNPA-20. Phase 8 activities are therefore subject to a separate NVMP (40-RHD-WS-70-EN-PL-0034) and are not considered in this document.
- 1.1.6 This NVMP therefore supersedes all previous NVMPs (except that for Phase 8) upon the commencement of Phase 17 and considers processes and controls with respect to all activities on site throughout Phase 17. Specific activities required for Phase 17 comprise the following:
- Installation of additional welfare provisions;
  - Amendment to the security building;
  - Creation of vehicular holding and borehole casings storage area on former reinjection pad;
  - Additional storage in logistics compound;
  - Sinking of the Service and Production Shafts between base of Lias and top of Rot Salt;
  - Insets to the Service Shaft, Production Shaft and MTS Shaft;
  - Simultaneous operation of the concrete batch plants;
  - Revised lattice mast specification;
  - Creation of Bund E attenuation ponds;
  - Relocation of workshops;
  - Relocation of process water tank;

- Covered materials handling area; and
- Installation and use of ventilation heater.

1.1.7 Appendix A provides an explanation of the acoustic terminology used in this NVMP.

## 1.2 Planning Conditions

1.2.1 In addition to Condition NYMNPA-18, two further conditions NYMNPA-20 and NYMNPA-21 establish noise limits relating to the Woodsmith Mine site as shown in Table 1-2 and Table 1-3.

Table 1-2: Condition NYMNPA 20 Noise and Vibration Management Plan

NYMNPA 20	Compliance with Condition NYMNPA-20
<p>Day-time (07.00 hrs to 19.00 hrs) noise levels <math>L_{Aeq,1hr}</math> from mine construction at the Dove's Nest site, excluding blasting operations, shall not exceed 55 dB <math>L_{Aeq,1hr}</math> and for short-term, construction activities solely relating to the demolition of existing buildings and erection of new structures excluding earth mound and bunds shall not exceed 65dB <math>L_{Aeq,1hr}</math>.</p> <p>An upper limit of 70 dB <math>L_{Aeq,1hr}</math> for the purposes of temporary noisy operations to provide noise-reducing earth bunds and / or barriers may be permitted for up to 56 days in any calendar year provided such temporary operations are specified and agreed in the NVMP described in Condition 18. Each calendar day when the higher temporary noise level is exceeded shall be counted as one day.</p> <p>Noise levels shall be measured in accordance with BS 4142:2014 and the limits apply at the curtilage boundary of residential properties and at the following recreational receptors: Falling Foss tea room, Lound House Camp/Caravan site, Sneaton Foss Lane Caravan site and at any location on the Wainwright Coast to Coast walk footpath as illustrated in drawing number PB1110-P2-7-002 which is Figure 7.2 of Part 2 of the York Potash Project Mine, MTS and MHF Environmental Statement dated September 2014.</p>	Section 3 and Appendix C

Table 1-3: Condition NYMNPA 21 Noise and Vibration Management Plan

NYMNPA 21	Compliance with Condition NYMNPA-21
<p>Evening (19.00 hrs to 22.00 hrs) and night-time (22.00 to 07.00 hrs) noise levels <math>L_{Aeq,1hr}</math> from mine construction at the Dove's Nest site, excluding blasting operations, shall not exceed 42 dB <math>L_{Aeq,1hr}</math> Noise levels shall be measured in accordance with BS 4142: 2014 and the limits apply at the curtilage boundary of residential properties and at the following recreational receptors: Lound House Camp/Caravan site and Sneaton Caravan site.</p>	Section 3 and Appendix C

1.2.2 Conditions NYMNPA-24, 27, 28 and 29 relate to vibration arising from blasting activities during underground chamber construction or shaft sinking activities involving blasting. Planning condition detail is provided in Table 1-4 to Table 1-7.

Table 1-4: Condition NYMNPA-24 Noise and Vibration Management Plan

NYMNPA 24	Compliance with Condition NYMNPA-24
Noise levels (air overpressure) from blasting shall not exceed 115dB (linear peak) as measured at any residential properties. No blasting shall take place outside the period 0700 until 2200 unless agreed in advance in writing by the MPA and it can be demonstrated that there will be no significant adverse noise effect on residents.	Section 2 and Section 5

Table 1-5: Condition NYMNPA-27 Noise and Vibration Management Plan

NYMNPA 27	Compliance with Condition NYMNPA-27
Day time (07.00 hrs to 19.00 hrs) ground vibration as a result of underground chamber construction or blasting operations involved in shaft sinking shall not exceed a peak particle velocity of 6 mm/sec in 95% of all blasts measured over any period of 6 months and no individual blast shall exceed a peak particle velocity of 10 mm/s as measured at vibration sensitive buildings. Evening (19.00 to 22.00 hrs) ground vibration as a result of underground chamber construction or blasting operations involved in shaft sinking shall not exceed a peak particle velocity of 4.5 mm/sec in 95% of all blasts measured over any period of 6 months and no individual blast shall exceed a peak particle velocity of 6 mm/s as measured at Vibration Sensitive Buildings and Infrastructure.	Section 2 and Section 5

Table 1-6: Condition NYMNPA-28 Noise and Vibration Management Plan

NYMNPA 28	Compliance with Condition NYMNPA-28
Night time (22:00 hrs to 07.00 hrs) ground vibration from construction/blasting shall not exceed a peak particle velocity of 2 mm/s in 95% of blasts at residential properties and no individual blast shall exceed a peak particle velocity of 3 mm/s as measured at Vibration Sensitive Buildings and Infrastructure.	Section 2 and Section 5

Table 1-7: Condition NYMNPA 29 Noise and Vibration Management Plan

NYMNPA 29	Compliance with Condition NYMNPA-29
Prior to the commencement of any blasting operations associated with shaft sinking or chamber construction, a scheme for the monitoring of blasting vibration within 1 kilometre of the site shall be submitted to the MPA for approval. Blast monitoring shall take place in accordance with the approved scheme and the results forwarded to the MPA on a quarterly basis until the completion of those blasting operations.	Section 1 and Section 5

- 1.2.3 In accordance with Condition NYMNPA-24, Anglo American contacted the NYMNPA on 16<sup>th</sup> September 2022 to request approval for an initial trial of 10 consecutive blasts to be undertaken on a 24-hour basis. NYMNPA provided written approval of this request on 27<sup>th</sup> September 2022.
- 1.2.4 In this document, the term “*construction*” includes all physical and related engineering and construction activities associated with the Phase 17 Works, as described above. Updates to this plan will be prepared and submitted to the NYMNPA for approval in advance of subsequent construction phases and following any material design or method change.



## GUIDANCE

### 2.1 Legislation and British Standards

2.1.1 Wherever practicable, construction will be carried out in accordance with:

- Planning Practice Guidance for Minerals (PPGM), 2014<sup>1</sup>; and
- BS 5228:2009+A1:2014 *Code of Practice for noise and vibration control on construction and open sites*<sup>2</sup>.

### 2.2 Construction Limits

2.2.1 Established construction noise limits (as measured at the identified receptors) remain as:

- 55 dB L<sub>Aeq,1hr</sub> for daytime (07:00 – 19:00);
- 65 dB L<sub>Aeq,1hr</sub> for the demolition of buildings and erection of new structures;
- Up to 70 dB L<sub>Aeq,1hr</sub> for temporary noisy operations to provide noise-reducing earth bunds and / or barriers; and
- 42 dB L<sub>Aeq,1hr</sub> for evening and night-time (19:00 – 07:00).

2.2.2 Established blasting vibration limits (peak particle velocity, PPV, as measured at the identified receptors) are:

- 6 mm/s in 95% of all blasts, 10 mm/s in individual blasts for blasting during daytime (07:00 to 19:00).
- 4.5 mm/s in 95% of all blasts, 6 mm/s in individual blasts for blasting during the evening (19:00 to 22:00); and
- 2 mm/s in 95% of all blasts, 3 mm/s in individual blasts for blasting during the night (22:00 to 07:00).

2.2.3 The established limit for air overpressure noise levels (from blasting), as measured at any residential property, is 115dB (linear peak).

<sup>1</sup> *Planning Practice Guidance for Minerals (PPGM), 2014 Department for Levelling Up, Housing and Communities (/government/organisation/department-for-levelling-up-housing-and-communities) and Ministry of Housing, Communities & Local Government (/government/organisations/ministry-of-housing-communities-and-local-government. (URL: <https://www.gov.uk/guidance/minerals>, accessed 03 February 2022)*

<sup>2</sup> *British Standards Institute (2014). BS 5228:2009+A1:2014 Code of Practice for noise and vibration control on construction and open sites*

## PREDICTED CONSTRUCTION NOISE AND VIBRATION LEVELS

### 3.1 Baseline Receptor Locations

- 3.1.1 Residential and recreational receptors for this NVMP remain as identified in the Environmental Statement (ES) which accompanied the planning application, in previous iterations of the NVMP (e.g. Phase 4 NVMP; document reference 40-RHD-WS-70-EN-PL-0017), and as shown in **Appendix B, Figure B1**. Whilst monitoring is not ongoing at Soulsgrave Farm it is still considered a receptor for the purposes of this NVMP.

### 3.2 Construction Method

- 3.2.1 Contractors responsible for implementing these Phase 17 Works (see Construction Environmental Management Plan (CEMP), reference 40-RHD-WS-70-EN-PL-0057) have provided details of the construction plan, number and type of plant items to be used and location/duration of construction activities within the site. Further detail is provided in the Phase 17 Construction Method Statement (CMS) (reference 40-SMP-WS-7100-PA-MS-00016).
- 3.2.2 **Appendix C** details the plant items used within the model, their sound power level and location on site. Predictions of noise levels based upon these details are assessed within this NVMP.

### 3.3 Predicted Noise Levels

- 3.3.1 Noise modelling has been undertaken to predict construction noise levels throughout the Phase. **Tables C.1 and C.2 in Appendix C** outline the construction noise assessment predictions for the Phase 17 Works.
- 3.3.2 Noise levels due to construction activities in the Phase 17 Works were not predicted to exceed the conditioned construction noise limits at any of the identified noise-sensitive receptors during the daytime, evening or night-time, following the application of suitable measures, including activity timing and physical mitigation. The prediction methodology is conservative and exceedances of the noise limits during normal operations are therefore not anticipated.
- 3.3.3 Since construction started in 2017, visits have been made to the various receptors to undertake manned noise monitoring and maintain unmanned noise monitoring equipment. At those receptors to the south and west of the site (Moorside, Thornhill and the Wainwright Coast to Coast Path) site noise was generally inaudible.

### 3.4 Vibration

- 3.4.1 In relation to all construction works, excluding blasting, ground borne vibration was considered according to the conservative approach outlined in previous NVMPs (e.g. Phase 4 document reference 40-RHD-WS-70-EN-PL-0017; see Table C.7, Appendix C for minimum set-back distances for vibration levels of reportable significance).

- 3.4.2 All identified sensitive receptors are at least 180m from the nearest site boundary, and the minimum distance between the primary haul route and any of the surrounding receptors is over 400m. Therefore ground borne vibration levels due to construction works, excluding blasting, will be below levels considered to be *“just about perceptible in residential environments”*<sup>3</sup>.

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<sup>3</sup> Planning Policy Guidance Note 24 (PPG24, 1994), Department for Communities and Local Government

## NOISE MONITORING PROGRAMME

### 4.1 Noise Monitoring

- 4.1.1 Continuous noise monitoring, as required by condition NYMNPA-18, is being undertaken during construction at three key residential receptor locations and seven boundary locations as described in previous NVMP (e.g. Phase 4 document reference 40-RHD-WS-70-EN-PL-0017) and shown in **Appendix B, Figure B1**. The Sound Level Meters (SLMs) are recording  $L_{Aeq}$ ,  $L_{Amax}$ ,  $L_{A90}$ , and  $L_{A10}$  data with a “fast” time constant (see **Appendix A** for descriptions of these terms). Weather condition monitoring is carried out simultaneously.
- 4.1.2 A system of real time alerts enables remote monitoring of noise levels and appropriate action by contractors.

## BLASTING VIBRATION MONITORING PROGRAMME

- 5.1.1 Condition NYMNPA-29 requires a scheme for monitoring of blasting vibration within 1 kilometre of the site to be submitted to the MPA for approval. Blasting operations, approved under Phase 11, will continue to occur to form the insets and cubbies for the MTS, Service and Production shafts during Phase 17, and the agreed monitoring programme is set out below.
- 5.1.2 As required by condition NYMNPA-29, and subject to approval from the MPA, continuous vibration monitoring is being undertaken during blasting operations at one key residential receptor location (Parkdown Bungalow, NM1) and one on site location (boundary location BML1).
- 5.1.3 Monitoring is undertaken using a Datum InstanTel CombiMate system to measure Peak Particle Velocity (PPV) and air over-pressure.
- 5.1.4 The continuous monitoring and monitoring during blasting are undertaken in accordance with BS 7385:1990 Evaluation and measurement for vibration in buildings, Part 1 Guide for measurement of vibrations and evaluation of their effects on buildings.
- 5.1.5 The results from the blasting vibration monitoring are forwarded to the NYMNPA on a quarterly basis.
- 5.1.6 Blasting has been undertaken at the MTS shaft since March 2022, beginning with a trial period of restrictions on this activity to 07:00 to 19:00hrs only, which was extended to 07:00 to 22:00hrs in July 2022. There have been zero exceedances of either the vibration or overpressure limits recorded at any receptor attributed to the blasting activities. On this basis, in September 2022, a request by Anglo-American for a trial period of 10 consecutive blasts on an unrestricted basis was approved by the NYMNPA. The NYMNPA have requested that they are notified in advance of the first trial blast after 10:00pm, and that monitoring results are issued for review.

## MITIGATION MEASURES

### 6.1 Purpose of the Section

- 6.1.1 This section outlines measures to be taken by the contractors to limit, and manage the impact of, noise and vibration. These measures comprise Best Practicable Means, specific mitigation actions to be adopted and communication procedures.

### 6.2 Best Practicable Means

- 6.2.1 The Control of Pollution Act (1974) and BS 5228:2009+A1:2014 define working methods and mitigation measures referred to as Best Practicable Means (BPM). Appropriate BPM set out in previous NVMPs (e.g. Phase 4, reference 40-RHD-WS-70-EN-PL-0017), will continue to be applied to the Phase 17 Works.

#### Management Structure and Responsibilities

- 6.2.2 While overall responsibility for compliance with environmental and approvals requirements will remain with Anglo American, all contractors working on site are accountable for undertaking the construction activities in accordance with the requirements of this NVMP.
- 6.2.3 The CEMP (reference 40-RHD-WS-70-EN-PL-0057) provides details of the lines of responsibility for environmental management (including relating to robust implementation of noise management and mitigation measures) during the Phase 17 Works.

#### Maintenance

- 6.2.4 Maintenance of plant will be carried out routinely and in accordance with the manufacturers' guidance. Daily inspections will be undertaken as described in previous NVMPs (e.g. Phase 4, reference 40-RHD-WS-70-EN-PL-0017).

#### Training

- 6.2.5 The site induction programme and site rules will include good working practice instructions for site staff, managers, visitors and contractors to help minimise noise, as set out in previous NVMPs (e.g. Phase 4, reference 40-RHD-WS-70-EN-PL-0017).

### 6.3 Specific Mitigation

- 6.3.1 As part of the development of NVMPs for previous phases of work, a variety of mitigation measures have been specified, including acoustic barriers/bunds and limitations to operational hours for certain activities. Where applicable, these measures are assumed to be carried forward into the Phase 17 works. No additional Phase 17 specific mitigation measures are deemed necessary.

6.3.2 To minimise the potential vibration and air-overpressure impacts of blasting operations, blasts in different shafts will be timed so that they don't occur simultaneously.

6.3.3 All individual operations will be kept under review and relevant mitigation will be applied.

## **6.4 Communications**

### **Procedure for complaints or exceedance of limits**

6.4.1 The procedures to be followed in the event of a complaint or an exceedance of permitted noise limits will remain as set out in previous NVMPs (e.g. Phase 4, reference 40-RHD-WS-70-EN-PL-0017).

### **Public relations**

6.4.2 Good public relations with local residents will be maintained.

6.4.3 A Community and Stakeholder Engagement Plan is provided in Appendix A to the Phase 17 CEMP (40-RHD-WS-70-EN-PL-0057). It remains valid for Phase 17 Works, and details actions to be taken by Anglo American and the Contractors.

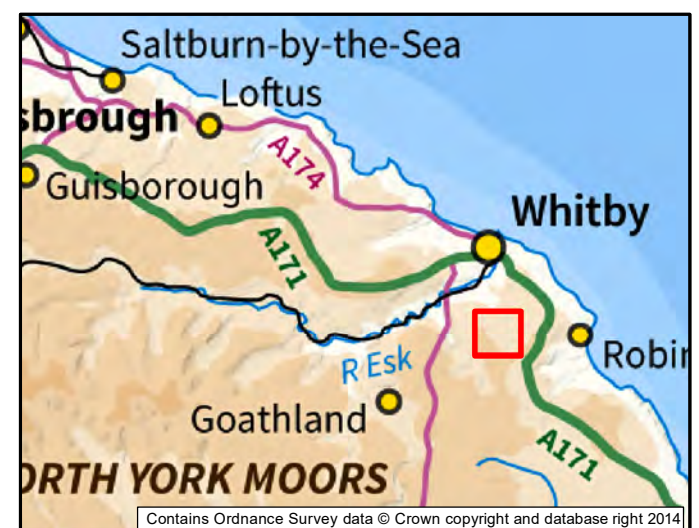
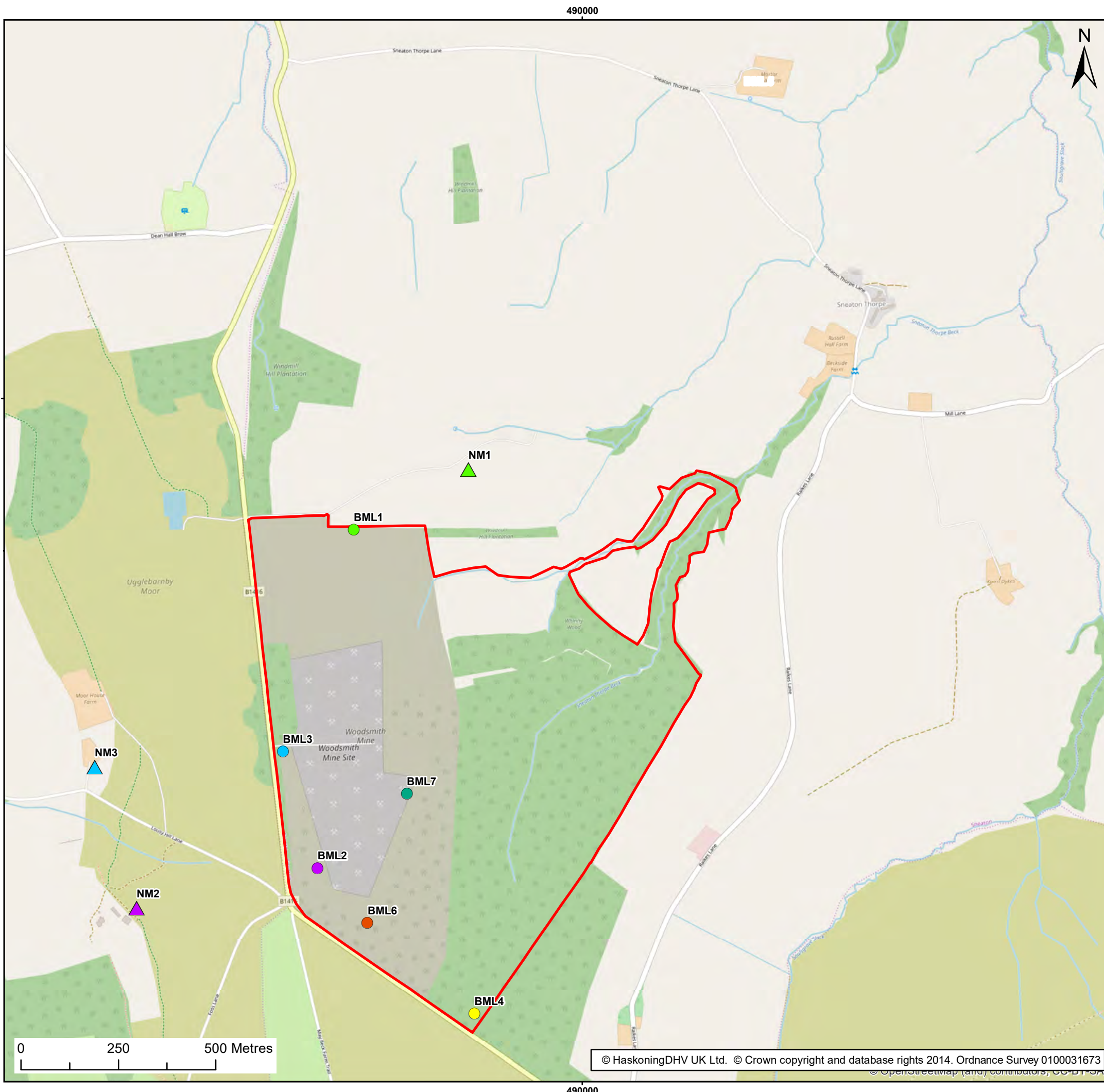
6.4.4 An updated Scheme for the Prior Notification of Blasting (40-SMP-WS-1000-PA-PL-00001) was approved as part of the Phase 14 Works at Woodsmith Mine and contains details of the procedures adopted for informing local residents of blasting operations.

## Appendix A Acoustic Terminology

Term	Definition
Noise sensitive receptors	People, property or designated sites for nature conservation that may be at risk from exposure to noise and vibration that could potentially arise as a result of the proposed development/project
Noise and Vibration study area	The area assessed for noise and vibration impacts during this assessment
Baseline scenario	Scenarios with the proposed development/project not in operation
Decibel (dB)	A unit of noise level derived from the logarithm of the ratio between the value of a quantity and a reference value. It is used to describe the level of many different quantities. For sound pressure level the reference quantity is 20 $\mu$ Pa, the threshold of normal hearing is 0dB, and 140dB is the threshold of pain. A change of 1dB is only perceptible under controlled conditions. Under normal conditions a change in noise level of 3dB(A) is the smallest perceptible change.
dB(A)	Decibels measured on a sound level meter incorporating a frequency weighting (A weighting) which differentiates between sounds of different frequency (pitch) in a similar way to the human ear. Measurements in dB(A) broadly agree with people's assessment of loudness. A change of 3 dB(A) is the minimum perceptible under normal conditions, and a change of 10 dB(A) corresponds roughly to halving or doubling the loudness of a sound. The background noise level in a living room may be about 30 dB(A); normal conversation about 60 dB(A) at 1 metre; heavy road traffic about 80 dB(A) at 10 metres; the level near a pneumatic drill about 100 dB(A).
$L_{Aeq,T}$	The A-weighted equivalent continuous sound level – the sound level of a notionally steady sound having the same energy as a fluctuating sound over a specified measurement period (T). $L_{Aeq,T}$ is used to describe many types of noise and can be measured directly with an integrating sound level meter.
$L_{A10,T}$	The A-weighted noise level exceeded for 10% of the specified measurement period (T). $L_{A10}$ is the index generally adopted to assess traffic noise
$L_{A90,T}$	The A-weighted noise level exceeded for 90% of the specified measurement period (T). In BS 4142:2014 it is used to define the 'background' noise level.
$L_{Amax}$	The maximum A-weighted sound pressure level recorded during a measurement.
PPV	Instantaneous maximum velocity reached by a vibrating element as it oscillates about its rest position.
'A' weighting	A frequency weighting to compensate for the varying sensitivity of the human ear to sound at different frequencies. Application of the A-weighting is indicated by the "A" shown in the measurement parameter.
Fast time constant	Sound level meters have two conventional time weightings, F = Fast and S = Slow with time constants of 125 ms and 1000 ms respectively. Fast time constant relates to the response time of the meter which allows rapid variations in noise level to be registered.



## Appendix B Figures



- Legend:
- Land Ownership Boundary
- Site Boundary Monitoring Locations**
- BML1 - Parkdown Bungalow
  - BML2 - Thornhill
  - BML3 - Moorside Farm
  - BML4 - Soulsgrave Farm/Wainwright Coast to Coast Walk
  - BML6 - Sneaton Foss/Falling Foss
  - BML7 - Between shaft sinking area and BML4
- Receptor Monitoring Locations**
- ▲ NM1 - Parkdown Bungalow
  - ▲ NM2 - Thornhill
  - ▲ NM3 - Moorside Farm

Client:	Project:
Anglo American	Woodsmith Project

Title:  
Residential Receptor and Boundary Noise Monitoring Locations

Appendix:	Figure:	Drawing No:			
B	B.1	40-RHD-WS-70-EN-PL-0016-D001			
Rev:	Date:	Drawn:	Checked:	Size:	Scale:
B	16/10/2018	JT	AB	A3	1:10,000
A	23/05/2017	GC	AB	A3	1:10,000

Co-ordinate system: British National Grid



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## Appendix C Predicted Construction Noise Levels

The predicted noise levels detailed within the tables below are considered to represent the most conservative scenario.

**Table C.1 Calculated highest noise levels during Phase 17 – Daytime**

Receptor Location	Daytime (07:00–19:00)	
	Limit $L_{Aeq,1hr}$ dB	Maximum Predicted $L_{Aeq,1hr}$ dB
Parkdown Bungalow	55	49
Moor House Farm	55	47
Moorside Farm	55	43
Thornhill	55	42
Soulsgrave	55	40
Wainwright Coast to Coast Path	55	42
Sneaton Foss Caravan Park	55	42
Falling Foss Tearooms	55	27
Lound House Caravan Park	55	41

**Table C.2 Calculated highest noise levels during Phase 17 – Evening and night time**

Receptor Location	Evening and Night-time (19:00–07:00)	
	Limit $L_{Aeq,1hr}$ dB	Maximum Predicted $L_{Aeq,1hr}$ dB
Parkdown Bungalow	42	42
Moor House Farm	42	38
Moorside Farm	42	32
Thornhill	42	33
Soulsgrave	42	31
Wainwright Coast to Coast Path	42	34
Sneaton Foss Caravan Park	42	35
Falling Foss Tearooms	42	18
Lound House Caravan Park	42	35

### Modelling Assumptions

The modelled results for Phase 17 cumulative with other overlapping phases are detailed in Tables C.1 and C.2.

The works at the site are considered to comprise mineral extraction and the conditioned noise limits are in accordance with the Planning Practice Guidance for Minerals (PPGM). The PPGM does not specify the method to be used to predict noise propagation; therefore, in line with acoustics industry best practice, noise propagation from the site was calculated using the ISO 9613-2 methodology.

Overall, the model setup and assumptions made on the number of plant and their location within the site were conservative, and therefore the predicted impacts are considered to be worst-case.

The following Phase 17 equipment, associated sound power levels and conservative assumptions regarding plant 'on-times' were included within the SoundPLAN noise model:

### Construction Operations at the Service Shaft Building

1 x Concrete Truck to Concrete Batch Plant based on 1 trip per hour, 24 hrs,  $L_{WA}$  107 dB  
 1 x Dump truck to Material Handling Platform based on 2 x trips per hour daytime and 1 trip per hour night-time,  $L_{WA}$  110 dB

#### **Construction Operations at the Production Shaft Building**

1 x Concrete Truck to Concrete Batch Plant based on 1 trip per hour, 24 hrs,  $L_{WA}$  107 dB  
 1 x Dump truck to Material Handling Platform based on 2 x trips per hour daytime and 1 trip per hour night-time,  $L_{WA}$  110 dB

#### **Construction Operations at the MT Shaft**

2 x Concrete Trucks to Concrete Batch Plant based on 1 trip per hour, 24 hrs,  $L_{WA}$  107 dB  
 1 x MTS IDF Heater, 100% on time, 24 hours,  $L_{WA}$  93 dB  
 1 x Dump truck to Material Handling Platform based on 2 x trips per hour daytime and 1 trip per hour night-time,  $L_{WA}$  110 dB

#### **Operation of the Materials Handling Bunker**

2 x Front end loader, 33% on-time daytime and 17% on-time night,  $L_{WA}$  107dB  
 1 x Volvo EC480E Excavator, 75% on-time, daytime only,  $L_{WA}$  106 dB  
 1 x Dozer, 75% on-time, daytime only,  $L_{WA}$  105dBA

#### **Relocation of Workshops and Relocation of Process Water Tank**

1 x 25t Excavator moving rubble, 50% on-time, daytime only,  $L_{WA}$  114 dB  
 1 x Concrete Pump, 50% on-time, daytime only,  $L_{WA}$  112 dB  
 1 x Dump Truck, 25% on-time, daytime only,  $L_{WA}$  115 dB  
 1 x Mobile Crane 50% on-time, daytime only,  $L_{WA}$  110 dB  
 2 x Poker Vibrator, 50% on-time, daytime only,  $L_{WA}$  106 dB  
 1 x Telehandler, 50% on-time, daytime only,  $L_{WA}$  99 dB  
 2 x Torque Gun, 50% on-time, daytime only,  $L_{WA}$  104 dB

#### **General sitewide works**

10 x Telehandlers (3 at night), 50% on time each,  $L_{WA}$  99 dB  
 7 x MEWP, 50% on time each, daytime only,  $L_{WA}$  108 dB  
 1 x Tractor, 50% on time, daytime only,  $L_{WA}$  112 dB  
 1 x Road Sweeper, 50% on time, daytime only,  $L_{WA}$  104 dB  
 16 x Tower Light, 100% on time, night only,  $L_{WA}$  85 dB  
 1 x Harmonic Filters, 100% on time, 24 hours,  $L_{WA}$  82 dB  
 1 x Modular Substation, 100% on time, 24 hours,  $L_{WA}$  80 dB from the roof only

#### **Regular HGV movements**

NDWWTP Delivery, one per hour, daytime only,  $L_{WA}$  104 dB  
 Warehouse Delivery, two per hour, daytime only,  $L_{WA}$  108 dB  
 Skip Replacement, one per hour, daytime only,  $L_{WA}$  106 dB  
 Coaches to Main Welfare, 4 per hour, 24 hrs,  $L_{WA}$  108 dB  
 Deliveries to Concrete Batch Plant, 1 per hour, daytime only,  $L_{WA}$  108 dB  
 Septic Tankers, 1 per hour, daytime only,  $L_{WA}$  104 dB

#### **Borehole Remediation and Exploratory Works – Main Rig**

1 x Rig 50 Marriott HH-220 Drilling Rig comprising of point sources:  
     1 x Top Drive (Enclosed), 100% on-time, 24hrs,  $L_{WA}$  97 dB  
     1 x Centrifuge, 100% on-time, 24hrs,  $L_{WA}$  87 dB

- 3 x Mud Plant Pumps (Enclosed), 100% on-time, 24hrs,  $L_{WA}$  98 dB each
- 2 x Shale Shakers, 100% on-time, 24hrs,  $L_{WA}$  95 dB each
- 1 x Main Platform Area Source, 100% on-time, 24hrs,  $L_{WA}$  92 dB
- 1 x Rig Above Trailer (including pipe storage area) Area Source, 100% on-time, 24hrs,  $L_{WA}$  90 dB
- 1 x Degasser, 100% on-time, 24hrs,  $L_{WA}$  59 dB
- 1 x Accumulator/Hydraulic Power Unit, 100% on-time, 24hrs,  $L_{WA}$  90 dB
- 2 x MTU Generators (Enclosed), each comprising of:
  - 1 x Containerised Engine, 100% on-time, 24hrs,  $L_{WA}$  95 dB
  - 1 x Exhaust, 100% on-time, 24hrs,  $L_{WA}$  99 dB

#### **Boreholes Remediation and Exploratory Works – Ancillary Plant**

- 1 x Grout Truck, 100% on-time, 24hrs,  $L_{WA}$  108 dB
- 1 x Merlo Forklift on Drill Pad, 25% on-time loading, 25% on-time mobile between Drill Pad and Drilling Contractor Compound areas, 24hrs,  $L_{WA}$  99 dB
- 4 x Tower Lights, 100% on-time, 24hrs,  $L_{WA}$  85 dB

#### **Boreholes Remediation and Exploratory Works – Drilling Contractor Compound**

- 1 x Tower Light, 100% on-time, 24hrs,  $L_{WA}$  85 dB
- 1 x Generator for Canteen, 100% on-time, 24hrs,  $L_{WA}$  85 dB

#### **Hydro Boreholes at Production Shaft and Service Shaft**

- 1 x Rig 15 MI-45 Massenza Drilling Rig (Truck Mounted), 100% on-time, 24hrs,  $L_{WA}$  101 dB
- 1 x F800 Mud Pump (Cummins KTA 38 G3 V12), 100% on-time, 24hrs,  $L_{WA}$  97.6 dB
- 1 x Rig 19 Enerflow ESR-550 Mobile Service Rig, 100% on-time, 24hrs,  $L_{WA}$  110dB
- 1 x Telehandler, 50% on time, daytime only,  $L_{WA}$  99dB
- 1 x MEWP, 50% on time, daytime only,  $L_{WA}$  108dB

#### **Construction Operations within Service Shaft Building**

Internal reverberant noise level, 85 dB(A), 100% on-time, 24hrs

#### **Construction Operations within Production Shaft Building**

Internal reverberant noise level, 85 dB(A), 100% on-time, 24hrs

#### **Construction Operations within MTS Building**

Internal reverberant noise level, 85 dB(A), 100% on-time, 24hrs

- 1 x Front end loader, 33% on-time daytime and 17% on-time night at MTS,  $L_{WA}$  107dB

#### **Development of Mitigation Screening Bund F**

- 1 x Dozer, 75% on-time, daytime only,  $L_{WA}$  109 dB
- 1 x Dump Truck to Bund F tipping area, based on 2 x trips per hour daytime and 1 trip per hour night-time,  $L_{WA}$  110 dB
- 1 x Dump truck tipping, 25% on-time, daytime only,  $L_{WA}$  107 dB (measured on site)
- 1 x Dump truck tipping, 60 secs on-time daytime, 30 secs on-time night to Material Handling Platform,  $L_{WA}$  107 dB
- 1 x Mobile Crusher, 10% on-time, daytime only,  $L_{WA}$  109 dB

#### **Grout shed and winches**

- 1 x Grout Shed operations, internal reverberant noise level 80 dB(A), 50% on-time, 24hrs
- 1 x MTS Winch House, internal reverberant noise level 85 dB(A) 100% on-time, 24hrs

### Service Shaft and Production Shaft Ventilation and Dust Silencer

- 1 x Silencer, 100% on-time, 24hrs,  $L_{wA}$  88 dB(A)
- 1 x Service Shaft Winch House, internal reverberant noise level 85 dB(A), 100% on-time, 24hrs
- 1 x Production Shaft Winch House, internal reverberant level 85 dB(A), 100% on-time, 24hrs
- 1 x PS ventilation, 100% on-time, 24hrs,  $L_{wA}$  93 dB
- 1 x PS ventilation, 100% on-time, 24hrs,  $L_{wA}$  94 dB
- 1 x SS ventilation, 100% on-time, 24hrs,  $L_{wA}$  93 dB
- 1 x SS ventilation, 100% on-time, 24hrs,  $L_{wA}$  94 dB

### Air Compressing Facility

- Internal reverberant noise level 96 dB(A), 100% on-time, 24hrs
- 2 x Condensate pumps, 100% on-time, 24hrs,  $L_{wA}$  81 dB

### NDWWTP

- 1 x Dissolved Air Flotation Unit, 80% on time, daytime only,  $L_{wA}$  93 dB
- 1 x Shaft Head Shaker Unit at NDWWTP, 80% on time, daytime only,  $L_{wA}$  93 dB
- 1 x Shaft Head Shaker Unit at minus 45m below ground level inside Production Shaft building, internal reverberant level 85 dB(A), 100% on-time, 24hrs
- 1 x Shaft Head Shaker Unit at minus 45m below ground level inside Service Shaft building, internal reverberant level 85 dB(A), 100% on-time, 24hrs

### LNG Plant

- 1 x Tanker discharging LNG, 80% on time, daytime only,  $L_{wA}$  92 dB
- 4 x Genbachers, 100% on time, 24 hours,  $L_{wA}$  85 dB

### Concrete Batching Plant Operation

- 1 x Batch Plant with Concrete Mixer, 100% on time, 24 hours,  $L_{wA}$  99 dB
- 1 x Batch Plant with Concrete Mixer, 10% on time, 24 hours,  $L_{wA}$  99 dB

### Creation of Bund E Attenuation Ponds

- 1 x Volvo EC480E Excavator, 75% on-time, daytime only,  $L_{wA}$  106 dB
- 2 x Volvo A30G Dump Truck, 75% on-time, daytime only,  $L_{wA}$  104 dB
- 1 x Dozer, 75% on-time, daytime only,  $L_{wA}$  105dBA
- 1 x Water Pump, 100% on-time, daytime only,  $L_{wA}$  93 dB

### Acoustic modelling input data

Data sources used for this modelling are shown in Table C-3.

Table C-3 Data sources

Data	Source file	Origin
Nearby building locations	Base Noise Model MAY22.geo	Ordnance Survey Vectormap
Site topography	CAD drawing entitled 'WS Drone Platform Model 211111 North Part' CADDXF 201202 WS DTM Contour CADDXF entitled 'Woodsmith Mine Planning Application for Borehole Remediation Location Plan', reference (DRG No. 40-ARI-WS-7100-CI-22-01092 Rev. 1, dated 10/03/22. ARUP	Anglo American ARUP
Wider area topography	NZ80NE, NZ80SE, NZ90NW, NZ90SW _DTM_2m.tif	Defra LiDAR survey data (available at

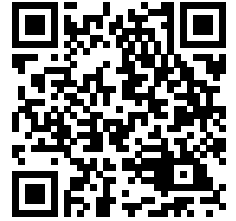
	Ordnance Survey Vector Map	<a href="#">Defra Survey Data Download)</a> Ordnance Survey
Site layout	CAD drawing entitled 'Woodsmith Mine Planning Application for Borehole Remediation Location Plan', reference (DRG No. 40-ARI-WS-7100-CI-22-01092 Rev. B, dated 10/03/22. ARUP CAD drawing entitled 'Woodsmith Mine Planning Application for Borehole Remediation General Arrangement' reference (DRG No. 40-ARI-WS-7100-CI-22-01091 Rev. 1, dated 10/03/22. ARUP	ARUP
Drillmec HH-220 elevations and layout	CAD drawing entitled 'Woodsmith Mine Planning Application for Borehole Remediation Indicative General Arrangement', reference (DRG No. 40-ARI-WS-7100-CI-22-01091 Rev. A, dated 13/01/22. ARUP	ARUP

### Acoustic model settings

Acoustic modelling has been undertaken using the following model settings:

- Maximum search radius of 2500m.
- Maximum number of reflections: 3
- Noise predictions carried out at each floor level of sensitive receptors, ground floor level is 1.5m above ground, each storey is 2.5m high.
- Side diffraction enabled.
- Ground absorption has been set as:  
Drill Pad, SS, PS, MTS platforms, warehouse storage areas, welfare, batch plant, NDWWTP areas and roads/haul routes within site set to G=0;  
Acoustic landscaped bund areas within site red line boundary set to G=0.6 (representative of mixed ground);  
Ground outside of site red line boundary set to G=1 (representing soft ground).





NYMNP

13/12/2022

Project Title / Facility Name:

**Woodsmith Project**

Document Title:

**CONSTRUCTION METHOD STATEMENT (NYMNP 94 - PHASE 17) (CMS)**

**Document Review Status**

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**40-SMP-WS-7100-PA-MS-00016**

This document has been electronically verified and accepted in accordance with Project Information Management System (Pims) prior to issue. An audit trail of verification and acceptance is available within Pims. As such signatures are not required. Only the latest accepted revision of the digital version is considered valid for use. Any print out shall be regarded as a non-controlled copy.



# Woodsmith Mine Phase 17 Construction Method Statement (CMS)

Document Number: 40-SMP-WS-7100-PA-MS-00016

Document Verification					
Revision	Date	Prepared by	Checked by	Approved by	Reason for Issue
A	07/10/2022	S. Hickey			Issued for Review
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## Woodsmith Mine Phase 17 Construction Method Statement (CMS)

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**Woodsmith Mine Phase 17 Construction Method Statement (CMS)**

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## Woodsmith Mine Phase 17 Construction Method Statement (CMS)

### 1 Introduction

#### 1.1 The purpose of this document

This document details the Construction Method Statement (CMS) for Phase 17 Site Works at Woodsmith Mine. This CMS is required to partially discharge condition 94 of the North York Moors National Park Authority (NYMNPA) planning permission NYM/2014/0676/MEIA (as subsequently varied by NYM/2017/0505/MEIA) and has been prepared in accordance with good practice.

This CMS details the works to be undertaken during the Phase 17 Site Works at Woodsmith Mine only. Further construction method statements will be submitted to discharge condition NYMNPA 94 for subsequent Phases. The CMS will remain a live document, being reviewed, and updated as required.

#### 1.2 Compliance with Condition NYMNPA 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.

**Table 1.1: Details of NYMNPA Planning Condition 94**

NYMNPA 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 will be submitted for that Phase, and approved in writing by the MPA, in consultation with the appropriate Highways Authority. Each approved Statement will be adhered to throughout the construction period. The Statements will provide for:	This CMS is provided for Phase 17 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 highways;	Section 2.5
(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 2.4
(v) Wheel washing facilities;	Section 2.9
(vi) An outline construction method for sub-surface works including adherence to the 'rack and pillar' method of mining described in the SEI (14 <sup>th</sup> February 2015) and the SRK Subsidence Memorandum (15 <sup>th</sup> May 2013);	This work is not required in Phase 17.
(vii) Buildings and structures associated with the mine and tunnel shafts;	This work is not required in Phase 17.
(viii) Welfare/office building and security gatehouse;	Section 2.4
(ix) Screening bunds;	This work is not required in Phase 17.
(x) Hardstandings;	Section 3.3
(xi) Shuttle Bus terminal;	This work is not required in Phase 17.
(xii) Park-and-Ride layby;	This work is not required in Phase 17.

NYMNP Condition 94	Compliance with Condition 94
(xiii) Emergency helipad;	This work is not required in Phase 17.
(xiv) Lighting columns;	Section 2.11
(xv) Internal access and haul roads;	Section 2.10
(xvi) Domestic wastewater (foul sewage) treatment plant;	This work is not required in Phase 17.
(xvii) Non-domestic wastewater treatment plant and settlement tanks;	This work is not required in Phase 17.
(xviii) Surface water attenuation ponds, settlement ponds, swales and wetland areas;	Section 3.9
(xix) Temporary spoil and Polyhalite storage areas;	This work is not required in Phase 17.
(xx) Road widening and provision of right-hand turn areas;	This work is not required in Phase 17.
(xxi) Removal of any temporary structures; and	Section 3.11
(xxii) Formation spoil mounds and the establishment of vegetation on them	This work is not required in Phase 17.
The CMS will 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	The CMS relates to the Phase 17 Works at Woodsmith Mine only and all required mitigation has been included in a Construction Environmental Management Plan (CEMP), which is required to discharge condition 93.

## 2 Project Overview and Description of the Works

### 2.1 Project overview

Anglo American Woodsmith Limited (Anglo American) is developing a new mine surface development south of Whitby in North Yorkshire to access polyhalite mineral. The polyhalite is to be brought to surface at the Wilton International site, Teesside, where it will be processed into a granular fertiliser product and transferred to a Port Handling Facility for storage and export (the port facility is covered by a separate consenting regime). This CMS relates to the Phase 17 Works at Woodsmith Mine only. This document builds on the CMS documents produced for Phases 1-16 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 17 Works. It includes the measures to be taken to ensure that the works are carried out safely and in accordance with the requirements of the planning permission and all relevant statutory obligations.

### 2.3 Description of the works

The Phase 17 works comprise:

- Installation of additional welfare provisions
- Amendment to the security building
- Creation of vehicular holding and borehole casings storage area on former reinjection pad
- Additional storage in logistics compound
- Sinking of the Service and Production Shafts between base of Lias and top of Rot Salt
- Insets to the Service Shaft, Production Shaft and MTS Shaft

- Simultaneous operation of the concrete batch plants
- Revised lattice mast specification
- Creation of Bund E attenuation ponds
- Relocation of workshops
- Relocation of process water tank
- Covered materials handling area
- Installation and use of ventilation heater

These works are further detailed in Section 3.

## 2.4 Contractor's offices/compounds

All contractors will continue to use the facilities already established in earlier Phases, namely the main site welfare facility established in Phase 3 and extended in Phase 6 and Phase 14, as well as the shaft welfare facilities approved in Phase 12.

In this Phase, the following additional units will be constructed:

- A third storey will be installed at the existing MTS Shaft Welfare building.
- Temporary facilities housing shower units and changing facilities will be provided in a two storey portacabin type welfare block on the platform area between the car park and the batch plant. These temporary facilities will be replaced in the future by shower and changing facilities, close to the Production Shaft and MTS Shaft locations, to provide additional necessary facilities for the underground teams.
- Amendments to the security building and logistic compound.
- Relocation of workshops, containers and additions of a briefing room and contractor workspace in the Service Shaft compound.
- An external Tally Hut located at the Production Shaft.

Further details are provided in Sections 3.1, 3.2, 3.4 and 3.10.

In addition, the perimeter security fencing will be re-aligned to accommodate the addition of the new attenuation ponds detailed in Section 3.9.

## 2.5 Parking of cars

Transport of workers to and from site, including onsite parking and use of Park and Ride facilities will be in accordance with the Phase 14 Construction Traffic Management Plan (Ref: 40-RHD-WS-70-EN-PL-0050). This will include any measures required to conform with the latest Government guidance in relation to COVID-19.

## 2.6 Mobilisation

All equipment, plant and materials will be delivered to site using the approved traffic routes as per the Phase 14 Construction Traffic Management Plan (Ref: 40-RHD-WS-70-EN-PL-0050).

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

Fewer than 10 abnormal loads per month are expected during this Phase.

## 2.7 Unloading and loading of materials

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

## 2.8 Storage of plant and materials

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

Plant and materials will be stored in designated areas as close to the works as possible. All storage areas will be on hardstanding appropriate to the plant and materials and away from sensitive receptors.

In this Phase, additional laydown will be provided on the former reinjection pad area for the placement and storage of borehole casing for the Hydro Drilling works discharged in Phase 15, as detailed in section 3.3.

## 2.9 Wheel wash

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

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

## 2.10 Internal access routes

Haul roads and internal access routes within the Phase 17 working area will be demarcated and separated from pedestrians as per previous Phases. Speed limits will be enforced as per the site limits.

In this Phase, access improvements will be made to the stone road to the west of the attenuation ponds by extending this to the site boundary as shown on the Masterplan (40-ARI-WS-7100-CI-22-01098).

## 2.11 Lighting columns

No permanent lighting columns will be installed as part of this phase.

It should be noted temporary lighting columns will be installed for safe access and egress to / from the new temporary welfare units. The colour temperature and lux levels will be kept to the minimum required for safe operations. These will be sensor-controlled units, columns less than 4m in height and pathway bollards, designed to cast zero upwards light. Further detail is provided in section 3.1.

Temporary lighting of the same nature will also be installed around the security building, in the logistic compound and in the workshop area for safe access and egress.

The vehicular holding and borehole casings storage area will need to be lit when in use in hours of darkness, between 07:00 and 19:00. Tower light task lighting will be used and this will be kept to a low level, facing away from the B1416, as used during covid times when this area was a car park.

In the event that temporary task lighting is required, this will be provided by moveable diesel tower lights, as already used on site. Use of lights will be kept to the minimum necessary for safe working and all lights will be switched off when not required. Lights will be kept to a maximum of 4m height, shielded and positioned so as not to point towards Whitby and the A171. Further information on lighting is provided in the CEMP.



### 3 Construction Method Statements

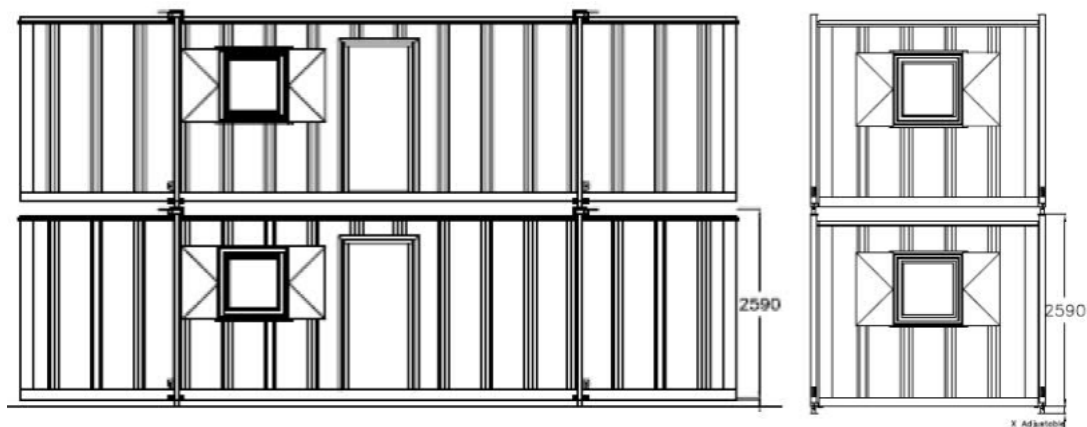
#### 3.1 Installation of additional welfare provisions

In this Phase additional modular welfare provisions are required. All units will be painted RAL6008 (brown/green) or equivalent prior to arrival on site. Discreet, sensor-controlled perimeter downlighting will be fitted to provide safe access and egress and all windows will be fitted with shutters. The modular units will be lifted into place by a site mobile crane or HIAB.

A third storey will be added to the existing MTS welfare/office facility (footprint = 186m<sup>2</sup>).

Temporary facilities housing shower units and changing facilities will be provided in a two storey portacabin type welfare block approx. 50m x 30m (1500m<sup>2</sup>) area and approx. 6m high located on the platform area between the car park and the batch plant.

These temporary facilities will be replaced in the future by facilities at the MTS Shaft (3 storeys/9 m high, with 288m<sup>2</sup> footprint) and Production Shaft (2 storeys/6 m high, with 544m<sup>2</sup> footprint), as shown on the Masterplan (40-ARI-WS-7100-CI-22-01098). These new temporary units will be of a similar nature to those approved as part of Phase 10 (40-SMP-WS-7100-PA-MS-00008) and Phase 12 (40-SMP-WS-7100-PA-MS-00011).



*Figure 1; Indicative design of Welfare Units*

An external Tally Hut approx. 12m x 6m in area and 3m height, painted either Brown Green (RAL 6008) or Juniper Green (RAL 160 20 10) to match those at the other shafts, will also be located at the Production Shaft in this Phase.

To provide these facilities with the necessary services, the existing electrical and water utility networks will be upgraded to meet the demand and additional septic tanks will be installed at each location. Any new cables and piping will branch off existing service runs and be fitted to above ground hangers or buried into the platform in underground ducts.

#### 3.2 Amendment to the security building

Additional units will be installed to 'fill in' the security gatehouse building as shown in Figure 2, below. There will be two units, approximately 9m x 4m in length and width and 3m in height to match the existing structure. Units will be painted RAL6008 (brown/green) or equivalent prior to arrival on site. Discreet, sensor-controlled perimeter downlighting will be fitted to provide safe access and egress and all windows will be fitted with shutters.



**Figure 2; Security Gatehouse building**

A canopy will be installed around the structure, on the south and east side as indicated in orange, to provide a waiting area for any delivery vehicle drivers. This will be as per the canopy at the main welfare, shown in Figure 3.



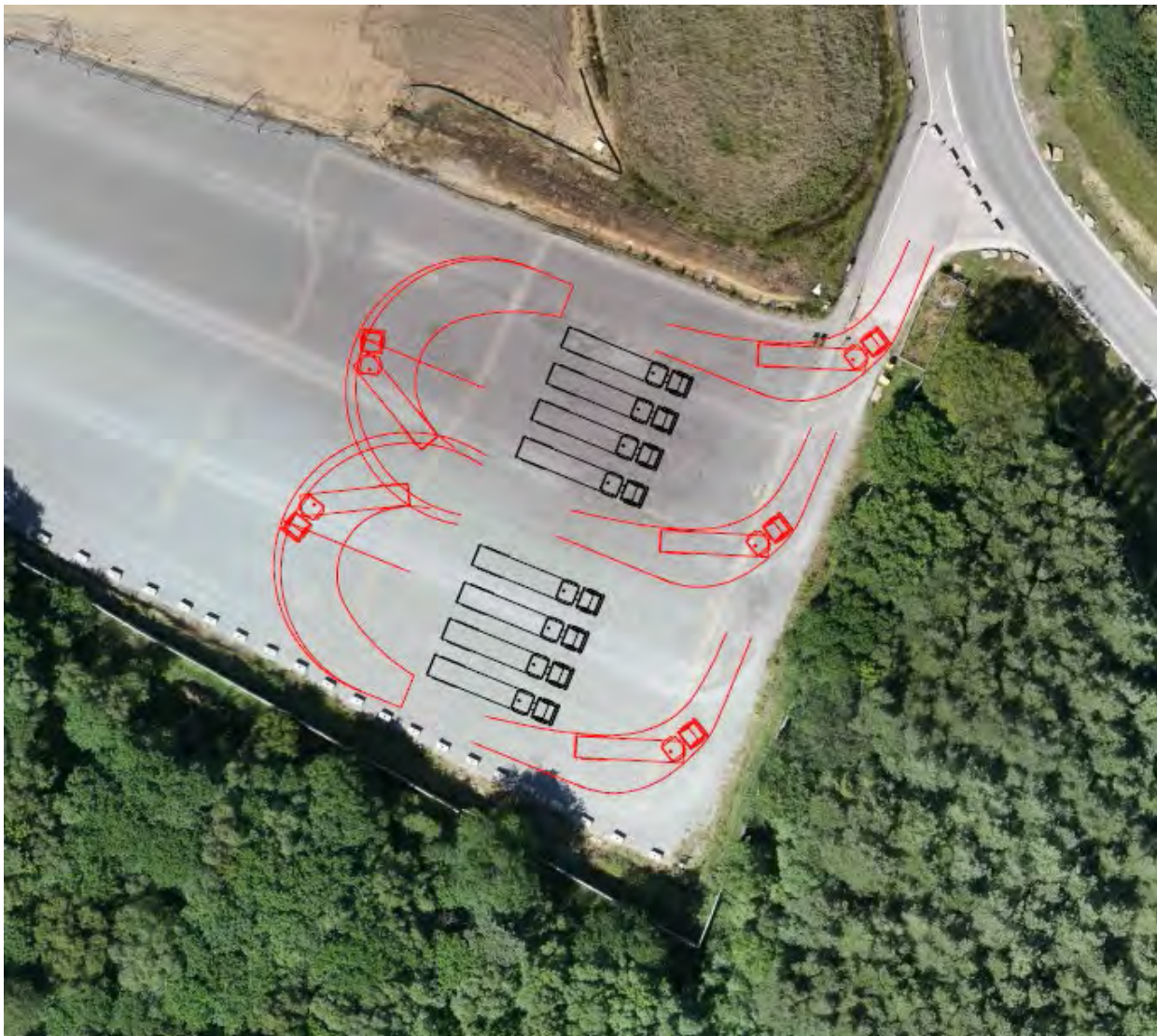
**Figure 3; Canopy**

### 3.3 Creation of vehicular holding and borehole casings storage area on former reinjection pad

The area to the south of site, previously identified as an area for temporary laydown / storage of segments in Phase 13 (40-SMP-WS-7100-PA-MS-00012), will be used as a vehicular holding area in the interim period as depicted in Figure 4. This will prevent HGVs waiting and idling at the gatehouse, which reduces vehicle emissions and noise levels on site and improves the safety of traffic management.

The area is surrounded by wooden perimeter fencing, 3m in height, to provide an acoustic barrier and screening from the B1416. The existing drainage for this area will be retained, including outfall via oil interceptor into adjacent water course. To the west of the vehicle turning and parking bays an area will be retained for the storage of hydro boreholes casing. These will be 9.4m long casing pipes, stored in casing stillages for safety. They will be transferred to the working areas, adjacent to the main shafts, by trailer, as required, with movements limited to day shifts.

This holding area will be used during the normal HGV movement hours, from 07:00 to 19:00, and when parked vehicles will be stationary with engines off.



*Figure 4; Vehicular holding area*

### 3.4 Additional storage in logistics compound

To provide additional storage required in the existing logistics compound, the existing containers will be reconfigured as per Figure 5 and additional units will be stacked on top, essentially double stacking the storage containers to a maximum height of 6m. Access stairs and a walkway platform will be provided, with safety critical access lighting that will be sensor controlled for minimal visibility in the hours of darkness. The containers will be RAL6008 or similar in colour and have access doors positioned to face into site (on the south side). Two of the containers will be used as workspaces for the area managers and any windows will be fitted with shutters to be closed in the hours of darkness.

As a safety improvement, the road will be configured in this area as shown in Figure 5 with a new access ramp to the east, where containers will be relocated from, forming a one way system.

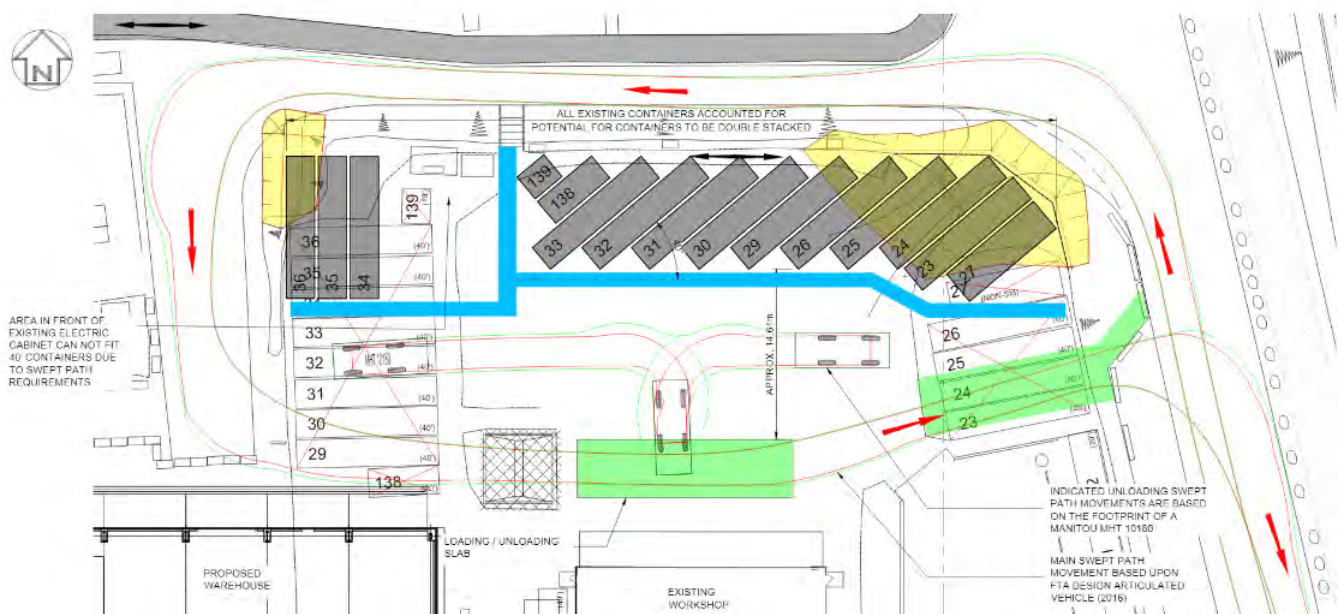


Figure 5; Logistics compound

### 3.5 Sinking of the Service and Production Shafts between base of Lias and top of Rot Salt

The main shaft sinking of both the Service Shaft & Production Shaft is being done using SBR machines. As part of the Phase 12 works, both of these shafts were sunk from the base of the pre sink (120mBGL) to the base of the Lias Group at approximately 490mBGL. Under Phase 17, the shaft sinking will continue using the same methodology to just above the top of the Rot Salt Formation (approx. 750mBGL). Probe drilling and shaft sinking through and below the Rot Salt formation will be detailed in a future Phase.

The construction sequence utilising the SBRs will continue to involve probe drilling, grouting as required, excavation, shaft lining and installation of services, as previously described in the Phase 12 CMS (40-SMP-WS-7100-PA-MS-00011). The only variation is that the lining to this depth will be cast with an internal shaft diameter of 7.5m and two Cubbies will be excavated out from the shaft wall, as detailed in section 3.5.1. It should also be noted that two water rings will be inset to the shaft lining at approx. 523mBGL and 721mBGL to direct any groundwater ingress from the liner to the drain lines. Figures 6 and 7, below, provide detail of the shaft lining and water rings.

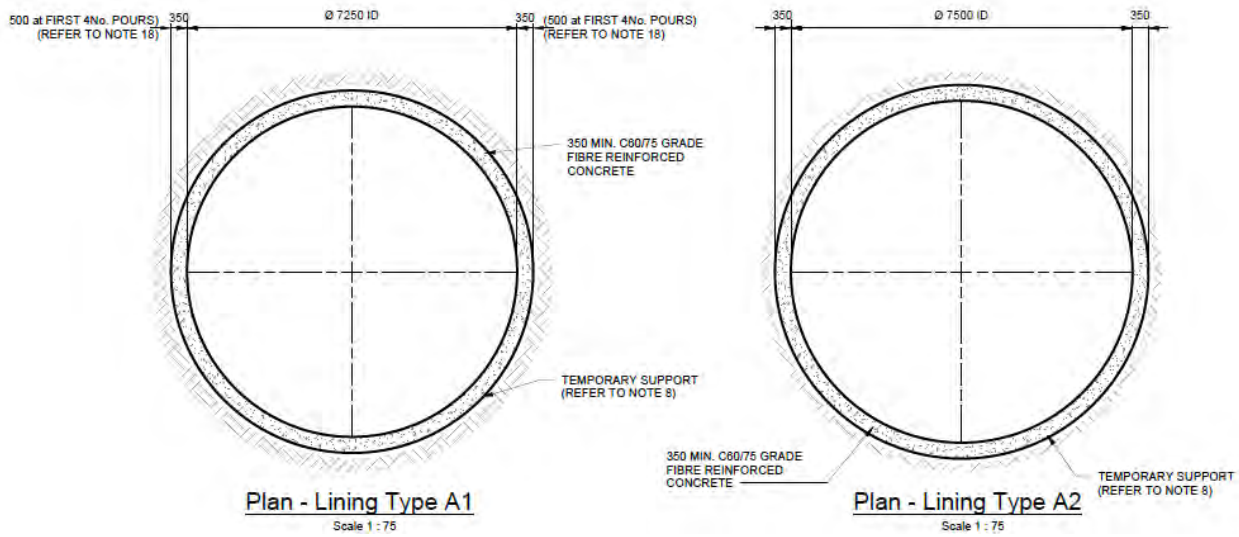


Figure 6; Shaft lining

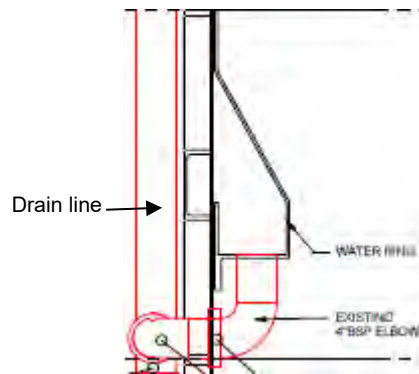


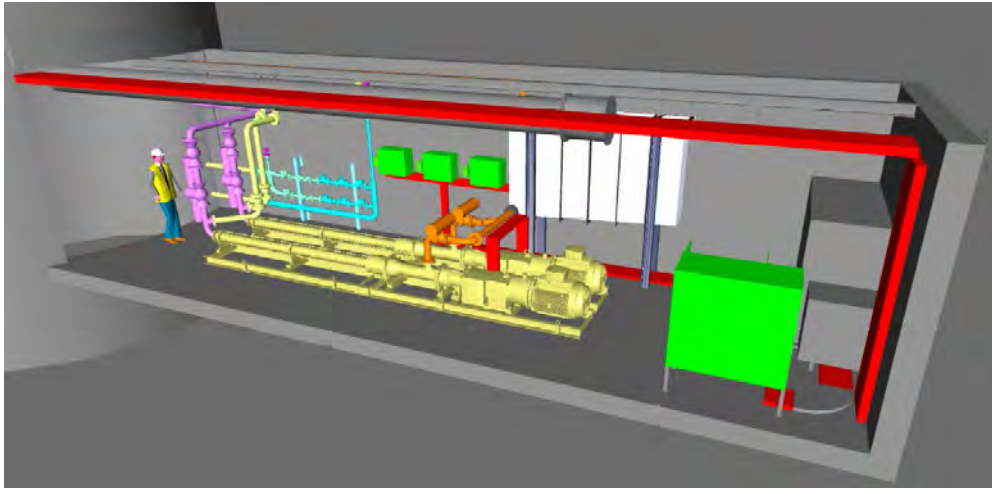
Figure 7; Water ring

### 3.5.1 Cubbies

In addition to shaft sinking and lining activities, two insets known as ‘Cubbies’ will be constructed in both the Service Shaft & Production Shaft above the Rot Salt Formation at approx. 365mBGL & 745mBGL. These will be constructed by mechanical excavation from the shaft bench into the shaft wall, using a brock, or by drill & blast excavation techniques, similar to the MTS shaft sinking technique detailed in Phase 11.

Each Cubby will be approx. 4m wide by 12m deep, with a height of 3.6m, and will be constructed to provide a station for water pumps and tanks to be installed as part of a progressive pumping system for shaft dewatering. A ventilation fan will also be fitted to provide fresh airflow when accessing the Cubby. The Cubby will be mechanically supported by rock bolts and mesh. An isometric view is shown in Figure 8.

To power this pumping system, a modular electrical substation will be installed on the surface located adjacent to the Service Shaft substation as shown on the Masterplan (40-ARI-WS-7100-CI-22-01098). This will be a RAL6008 or similar coloured steel kiosk, sitting on a concrete base, with a footprint of approx. 50m<sup>2</sup> and height of 6m.



*Figure 8; Cubby isometric view*

### 3.5.2 Excavated Material

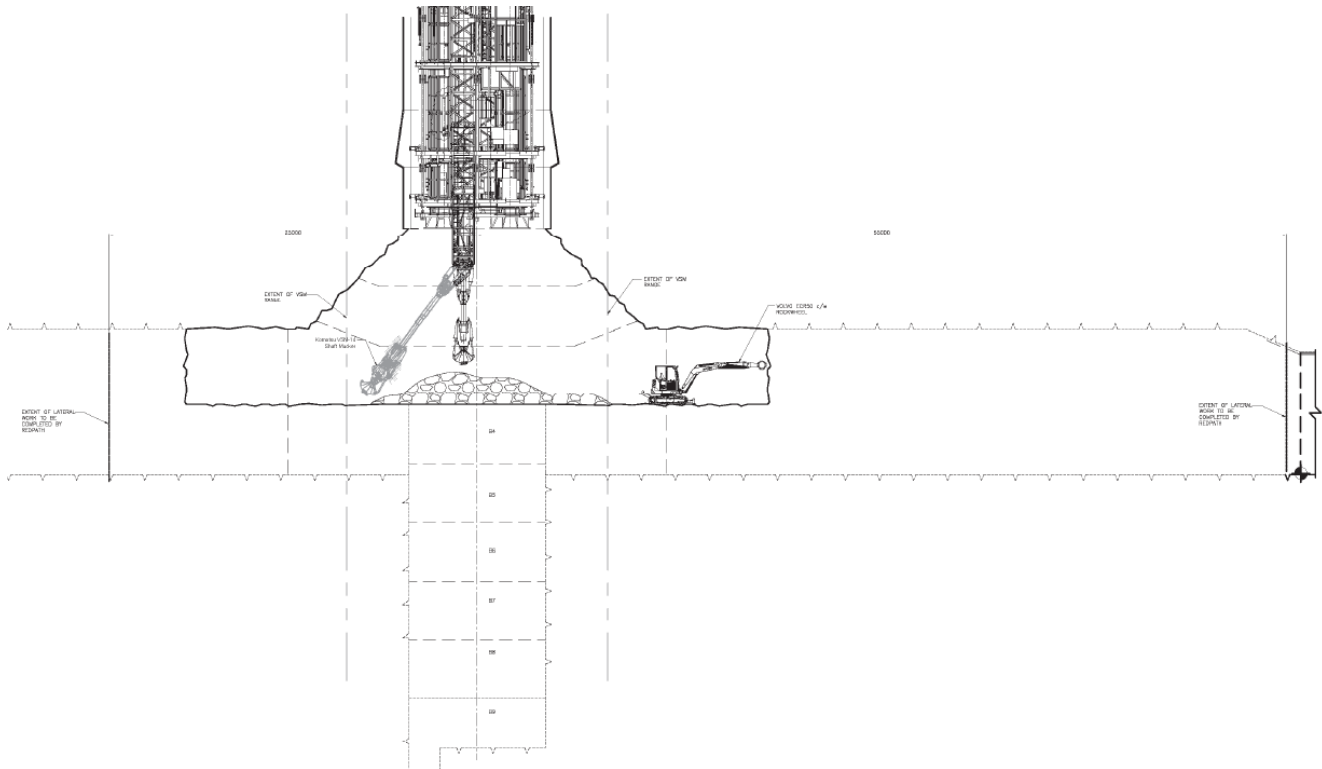
In this Phase of shaft sinking the material excavated will consist of Penarth Group and Mercia Mudstone Group strata that is not acceptable to be retained within the permanent landscape bunds, due to its geotechnical and chemical properties. This material will be transported off-site for disposal at a suitably licensed facility, via the Materials Handling Area or Segregated Material Store.

Waste water will continue to be managed through the Non-Domestic Wastewater Treatment Plant (NDWWTP), where it will be treated for disposal off-site by means of tanker, to a suitably licensed facility, or discharged to Sneaton Thorpe Beck in accordance with the environmental permit (EPRLB3797VJ). The water flow discharged from each shaft will be monitored and recorded.

### 3.6 Insets to the Service Shaft, Production Shaft and MTS Shaft

The insets will be developed by breaking out from vertical shaft sinking to create caverns to the sides of the shafts to connect to what will become the lateral development, for final connection to the MTS tunnel. In total a volume of approx. 12000m<sup>3</sup> of mudstone material will be excavated for the insets with dimensions & methodology as below. This material will be retained on surface for development of the screening bunds.

In the MTS shaft, the inset will be formed by horizontal lateral development from the base of the shaft at approx. 340mBGL. The extent of the development will be approx. 25m to one side of the shaft and 50m to the other, with an excavated height and width of 10m. Horizontal excavation will be by a combination of mechanical excavation and drill & blast excavation techniques, similar to those used in the MTS shaft sinking detailed in Phase 11. The same explosive type, usage and management as described in Phase 11 will be adopted, albeit in a horizontal not vertical plane. Material excavated will be transferred to the shaft by electric powered mechanical excavators and removed to the surface using the same material buckets as for shaft sinking. Figure 9 depicts this development.



**Figure 9; MTS inset development**

The excavation will be supported by mechanical rock bolting, meshing and shotcreting. The shotcrete is essentially sprayed concrete that is applied to the excavated surface by a robotic arm. It will be mixed on surface using the batch plant, or reserve batch plant, and transferred down the shaft in buckets.

Once the inset is developed, the shaft sinking Galloway will continue to excavate a sump beyond the floor of the inset to complete the shaft sinking stage.

In the Service & Production Shafts, the SBR will first excavate an enlarged diameter shaft up to 11.2m diameter and then continue a short section of normal shaft to create a base for building the inset from. To build up this base, the SBR will be retracted above the inset level and approx. 2000m<sup>3</sup> ballast material will be used. Mechanical rock cutters will then be lowered down the shaft, through the SBR, and begin excavating horizontally from this base by a combination of mechanical excavation and drill & blast techniques. As in the MTS, rock bolting, meshing and shotcreting will be used to support the excavation and the normal shaft sinking material buckets will be used to remove material. The extent of these insets will be approx. 15m to either side of each shaft, with dimensions as shown in Figures 10 and 11

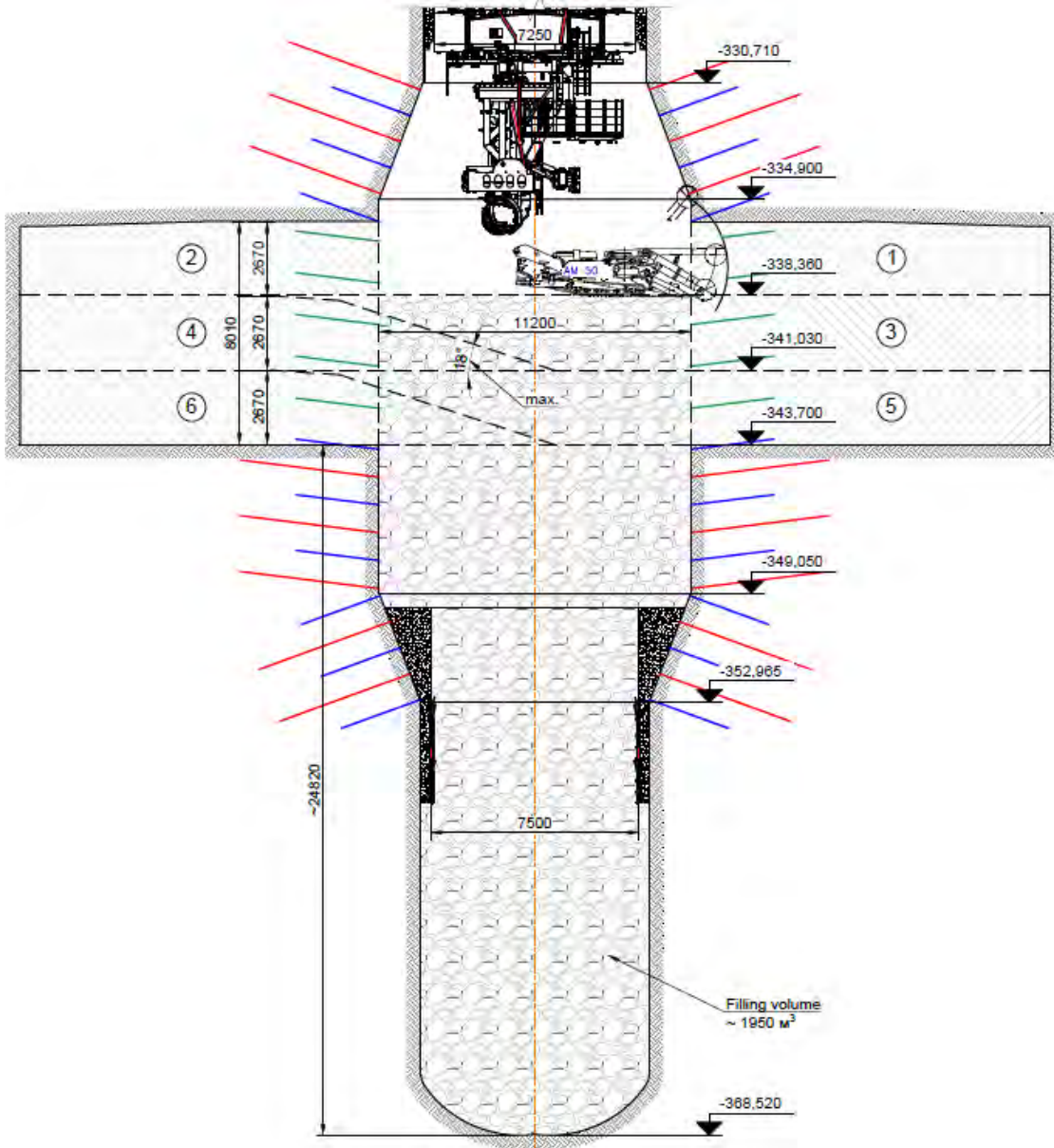


Figure 10; Service and Production Shaft inset development



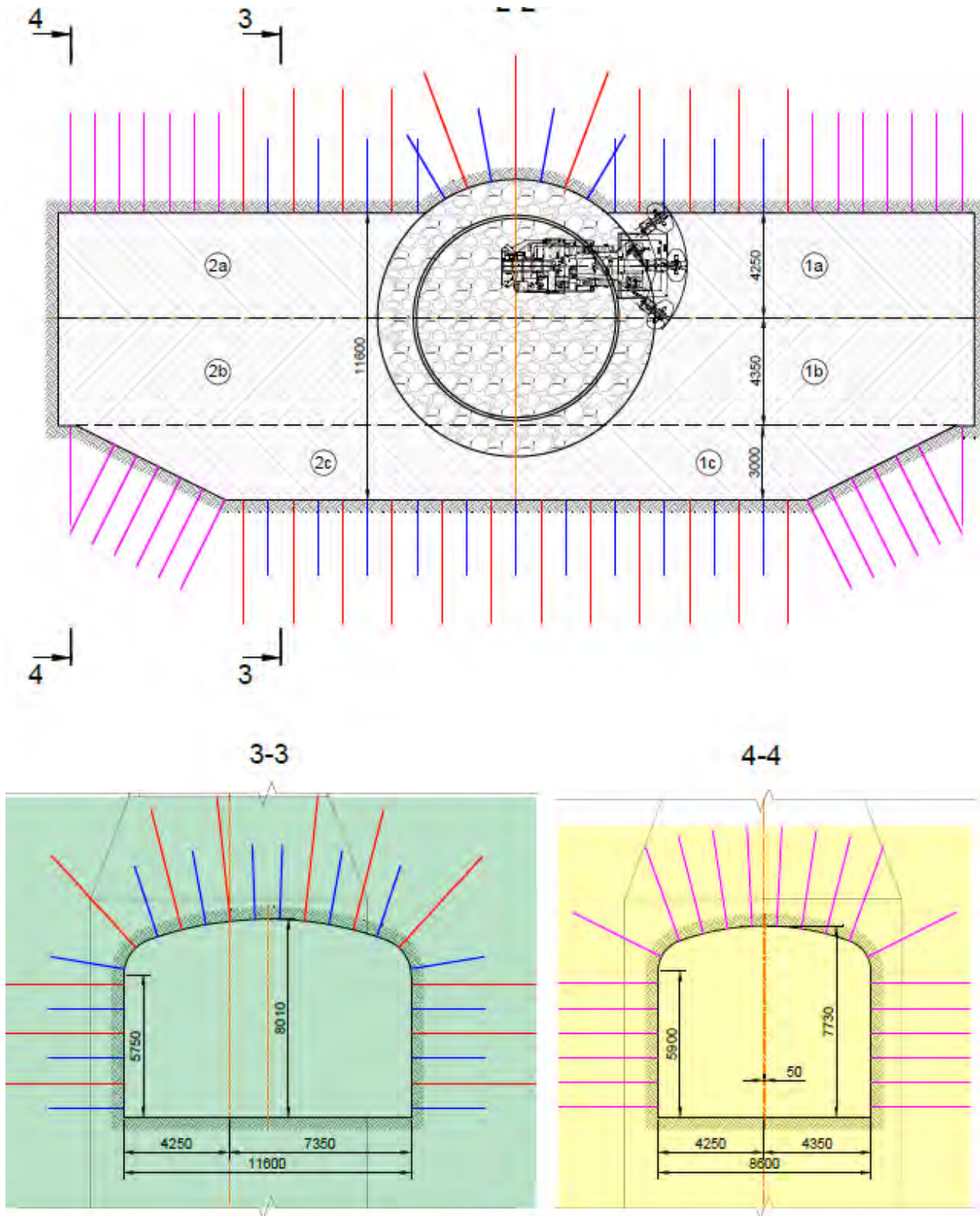


Figure 11; Service and Production Shaft inset dimensions

Once the insets have been constructed, shaft sinking will continue into the next phase with the ballast material excavated by the SBR brought to the surface and temporarily stockpiled at the batch plant ready for future re-use in the lateral development. This lateral development will to be detailed in a future Phase.

It is worth noting that there is an option to construct the insets at this stage, as described above, or at a later stage, as part of the lateral development.

### 3.7 Simultaneous operation of the concrete batch plants

In order to support simultaneous concreting and shotcreting activities, it will be necessary to operate the main batch plant and reserve batch plant at the same time. This will be required 24/7 to support the sinking and inset development operations.

### 3.8 Revised lattice mast specification

Revised security infrastructure is proposed, comprising CCTV lattice masts across the established platform areas of site as shown on the Masterplan (40-ARI-WS-7100-CI-22-01098). There will be 1 No. 11m mast and 4 No. 6m masts. The masts will only hold CCTV cameras, no lighting.

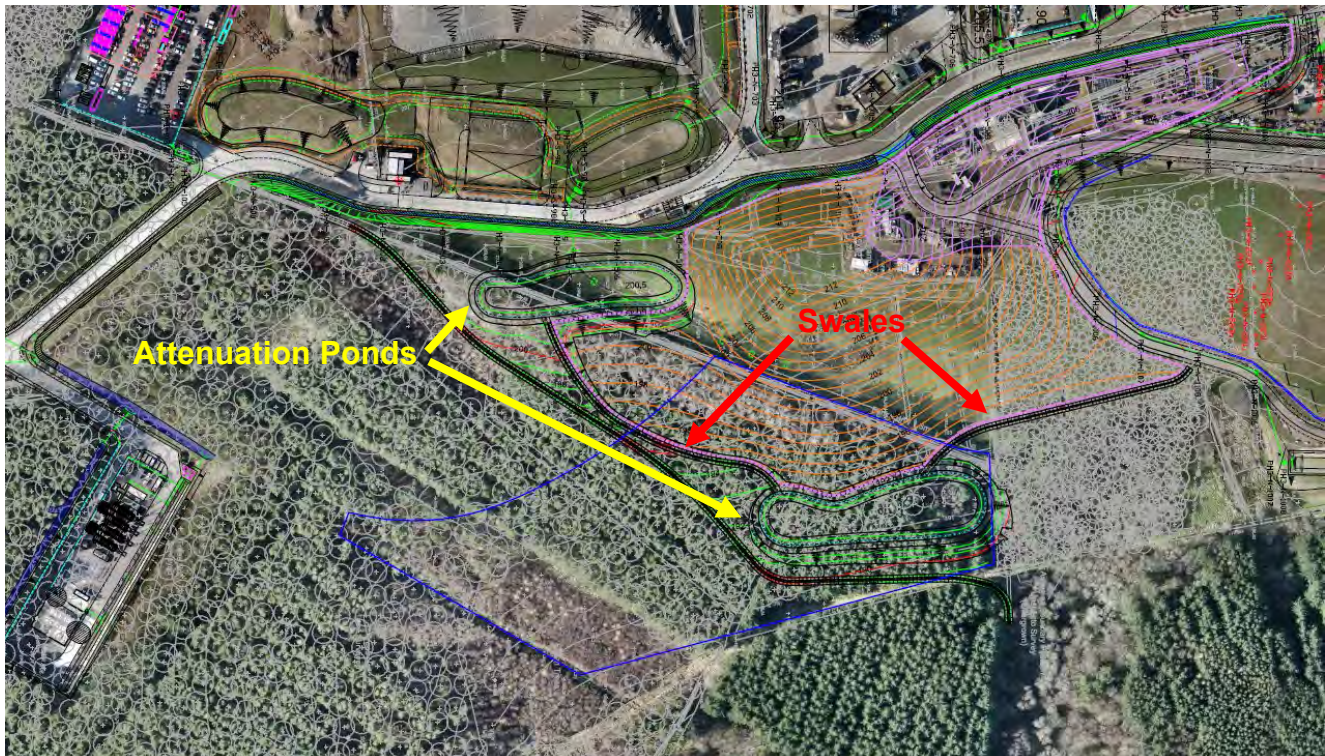
This will supersede the lattice masts that were previously approved under Phase 16.



*Figure 12; Proposed CCTV lattice mast*

### 3.9 Creation of Bund E attenuation ponds

As part of the Phase 17 works, attenuation ponds and swales will be created towards the southern end of the site to prepare for the development of earthworks Bund E, to be detailed in a future Phase. These will replace an existing pond in this location. These will be constructed in the revised area cleared of trees detailed in Phase 11, as shown on the Masterplan (40-ARI-WS-7100-CI-22-01098). There will be two ponds, approximately 1m deep excavated into the clay subsoil, that will be connected by a swale and outfall to the existing surface water swale and attenuation ponds to the northeast of the site, as shown in Figure 13. Topsoil and subsoil excavated for the ponds will be retained on site in temporary stockpiles.



The perimeter security fencing will be re-aligned to accommodate these ponds.

*Figure 13; Bund E attenuation ponds*

### 3.10 Relocation of workshops

The workshop arrangement and containers detailed in Phase 14 will be reconfigured as per Figure 14 in this Phase. This is to provide an effective working area for the maintenance teams supporting the shaft sinking operations at both the Service Shaft and Production Shaft.

The main workshop canopy type structure will be approximately 25m x 15m in area with a maximum height of 6m and there will be an adjacent fabrication shop canopy type structure 15m x 10m in area with a maximum height of 6m. The existing canopy structure will be retained as a hose making facility. To the west and the north of the area, storage and workspace containers will be positioned as shown. The containers to the north will double stacked to provide additional space, to a maximum height of 6m. Access stairs and a walkway platform will be provided, with safety critical access lighting that will be sensor controlled for minimal visibility in the hours of darkness. All structures and containers will be RAL6008 or similar in colour and have access doors positioned to face into site. Four of the upper storey containers will be used as workspaces for the area managers and any windows fitted with shutters to be closed in the hours of darkness.

In addition, a briefing room unit approximately 6m x 6m in area, 3m high, will be required adjacent to the shaft offices. For this, a concrete base slab will be constructed onto the platform. The unit will be RAL6008 or similar in colour, have shutter on any windows and be lit with low level perimeter lighting for safety.



**Figure 14; Relocation of Workshops**

### 3.11 Relocation of process water tank

Process water is required on site for construction needs. Currently, this is stored in three 500m<sup>3</sup> buffer tanks located behind the existing warehouse building. In this phase, these will be replaced with a 1500m<sup>3</sup> tank located adjacent to the wastewater treatment plant tanks as shown by the polygon in Figure 15. The tank will be approximately 18m diameter, 6m in height, and will be installed onto a concrete base with surrounding full capacity bund wall. The existing tanks will be removed, and the pumps and interconnecting pipework will be relocated.



*Figure 15; Process water tank relocation*

### **3.12 Covered materials handling area**

In this Phase, a temporary covered area will be constructed on the materials handling platform extension, approved in Phase 16, as shown on the Masterplan (40-ARI-WS-7100-CI-22-01098). The structure will have a footprint of approximately 500m<sup>2</sup>, with a maximum height of 10m. The walls will be built up using concrete precast lego-blocks made at the on-site concrete batching plant and the roof canopy will be a RAL 6008 Brown Green or similar steel framed, fabric dome shelter. Surface water run-off will be directed into gutters that will drain directly into the surface water swales.

### **3.13 Installation and use of ventilation heater**

A temporary air heater is required to heat the air prior to its inlet to the ventilation fan at the MTS shaft to improve underground working conditions. For this, an Indirect Diesel Fired (IDF) heater will be installed adjacent to the ventilation supply fan as shown in Figure 16.

The IDF heater will use an oil-fired burner that exhausts through a heat exchanger that is cooled by the air stream that requires heating. This method keeps the heated diesel exhaust gases separate from the ventilation air and allows a flow of heated air to be generated without being contaminated by products of combustion. The diesel exhaust will be ducted to a safe location.

To fuel the IDF, an oil storage tank is also required. This will be a metal 3000-liter tank, incorporating a bund and overfill protection, located adjacent to the IDF. It is expected to be filled weekly.

The IDF data states a sound level of 76.5dB(A) at 1m.

The unit will only be operational whilst the ambient air temperature is less than 15 degrees Celsius. Once the ambient air temperature increases sufficiently it will be off hired.

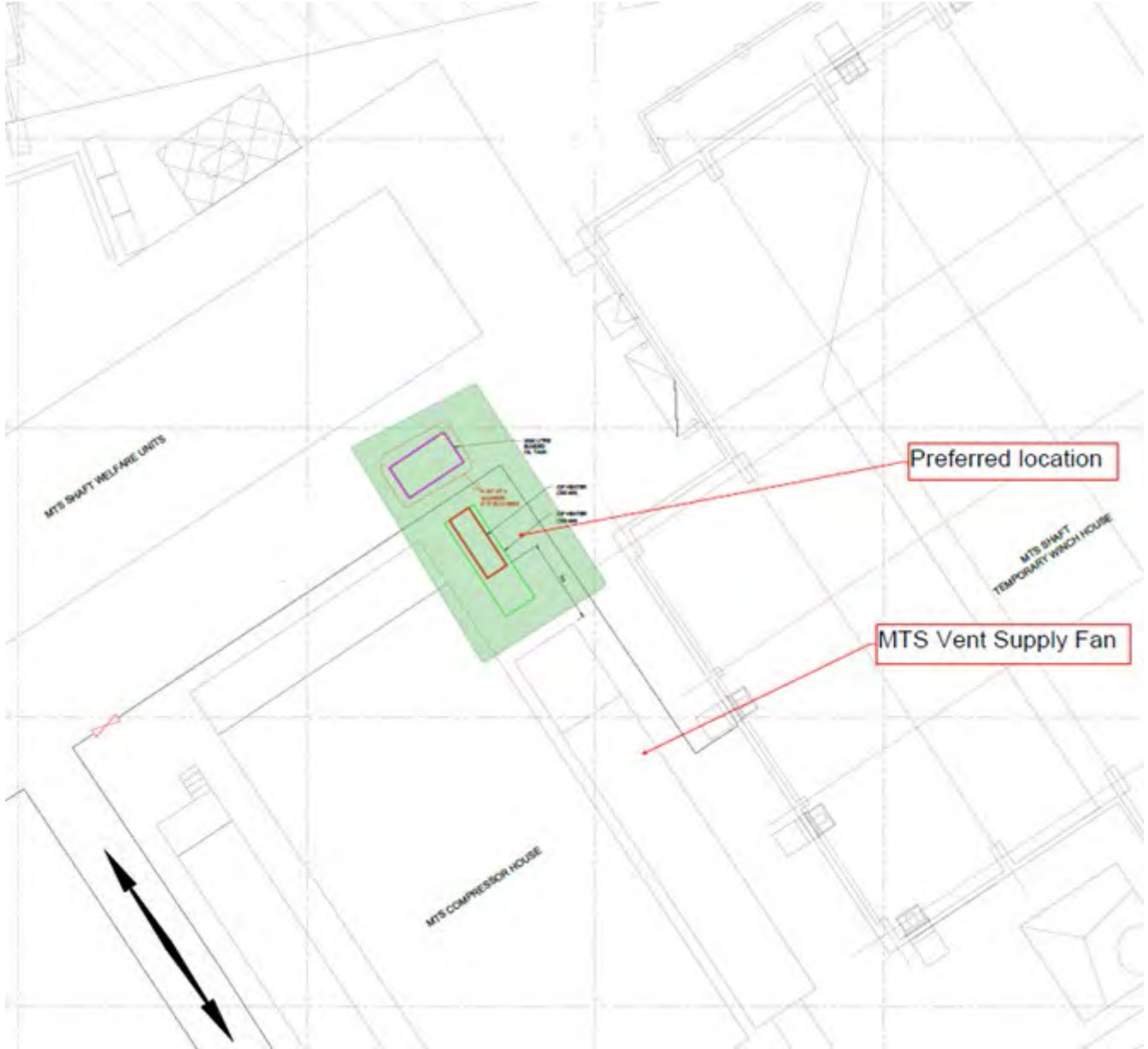


Figure 16; IDF Heater & Fuel storage tank