

SIRIUS MINERALS PLC - DISCHARGE OF PLANNING CONDITIONS FOR PLANNING APPLICATION NYM/2014/0676/MEIA, THE YORK POTASH PROJECT

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| CONDITION | NYMNPA 46 |
| REPORT | REMEDIAL ACTION PLAN |
| SITE | PHASE 2 SITE PREPARATORY WORKS AT DOVES NEST FARM MINESITE, NORTH YORKSHIRE |

1433DevOR30Rev2/January 2017

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|-------------------------|--|---------------|----------------|-----------------|
| PROJECT NUMBER | 1433 | | | |
| PROJECT TITLE | YORK POTASH PROJECT | | | |
| CLIENT | Sirius Minerals plc 7-10 Manor Court Manor Garth SCARBOROUGH YO11 3TU | | | |
| REPORT TITLE | Remedial Action Plan for the Phase 2 Site Preparatory Works At Doves Nest Farm Minesite, North Yorkshire | | | |
| REPORT REFERENCE | 1433DevOR30 | | | |
| | | | | |
| REVISION | Date | Author | Checked | Approved |
| Rev00 | 22/12/2016 | CB | RIL | RIL |
| Rev01 | 09/01/2017 | CB | RIL | RIL |
| Rev02 | 13/01/2017 | CB | RIL | RIL |

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REMEDIAL ACTION PLAN FOR THE PHASE 2 SITE PREPARATORY WORKS AT DOVES NEST FARM MINESITE, NORTH YORKSHIRE

1 INTRODUCTION

1.1 General Background

This document has been prepared on behalf of Sirius Minerals plc and provides the Remedial Action Plan for the Phase 2 Site Preparatory Works at the Doves Nest Farm Minesite (Phase 2 Works). This is required to satisfy Condition 46 of the North York Moors National Park Authority (NYMNP) planning permission NYM/2014/0676/MEIA.

This document details the remedial actions required should monitoring, undertaken in accordance the Ground and Surface Water Monitoring Scheme for the Phase 2 Works (Ref. 1), identify breaches of the defined Trigger Values. The scope of the Phase 2 Works is detailed in Section 1.3.

Subsequent revisions of this document will be issued to present the Remedial Action Plan to be adopted for future phases of the development, dates of which are to be confirmed.

1.2 Objectives

The purpose of this document is to:-

- Provide a list of individuals (and their contact details) who are responsible for identifying and investigating a trigger value breach;
- Provide a procedure for investigating and escalating a trigger value breach, and for informing the appropriate regulator (the Environment Agency);
- Provide a list of individuals and organisations to be informed in the event of a breach or a confirmed departure from the established baseline;
- Detail actions to protect the environment in the event of a suspected or confirmed environmental incident or departure from the established baseline.

1.3 Phase 2 Works

The Phase 2 Works comprise:-

- Construction of an acoustic fence / environmental barrier and installation of fencing, gates and security, as shown on Arup Drawing YP-P10-DNF-CX-004;
- General site clearance including tree clearance for the Welfare Road and scrub clearance, as shown on Arup Drawing YP-P10-DNF-CX-009;

- Excavation and construction of the two tiered working platform with a western upper level at around 204m Above Ordnance Datum (AOD) and an eastern lower level at around 200m AOD, as shown on Arup Drawing YP-P10-DNF-CX-004;
- Excavation and construction of site roads, as shown on Arup Drawing YP-P10-DNF-CX-004;
- Construction of temporary and permanent soil mounds including the environmental screening bund (Bund A) along the western boundary, as shown on Arup Drawing YP-P10-DNF-CX-010;
- Construction of surface water drainage, a silt removal facility and an attenuation pond with outfalls to an existing drain, as shown on Arup Drawing YP-P10-DNF-CD-001;
- Construction of a site compound to the east of the Welfare Access Road.

1.4 Compliance with Conditions

The table below sets out the wording of Planning Condition 46 to Planning Consent Ref No. NYM/2014/0676/MEIA and details where the relevant material, to comply with this condition, has been provided within this report:-

| NYMNP A Condition 46 | Compliance with Condition 46 |
|--|-------------------------------------|
| The plan shall include: - | |
| The remedial actions to be taken in the event that any monitoring triggers of the approved Construction and Operation Phase Ground and Surface Water Monitoring Scheme area exceeded | Section 3 |
| Should any monitoring results exceed those triggers set out in the approved Construction and Operation Phase Ground and Surface Water Monitoring Scheme, the MPA, the Environment Agency and Natural England shall be informed as soon as possible and the approved Remedial Action Plan shall thereafter be implemented as soon as possible and within one month of the relevant monitoring trigger having been exceeded. | Sections 2, 3, 4 & 5 |
| Following remedial action, monitoring in accordance with the Construction and Operation Phase Ground and Surface Water Monitoring Scheme will be undertaken in accordance with the timescales to be submitted to and approved by the MPA in consultation with the Environment Agency, the results of which shall be reported to the MPA within four weeks of the monitoring date. | Section 2, 3, 4 & 5 |

2 RESPONSIBILITIES AND CONTACTS

2.1 Parties Responsible for Identifying and Investigating a Trigger Value Breach

Presented overleaf are details of the individuals and their contact information for the parties responsible for identifying and investigating a Trigger Value breach.

| CONTACT NAME | POSITION | COMPANY | CONTACT DETAILS | RESPONSIBILITY |
|------------------|------------------------------|--------------------------------|--|---|
| Robert Staniland | Environment Manager | Sirius Minerals | 7-10 Manor Court Manor Garth Scarborough YO11 3TU +44 7775585456 | Coordination of Environmental Activities within the Development |
| Chris West | Operation / Delivery Manager | North Midland Construction PLC | Nunn Close Huthwaite Sutton In Ashfield NG17 2HW 07970 136524 | Site Preparation Contract Management |
| Chris Davis | Project Manager | | Nunn Close Huthwaite Sutton In Ashfield NG17 2HW 07712 324723 | Coordination of Site Works and Implementation of Remedial Actions |
| Selina Morson | Environmental Manager | | Nunn Close Huthwaite Sutton In Ashfield NG17 2HW 01623 515008 | Coordination of Environmental Activities within the site |
| TBC | Environmental Engineer | TBC | TBC | Coordination and reporting on monitoring and advising and recording of remedial actions |

2.2 Parties to be Informed in the Event of a Breach/Departure from Baseline Conditions

In accordance with Condition 46 of planning permission NYM/2014/0676/MEIA, the following individuals and organisations are to be informed in the event of a breach or a confirmed departure from the established baseline conditions:-

| CONTACT NAME | POSITION | COMPANY/ REGULATORY BODY | CONTACT DETAILS |
|------------------|--------------------------------|--|---|
| Mark Hill | Head of Development Management | North York Moors National Park Authority | The Old Vicarage Bondgate Helmsley York North Yorkshire YO62 5BP |
| Nick Peder | Planning Liaison officer | Environment Agency | Lateral 8 City Walk Leeds LS11 9AT |
| TBC | Natural England representative | Natural England | TBC |
| Robert Staniland | Environment Manager | Sirius Minerals | 7-10 Manor Court Manor Garth Scarborough YO11 3TU |
| TBC | Director of Operations | Phase 2 Contractor TBC | TBC |

3 PROCEDURE FOR EVALUATING BREACHES IN TRIGGER VALUES

3.1 General

A Ground and Surface Water Monitoring Scheme (Ref. 1) has been prepared that details the monitoring requirement for the Phase 2 Works. That document details the groundwater, spring water, surface water and ecological monitoring to be undertaken to identify if physical or chemical impacts are occurring from the Phase 2 Works.

The Ground and Surface Water Monitoring Scheme (Ref. 1) details the Control and Compliance Trigger Values that the monitoring data will be assessed against.

Where an exceedance of the Control and Compliance Trigger Values occurs, the following four stage procedure will be carried out to evaluate and record the remedial actions required:-

- Stage 1 - Inspection / Monitoring Appraisal
- Stage 2 - Consultation with Project Manager and Planning of Remedial Actions
- Stage 3 – Implementation of Remedial Actions
- Stage 4 – Reporting

The following sections detail the specific assessment procedures that will be undertaken, with regard to the individual groundwater, spring, ecological and surface water monitoring programme, and the remedial actions that will be considered.

Section 4 presents details of the reporting procedures that will be adopted to record the assessment, design and implementation of the remedial actions determined necessary.

Section 5 presents details of the timescale of the reporting to the relevant parties identified in Section 2.2.

3.2 Groundwater Levels

3.2.1 Groundwater Levels Assessment Procedure

Table 1 Appendix 1, presents the procedure for assessing exceedances of groundwater level Trigger Control and Compliance values at the groundwater level monitoring points during the Phase 2 Works. It presents a summary of the sequence of activities and respective timescales for each stage, for which details are provided below.

3.2.2 Monitoring Appraisal

The purpose of the groundwater level monitoring strategy is to detect physical effects during the Phase 2 Works on groundwater levels within the Secondary A Aquifers that could impact on the hydrogeologically supported flora within the Spring Flush and flows from Moorside Farm spring water supply (MF2). In the event of an adverse impact being detected, the objective of this appraisal is to determine the cause, so that appropriate remedial measures can then be

adopted should the impacts be attributable to groundwater level changes induced by the Phase 2 Works.

Groundwater levels will be monitored in the Moor Grit and Scarborough aquifers using the series of monitoring wells, aligned north to south between the Shaft Platform development and the Spring Flush and Moorside Farm target receptors, as listed below and shown on Drawing 1433DevOD242 Appendix 1. Groundwater levels will also be measured within the superficial deposits in the Spring Flush area using the series of monitoring wells as listed below and shown on Drawing 1433DevOD242 Appendix 1, to identify potential variations in the soil moisture conditions in comparison with the baseline conditions.

| Monitoring Well | Historical BH No. | NGR Coordinates | Purpose |
|--|---|--|---|
| GW132 GW132B GW132C GW132D GW132E | HG112 HG112B HG112C HG112D HG112E | 488933.66, 504800.88 488940.91, 504799.24 489042.06, 504807.25 489038.61, 504798.07 489035.65, 504791.81 | Monitor changes in the groundwater levels within the Superficial deposits within the Spring Flush and Moorside Farm Spring target receptors. |
| GW122A (SAC1) GW124 (SAC3) GW125 (SAC4) GW129 (SAC5) GW118 GW130 (SAC6) GW131 (SAC7) GW116 (SAC8) GW133A | HG105A -- -- -- HG122 -- -- -- HG111A | 489138.52, 505493.71 489184.48, 505377.01 489215.70, 505221.78 489219.39, 505118.00 489229.54, 505094.83 489236.10, 504928.69 489246.93, 504815.46 489270.51, 504711.77 489211.10, 504706.07 | Monitor changes in the groundwater levels within the Moor Grit between the Shaft Platform development and the Spring Flush and Moorside Farm Spring target receptors. |
| GW126A GW117 GW139 | HG108A -- HG5 | 489132.71, 505164.63 489236.66, 505102.82 489240.44, 504965.21 | Monitor changes in the groundwater levels within the Scarborough Formation between the Shaft Platform development and the Spring Flush and Moorside Farm Spring target receptors. |

Manual dip groundwater levels will be measured and diver data loggers downloaded on a weekly basis. The results will be compared with baseline data and the Control and Compliance Trigger Values to identify any exceedances.

3.2.3 Consultation with Project Manager and Planning Remedial Actions

The recorded breach of any Trigger Values will be evaluated by the Environmental Engineer in consultation with the Project Manager to determine the cause of the breach and the appropriate course of remedial action that will be taken.

A breach of the groundwater level Trigger Values for individual boreholes will be assessed in conjunction with the rainfall data for the preceding period, to ascertain whether the breach is due to natural climatic conditions or as a result of the Phase 2 Works.

The Trigger Value exceedance will be classed as either:-

- A natural (non-site related) exceedance of the Control Trigger Value, caused by natural variations in rainfall (i.e. low rainfall).
- An exceedance of the Control Trigger Value, caused by the Phase 2 Works.

- An exceedance of the Control Trigger Value, caused by non Phase 2 related offsite works.

Where the exceedance is found to be caused by natural climatic conditions or non Phase 2 related works, no further remedial actions will be required.

The remedial actions will be designed specific to the degree in exceedance (i.e. physical change in groundwater levels), the location where the exceedance was recorded, and the likely cause of this breach in Trigger Values.

3.2.4 Implementing Remedial Actions

Where remedial actions are specified by the Environmental Engineer, related to a breach in Trigger Values, they will be advised to the Director of Operations, the Environment Manager and the Regulators (as detailed in Section 2.2), and implemented by the Project Manager.

Remedial actions for a breach of Control Trigger Values may include, but not be limited to, the installation of a re-infiltration trench into the Moor Grit.

Remedial actions for a prolonged exceedance of the Compliance Trigger Value will be considered in association with exceedances of any spring flow Trigger Values or Ecology Trigger Values. They may include, but not be limited to, the above remedial actions, but may also include supply of tankered water to Moorside Farm and injection of waters into the Moor Grit aquifer to support the Spring Flush.

3.3 Groundwater Quality

3.3.1 Groundwater Quality Assessment Procedure

Table 2 presents the procedure for assessing exceedances of groundwater quality Trigger Control and Compliance values at the groundwater quality monitoring points, during the Phase 2 Works. It presents a summary of the sequence of activities and respective timescales for each stage, for which details are provided below.

3.3.2 Monitoring Appraisal

The purpose of the monitoring strategy is to detect chemical impacts on groundwater quality within the Secondary A Aquifers during the Phase 2 Works. In the event of an adverse impact being detected, the objective of this appraisal is to determine the cause, so that appropriate remedial measures can be adopted should the impacts be attributable to pollution emanating from the Phase 2 Works. As detailed in the Hydrogeological Risk Assessment (Ref 3), the principal potential cause of pollution from the construction works is expected from surface water runoff in the Shaft Platform and compound areas.

Groundwater quality sampling will be undertaken at locations up hydraulic gradient of the receiving aquifer and locations down hydraulic gradient within that aquifer of the potentially polluting activities associated with the Phase 2 works at the monitoring locations listed below. Water quality at each location will be assessed individually, as well as in relation to their up and down gradient positions to the Shaft Platform, Access Roads and Compound Area.

Shaft Development Platform and Screening Bund

| Monitoring Well | | NGR Coordinates | Reason |
|-----------------|--------|----------------------|---|
| GW101 | -- | 489152.62, 505656.51 | Monitor changes in the groundwater quality within the Moor Grit up gradient of the development areas |
| GW124 (SAC3) | -- | 489184.48, 505377.01 | |
| GW125 (SAC4) | -- | 489215.70, 505221.78 | |
| GW101A | -- | 489152.93, 505650.83 | Monitor changes in the groundwater quality within the Scarborough Formation up gradient of the development areas |
| GW126A | HG108A | 489132.71, 505164.63 | |
| GW117 | -- | 489236.66, 505102.82 | |
| GW103 | -- | 489342.55, 505678.83 | Monitor changes in the groundwater quality within the Moor Grit down hydraulic gradient of the tiered Shaft Platform. |
| GW105 | -- | 489449.41, 505667.32 | Monitor changes in the groundwater quality within the Scarborough Formation down hydraulic gradient of the tiered Shaft Platform. |
| GW137 | HG2 | 489498.55, 505506.42 | Monitor changes in the groundwater quality within the Cloughton Formation down hydraulic gradient of the tiered Shaft Platform. |
| GW106 | -- | 489559.62, 505668.15 | |
| GW108 | -- | 489658.09, 505397.27 | |

Access Road and Compound Area

| Name | | NGR Coordinates | Reason |
|--------------|-------|----------------------|---|
| GW129 (SAC5) | -- | 489219.39, 505118.00 | Monitor changes in the groundwater quality within the Moor Grit up gradient of the development areas |
| GW130 (SAC6) | -- | 489236.10, 504928.69 | |
| GW117 | -- | 489236.66, 505102.82 | Monitor changes in the groundwater quality within the Scarborough Formation up gradient of the development areas |
| GW141 | HG124 | 489412.00, 504958.60 | |
| GW109 | -- | 489610.08, 505119.60 | Monitor changes in the groundwater quality within the Scarborough Formation down hydraulic gradient of the areas access road and site compound. |
| GW140 | HG120 | 489606.05, 505068.86 | |
| GW138 | HG4 | 489496.28, 505206.94 | Monitor changes in the groundwater quality within the Cloughton Formation down hydraulic gradient of the areas access road and site compound. |

Analytical testing in the field will consist of pH, temperature, electrical conductivity and total dissolved solids. Samples will be analysed at a laboratory for:-

- pH,
- conductivity,
- chloride,
- benzene,
- toluene,
- ethylbenzene,
- xylene,
- anthracene,
- benzo(a)pyrene,
- benzo(b)fluoranthene,
- benzo(g,h,i)perylene,
- benzo(k)fluoranthene,
- indeno(1,2,3-cd)pyrene,
- naphthalene and
- Total Petroleum Hydrocarbons (TPH).

Groundwater samples will be taken on a monthly basis and the results of laboratory testing will be available one week after sampling. The laboratory results will be compared with baseline data and the Trigger Control and Compliance Values to identify any exceedances.

3.3.3 Consultation with Project Manager and Planning Remedial Actions

The recorded breach of any Trigger Values and the findings of the construction works inspection will be evaluated by the Environmental Engineer in consultation with the Project Manager to determine the cause of the breach and the appropriate course of remedial action to be taken.

A natural (non-site related) exceedance of the Control Trigger Values in the up hydraulic gradient boreholes may require an adjustment of the Control Trigger value, in line with the revised baseline conditions, as described in the Ground and Surface Water Management Scheme (Ref. 1).

The remedial actions will be designed specific to the determinand that has been exceeded, the location where the exceedance was recorded, and the likely cause of this breach in Trigger Values.

3.3.4 Implementing Remedial Actions

Where remedial actions are specified by the Environmental Engineer, related to a breach in Trigger Values, they will be advised to the Director of Operations, the Environment Manager and the Regulators (as detailed in Section 2.2), and implemented by the Project Manager.

Remedial actions for a breach of Control Trigger Values may include, but not be limited to, temporarily increasing monitoring frequency to weekly, remediation of spillage site and a change in site construction practices as detailed in the Construction Environmental Management Plan (CEMP) to prevent future re-occurrence of construction related pollution.

Where the exceedance of the Compliance Trigger Value occurs down hydraulic gradient of the site, remedial actions may include modelling and installation of additional groundwater monitoring wells to evaluate the magnitude of impact at the site boundary and at the nearest down hydraulic gradient receptor. If the results of that modelling and additional monitoring show that an adverse impact is occurring in exceedance of the Compliance Trigger Value at the groundwater receptor, then groundwater remediation of the pollution source will be considered.

3.4 Spring Water Flow Rates

3.4.1 Spring Water Flow Rate Assessment Procedures

Table 3 presents the procedure for assessing exceedances of spring flow Trigger Control and Compliance Values, during the Phase 2 Works. It presents a summary of the sequence of activities and respective timescales for each stage, for which details are provided below.

3.4.2 Monitoring Appraisal

The purpose of the spring water monitoring strategy is to detect physical impacts on the spring flows, emanating from Soulsgrave Farm Spring and Moorside Farm Spring, during the Phase 2 Works. In the event of an adverse impact being detected, the objective of the appraisal is to determine the cause, so that appropriate remedial measures can be adopted should the impacts be attributable to the Phase 2 Works.

The spring flowrate monitoring will be undertaken at Soulsgrave Farm Spring and Moorside Farm Spring at a monthly frequency in the pre commencement stage; weekly through the Phase 2 Works and for one month afterwards.

The flow rate monitoring will be compared with baseline data, and the Trigger Control and Compliance levels derived from baseline data for each individual month.

3.4.3 Consultation with Project Manager and Planning Remedial Actions

The recorded breach of any Trigger Values will be evaluated by the Environmental Engineer in consultation with the Project Manager to determine the cause of the breach and the appropriate course of remedial action that will be taken.

A breach of the spring flow rate Trigger Values for Moorside Farm Spring and Soulsgrave Farm Spring will be assessed in conjunction with the rainfall data and groundwater level data for the preceding period, to ascertain whether the breach is due to natural conditions or as a result of the Phase 2 Works.

The Trigger Value exceedance will be classed as either:-

- A natural (non-site related) exceedance of the Control / Compliance Trigger Value, caused by natural variations in rainfall (i.e. low rainfall).
- An exceedance of the Control / Compliance Trigger Value caused by the Phase 2 Works.

Where the exceedance is found to be natural, no further remedial actions will be required.

The remedial actions will be designed specific to the degree of exceedance (i.e. physical change in flow rate), the location where the exceedance was recorded, and the likely cause of this breach in Trigger Values.

3.4.4 Implementing Remedial Actions

Where remedial actions are specified by the Environmental Engineer, related to a breach in Trigger Values, they will be advised to the Director of Operations, the Environment Manager and the Regulators (as detailed in Section 2.2), and implemented by the Project Manager.

Remedial actions for a breach of Spring Flow Control Trigger Values may include, but not be limited to, installation of an infiltration trench into the Moor Grit and or Scarborough aquifers.

Remedial actions for a prolonged exceedance of the Spring Flow Compliance Trigger Values will be considered in association with exceedances of any Groundwater Level Trigger Values or

Ecological Trigger Values. Such remedial actions may include, but not be limited to, the above remedial actions, supplemented by the provision of a temporary supply of tankered water to Moorside Farm or Soulsgrave Farm.

3.5 Spring Water Quality

3.5.1 Spring Water Quality Assessment Procedure

Table 4 presents the procedure for assessing exceedances of spring water quality Trigger Control and Compliance values during the Phase 2 Works. It presents a summary of the sequence of activities and respective timescales for each stage, for which details are provided below.

3.5.2 Monitoring Appraisal

The purpose of the spring water quality monitoring strategy is to detect chemical impacts on Soulsgrave Farm Spring and to Moorside Farm Spring during the period of the Phase 2 Works. In the event of an adverse impact being detected, the objective of the appraisal is to determine the cause, so that appropriate remedial measures can be adopted should the impacts be attributable to the Phase 2 Works.

The spring water quality monitoring of Moorside Farm Spring and Soulsgrave Farm Spring will be undertaken monthly in the pre commencement stage and weekly through the Phase 2 Works and for one month afterwards.

The laboratory results will be compared with the baseline and Trigger Control and Compliance values.

3.5.3 Consultation with Project Manager and Planning Remedial Actions

The recorded breach of any Trigger Values will be evaluated by the Environmental Engineer in consultation with the Project Manager to determine the cause of the breach and the appropriate course of remedial action that will be taken.

A breach of the spring water quality Trigger Values for Moorside Farm Spring and Soulsgrave Farm Spring will be assessed in conjunction with the rainfall data and groundwater quality data for the preceding period, to ascertain whether the breach is due to natural conditions or is as a result of the Phase 2 Works.

A natural (non-site related) exceedance of the Control Trigger Values in the spring water quality may require an adjustment of the Control Trigger value, in line with the revised baseline conditions, as described in the Ground and Surface Water Management Scheme (Ref. 1).

The remedial actions will be designed specific to the determinand that has been exceeded, the location where the exceedance was recorded, and the likely cause of this breach in Trigger Values.

3.5.4 Implementing Remedial Actions

Where remedial actions are specified by the Environmental Engineer, related to a breach in Trigger Values, they will be advised to the Director of Operations, the Environment Manager and the Regulators (as detailed in Section 2.2), and implemented by the Project Manager.

Remedial actions for a breach of Control Trigger Values may include, but not be limited to, remediation of spillage site / pollution source and a change in site practices, detailed in the Construction Environmental Management Plan (CEMP), to prevent re-occurrence, future spillages / pollution.

Remedial actions for a prolonged exceedance of the Compliance Trigger Value may include provision of a temporary supply of tankered water to Moorside Farm and remediation to the groundwater source supplying the spring, as set out in Section 3.2.4.

3.6 Surface Water Quality and Geomorphology

3.6.1 Surface Water Quality and Geomorphology Assessment Procedures

Table 5 presents the procedure for assessing exceedances of surface water quality Trigger Control and Compliance values during the Phase 2 Works. It presents a summary of the sequence of activities and respective timescales for each stage, for which details are provided below.

The assessment of geomorphological impacts on Sneaton Thorpe Beck is to be undertaken in a qualitative manner. Although no Trigger Control Values are set, the requirement to adopt remedial actions will be determined by comparison to observations made identifying variation from the baseline geomorphological conditions, to be determined during the pre-commencement monitoring.

3.6.2 Monitoring Appraisal

The purpose of the surface water quality and geomorphological monitoring strategy is to detect chemical and physical impacts on Sneaton Thorpe Beck during the period of the Phase 2 Works. In the event of an adverse impact being detected, the objective of the appraisal is to determine the cause, so that appropriate remedial measures can be adopted, should the impacts be attributable to the Phase 2 Works.

Surface Water Quality

Monitoring of the construction stage discharges up and down stream of the surface water drainage outfall points will be undertaken as summarised below and shown in Drawing 1433DevOD241 (Appendix 2):-

- Surface drainage discharge points from key outfalls from the construction works denoted OF1 to OF6, to monitor the water quality from the works area prior to discharge to Sneaton Thorpe Beck;

- Downstream Sneaton Thorpe Beck (STB01 to STB04) to monitor the water quality and impacts on stream geomorphology of surface drainage discharges downstream of the Phase 2 works and exiting the development site.

The surface water quality monitoring will be undertaken monthly in the pre commencement stage and weekly through the Phase 2 Works and for one month afterwards.

Analytical testing in the field will consist of pH, temperature, electrical conductivity, total dissolved solids, turbidity and visual inspection of the monitoring locations. Samples will be analysed at a laboratory for:-

- pH,
- conductivity,
- suspended solids,
- free ammonia,
- Biological Oxygen Demand (BOD),
- chloride
- benzene,
- toluene,
- ethylbenzene,
- xylene,
- anthracene,
- benzo(a)pyrene,
- benzo(b)fluoranthene,
- benzo(g,h,i)perylene,
- benzo(k)fluoroanthene,
- indeno(1,2,3-cd)pyrene,
- naphthalene,
- Total Petroleum Hydrocarbons (TPH).

Trigger Control and Compliance values are presented in Ref. 1. A Control Trigger Value will be derived for turbidity based on the initial three months monitoring data.

The surface water drainage system will be inspected on a daily basis to ensure that it is in good working order. This will include, as appropriate, inspection of the swales, filter drains and associated catch pits, ponds, oil separators and silt fences. Any visible impact on the surface water courses will be identified and considered in conjunction with the field turbidity readings and their respective background concentrations, such as cloudy discharge due to suspended solids.

The monitoring will be assessed by consideration of the construction activities, as determined from a visual site inspection of the operations, and the meteorological conditions, to identify the cause of a specific breach in Trigger Values.

Geomorphology

A geomorphological stream reconnaissance survey will be undertaken at two downstream locations (STB 01 and 02) on Sneaton Thorpe Beck on a section of the stream bank of between 10m to 30m long.

The construction phase monitoring will be assessed by comparison with the pre-commencement will baseline geomorphological conditions to establish evidence of erosion, geotechnical failure, sediment accumulation, vegetation changes, pollution/discolouration, for which remedial actions to mitigate these changes should be considered.

3.6.3 Consultation with Project Manager and Planning Remedial Actions

The recorded breach of the surface water quality Trigger Values, changes in geomorphological conditions and the findings of the inspection will be evaluated by the Environmental Engineer in consultation with the Project Manager to determine the cause of the breach and the appropriate course of remedial action that will be taken.

The remedial actions will be designed specific to the cause and form of the breach in terms of pollution, erosion, siltation or adverse impact where the exceedance has been recorded.

3.6.4 Implementing Remedial Actions

Where remedial actions are specified by the Environmental Engineer, related to either a breach in Surface Water Quality Trigger Values or to an adverse change in the stream's geomorphological conditions, they will be advised to the Director of Operations, the Environment Manager and the Regulators (as detailed in Section 2.2), and implemented by the Project Manager.

A natural (non-site related) exceedance of the Control Trigger Value at LBSW1 may require an adjustment of the Control Trigger value, in line with the revised baseline conditions, as described in the Ground and Surface Water Management Scheme (Ref. 1).

Remedial actions for a breach of Surface Water Control Trigger Values or due to an adverse change in the geomorphology of the stream may include, but not be limited to, maintenance or extension to swales, addition of check dams and silt fencing, clearance of filter drains and associated catch pits, implementation of silt fences, maintenance of ponds, and maintenance of oil separators.

Remedial actions for an exceedance of the Compliance Trigger Value or due to an adverse change in the geomorphology of the stream may include, but not be limited to, the above remedial actions, but may also include implementation of additional emergency surface water management measures including the use of additional hay/heather bales, environmentally friendly coagulant, silt busters and silt fences to reduce silt migration, the use of absorbent spill pads and booms to contain and absorb hydrocarbon contamination, and temporarily closing the penstock in the attenuation pond.

3.7 Ecology

3.7.1 Ecological Assessment Procedure

The following sections present the procedure that will be adopted for assessing exceedances of the Ecological Trigger Values during the Phase 2 Works. It presents a summary of the sequence of activities and respective timescales to assess the Trigger Values and to implement the remedial values required.

3.7.2 Monitoring Appraisal

The objective of the ecological monitoring is to determine whether the Phase 2 Works are impacting on the groundwater dependant flora in the Spring Flush. Any changes in the habitat or its diversity in this area will be compared to changes in the groundwater levels and spring flow rates monitored at Moorside Farm Spring to determine whether these changes in habitat conditions are related to hydrogeological changes.

A series of ten fixed monitoring locations for quadrat sampling will be monitored for change in National Vegetation Classification (NVC), change in percentage cover of the key indicator species and colonisation by new species.

The preconstruction baseline monitoring will be undertaken immediately prior to the start of the construction works in Q2 with a further survey being undertaken in the summer of 2017, upon completion of the Phase 2 Works. Surveys will be undertaken in spring and summer during each subsequent year of construction.

3.7.3 Consultation with Project Manager and Planning Remedial Actions

The recorded breach of any Trigger Values will be evaluated by the Environmental Engineer in consultation with the Project Manager to determine the cause of the breach and the appropriate course of remedial action that will be taken.

A breach of the Ecology Trigger Values for the Spring Flush will be assessed in conjunction with the rainfall data, groundwater level and quality data and the spring flow rate and quality data for the preceding period, to ascertain whether the breach is due to natural conditions or as a result of the Phase 2 Works.

The remedial actions will be designed to mitigate the specific Ecological Trigger Value that has been exceeded.

3.7.4 Implementing Remedial Actions

Where remedial actions are specified by the Environmental Engineer, related to a breach in Trigger Values, they will be advised to the Director of Operations, the Environment Manager and the Regulators (as detailed in Section 2.2), and implemented by the Project Manager.

Remedial actions may include, but not be limited to, installation of an infiltration trench into the Moor Grit, injection of waters into the superficial deposits, Moor Grit or Scarborough aquifers to support the Spring Flush and replanting of specific vegetation.

4 REPORTING

All breaches in Trigger Values or visually identified impacts observed and remedial actions implemented will be reported on a weekly basis during the Phase 2 Works and for 1 month thereafter by the Environmental Engineer on the standard proforma included in Appendix 3.

That report will detail the exceedance that occurred, the weekly construction activities and meteorological conditions preceding the breach, the results of the site inspection/monitoring, the established cause of the breach in Trigger Values and the remedial action specified together with the timescale for it to be implemented.

Where Control Trigger or Compliance Trigger exceedances are identified associated with the Phase 2 Works, the completed proforma will be issued to those identified in Section 2.2 within 48 hours of receipt of the laboratory results. Where visual evidence of adverse impacts associated with the Phase 2 Works are identified the inspection report and remedial action specified will be issued to those identified in Section 2.2 within 48 hours of that exceedance.

On completion of the Remedial Action, a record of the measures implemented and their effectiveness will be recorded on the proforma (Appendix 3) and issued to the relevant parties. The Project Manager will provide a copy of the report to those identified in Section 2.2 to the timescales presented in Section 4.2.6.

5 TIMESCALES

A cumulative report detailing the assessment of monitoring and inspection results, recording any breaches in Trigger Values or visually identified impacts observed and remedial actions to be implemented will be issued on a weekly basis. The reports will be issued to the relevant regulators listed in Section 2.2 where a breach in Trigger Value or an impact is visually observed.

Control Trigger Value breaches will be investigated within 1 week and the remedial action required implemented within 1 month of receipt of the monitoring results reporting the breach. Where a cloudy discharge or elevated turbidity readings exceed the Control Trigger Value, remedial action will be implemented within 48 hours.

Compliance Trigger Value breaches for spring water will be investigated, and remedial action initiated within 1 week to 1 month. Compliance Trigger Value breaches for surface water will be investigated within 48 hours and the remedial action initiated within 1 week. Compliance Trigger Value breaches for groundwater will be investigated within 1 week, and remedial action initiated within 1 month. Changes to site practices will be implemented within 1 week.

C BELL
ASSOCIATE DIRECTOR

R IZATT-LOWRY
DIRECTOR

6 REFERENCES

- 1 FWS Consultants Ltd. 2016. Ground and Surface Water Monitoring Scheme (1433DevOR29)
- 2 FWS Consultants Ltd, 2016. Hydrogeological Baseline Report for the Doves Nest Farm Minesite, North Yorkshire 2012 to 2016 (1975OR01)
- 3 FWS Consultants Ltd. 2016. Hydrogeological Risk Assessment For The Phase 2 Site Preparatory Works At Doves Nest Farm Minesite, North Yorkshire (1433DevOR27)
- 4 ESI Ltd, 2016. York Potash: Groundwater Model Update and Simulation of the Phase two Preparatory Works, Report No. 61415R5 D1

APPENDIX 1

TABLE 1 - PROCEDURE FOR ADDRESSING TRIGGER VALUE EXCEEDANCE FOR GROUNDWATER LEVELS

TABLE 2 - PROCEDURE FOR ADDRESSING TRIGGER VALUE EXCEEDANCE FOR GROUNDWATER QUALITY

TABLE 3 - PROCEDURE FOR ADDRESSING TRIGGER VALUE EXCEEDANCE FOR SPRING FLOW RATE

TABLE 4 - PROCEDURE FOR ADDRESSING TRIGGER VALUE EXCEEDANCE FOR SPRING WATER QUALITY

TABLE 5 - PROCEDURE FOR ADDRESSING TRIGGER VALUE EXCEEDANCE FOR SURFACE WATER QUALITY

Table 1 – PROCEDURE FOR ADDRESSING TRIGGER VALUE EXCEEDANCE OF GROUNDWATER LEVELS

| Procedure | Responsibility | Control Value Breach | Compliance Value Breach |
|---|--|---|--|
| | | Groundwater Levels at BHs | Groundwater Level at HG111A |
| Monitoring | Environmental Engineer | A review of the construction activities within the area of the shaft platform and the meteorological conditions, up to and during the period of exceedance. An assessment will be made to determine if the breach of ground water level trigger is a caused by : natural climatic variation due to seasonal low rainfall, the Phase 2 Works, or a non Phase 2 related cause. | A review of the construction activities within the area of the shaft platform and the meteorological conditions, up to and during the period of exceedance. An assessment will be made to determine if the breach of ground water level trigger is a caused by : natural climatic variation due to seasonal low rainfall, the Phase 2 Works, or a non Phase 2 related cause. |
| Consultation with Project Manager and Planning Remedial Actions | Environmental Engineer/ Project Manager | Evaluate findings of monitoring in conjunction with spring flow rates, groundwater levels in the superficial deposits and ecological monitoring, to determine the cause and effects of the change in baseline conditions. From this data evaluate whether a future breach in Compliance Values is likely to occur in the future and design an appropriate course of remedial action, if required. | Evaluate findings of monitoring in conjunction with spring flow rates, groundwater levels in the superficial deposits and ecological monitoring, to determine the cause and effects of the change in baseline conditions. From this data evaluate whether a future breach in Compliance Values is likely to occur in the future and design an appropriate course of remedial action, if required. |
| Implementing Remedial Actions | Project Manager/ Environmental Manager/ Environmental Engineer | If the change in the groundwater level below the Control Trigger value has arisen from an adverse impact by the Phase 2 works, details of the Remedial Actions necessary to prevent continued adverse impact will be specified. Such measures may include installation of recharge trenches. | If the change in the groundwater level below the Compliance Trigger value has arisen from an adverse impact by the Phase 2 works, details of the Remedial Actions necessary to prevent continued impact will be specified. Such measures may include installation of recharge trenches, the provision of tankered water to Moorside Farm and the injection of water into the Superficial deposits, Moor Grit or Scarborough Formation. |
| Reporting | Environmental Engineer | Report to include details of exceedance, monitoring, and remedial actions as per proforma in Appendix 3 | Report to include details of exceedance, monitoring, and remedial actions as per proforma in Appendix 3 |
| Timescale | | 1 week to identify the cause and design and implement any remedial actions required. | 1 week to identify the cause and design and implement any remedial actions required in relation to restoring domestic spring water supplies. 1 month to identify the cause and design and initiate implementation of any remedial actions required in relation to mitigating impacts on flora in the Spring Flush area of Ugglebarnby Moor. |

Table 2 – PROCEDURE FOR ADDRESSING TRIGGER VALUE EXCEEDANCE OF GROUNDWATER QUALITY

| Procedure | Responsibility | Control Value Breach | | Compliance Value Breach | |
|---|--|--|---|--|---|
| | | Groundwater Quality at Up Hydraulic Gradient BHs | Groundwater Quality at Down Hydraulic Gradient BHs | Groundwater Quality at Up Hydraulic Gradient BHs | Groundwater Quality at Down Hydraulic Gradient BHs |
| Monitoring | Environmental Engineer | A review of activities up hydraulic gradient of the shaft platform or site compound, as appropriate, will be undertaken to identify potential sources of contamination impacting on baseline groundwater quality. | A review of the construction activities within the catchment area to the shaft platform or site compound, as appropriate, will be undertaken considering the data up to and during the period of exceedance and of the meteorological conditions during the period of the breach. A visual inspection of the ongoing construction works will be carried out. Inspection of oil separators will be undertaken for hydrocarbon breaches. The visual inspection will include observations on evidence of chemical, salt, hydrocarbon spillages and leakage. | A review of activities up hydraulic gradient of the shaft platform or site compound, as appropriate, will be undertaken to identify potential sources of contamination impacting on baseline groundwater quality. | A review of the construction activities within the catchment area to the shaft platform or site compound, as appropriate, will be undertaken considering the data up to and during the period of exceedance and of the meteorological conditions during the period of the breach. A visual inspection of the ongoing construction works will be carried out. Inspection of oil separators for hydrocarbon breaches will be undertaken. The visual inspection will include observations on evidence of chemical, salt, hydrocarbon spillages and leakage. |
| Consultation with Project Manager and Planning Remedial Actions | Environmental Engineer/ Project Manager | Evaluate findings of monitoring to determine the cause of the change in baseline groundwater quality and design the appropriate course of remedial action, if required. | Evaluate findings of monitoring to determine the cause of the change in groundwater quality and design the appropriate course of remedial action, if required. | Evaluate findings of monitoring to determine the cause of the change in baseline groundwater quality and design the appropriate course of remedial action if required. | Evaluate findings of monitoring to determine the cause of the change in groundwater quality and design the appropriate course of remedial action if required. |
| Implementing Remedial Actions | Project Manager/ Environmental Manager/ Environmental Engineer | Continued monitoring of BHs to monitor plume movement through site. Consideration of up hydraulic gradient contamination in assessing down hydraulic gradient groundwater. Increase in monitoring frequency until levels return to baseline. | Remediation of site spillages Maintenance clearance of filter drains to the shaft platform areas, maintenance of oil separator, maintenance of construction vehicles Changes to working practices (CEMP). Increase in monitoring frequency until levels return to baseline. | Continued monitoring of BHs to monitor plume movement through site and installation of additional groundwater monitoring wells, where appropriate. Consideration of up hydraulic gradient contamination source in assessing down hydraulic gradient groundwater quality. Increase in monitoring frequency until levels return to baseline. | Remediation of site spillages Maintenance clearance of filter drains to the shaft platform areas, maintenance of oil separator, maintenance of construction vehicles Changes to working practices (CEMP). Modelling and installation of additional groundwater monitoring wells to demonstrate that there is no impact occurring at the site boundary and the nearest down hydraulic gradient water supply receptor. If the results of that modelling or monitoring of additional boundary monitoring wells show that an impact on the groundwater is occurring then remediation of the groundwater pollution will be considered. Increase in monitoring frequency until levels return to baseline. |
| Reporting | Environmental Engineer | Report to include details of exceedance, monitoring, and remedial actions as per proforma in Appendix 3 | | Report to include details of exceedance, monitoring, and remedial actions as per proforma in Appendix 3 | |
| Timescale | | 1 week to identify the cause and design and implement any remedial actions required. | | 1 week to identify the cause, 1 week to implement changes determined necessary to site practices and 1 month to design and initiate implementation of any pollution clean-up remedial actions required. | |

Table 3 - PROCEDURE FOR ADDRESSING TRIGGER VALUE EXCEEDANCE FOR SPRING FLOW RATE

| Procedure | Responsibility | Control Value Breach | Compliance Value Breach |
|---|--|---|---|
| | | Spring flow rates | Spring flow rates |
| Inspection | Environmental Engineer | A review will be carried out of the construction activities that have been undertaken within the area of the shaft platform and the meteorological conditions, up to and during the period of exceedance. An assessment will be made to determine if the physical change that has been recorded in the spring flow rate at either Moorside Farm Spring or Soulsgrave Farm Spring is a natural variation due to seasonal low rainfall, or an impact caused by the Phase 2 Works. | A review will be carried out of the construction activities that have been undertaken within the area of the shaft platform and the meteorological conditions, up to and during the period of exceedance. An assessment will be made to determine if the physical change that has been recorded in the spring flow rate at either Moorside Farm Spring or Soulsgrave Farm Spring is a natural variation due to seasonal low rainfall, or an impact caused by the Phase 2 Works. |
| Consultation with Project Manager and Planning Remedial Actions | Environmental Engineer/ Project Manager | Evaluate findings of monitoring to determine the cause of the change in baseline conditions, in association with the groundwater level and ecological monitoring, and design the appropriate course of remedial action, if required. | Evaluate findings of monitoring to determine the cause of the change in baseline conditions, in association with the groundwater level and ecological monitoring, and design the appropriate course of remedial action, if required. |
| Implementing Remedial Actions | Project Manager/ Environmental Manager/ Environmental Engineer | If the change in the baseline data below the Control Trigger value has arisen from an adverse impact by the Phase 2 works the Remedial Actions to prevent continued impact will be specified. Such measures may include installation of recharge trenches into the Moor Grit and Scarborough aquifers. | If the change in the baseline data below the Control Trigger value has arisen from an adverse impact by the Phase 2 works the Remedial Actions to prevent continued impact will be specified. Such measures may include installation of recharge trenches and/or provision of tankered water to Moorside Farm and Soulsgrave Farm. |
| Reporting | Environmental Engineer | Report to include details of exceedance, monitoring, and remedial actions as per proforma in Appendix 3 | Report to include details of exceedance, monitoring, and remedial actions as per proforma in Appendix 3 |
| Timescale | | 1 week to identify the cause and 1 month to undertake the design and implement remedial actions required. | 1 week to identify the cause and to provide a tankered interim water supply, if necessary, and 1 month to design and initiate implementation of any re-infiltration remedial actions required. |

Table 4 - PROCEDURE FOR ADDRESSING TRIGGER VALUE EXCEEDANCE FOR SPRING WATER QUALITY

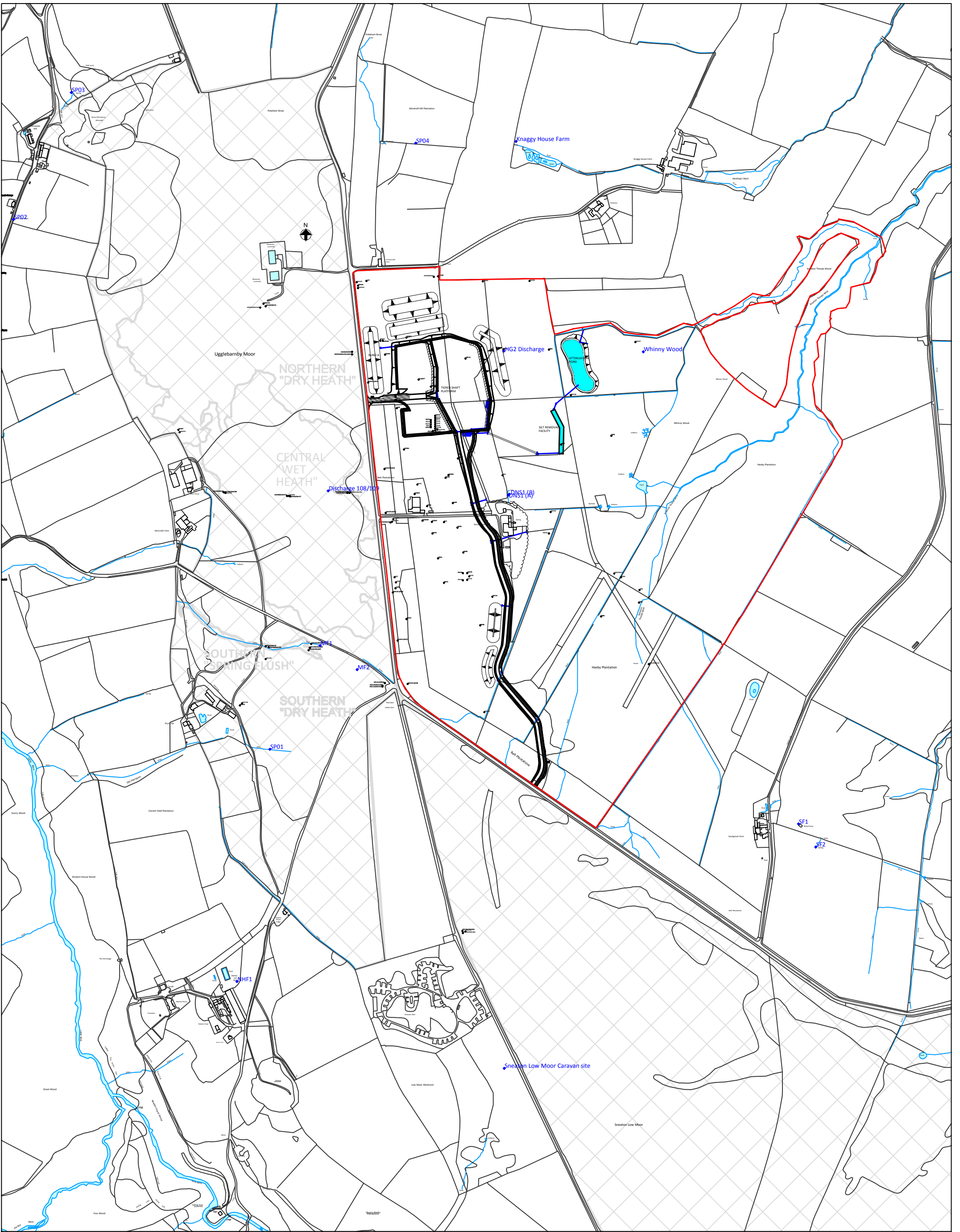
| Procedure | Responsibility | Control Value Breach | Compliance Value Breach |
|---|--|---|--|
| | | Spring water quality | Spring water quality |
| Inspection | Environmental Engineer | <p>A review will be undertaken of the construction activities within the catchment area to the shaft platform or site compound, as appropriate up to and during the period of exceedance, and of the meteorological conditions during the period of the breach.</p> <p>A visual inspection of the ongoing construction works will be carried out including inspection of oil separators for hydrocarbon breaches, and of fuel, lubricant, hydraulics and salt storage facilities. The visual inspection will include observations on evidence of cloudy discharges and a record of the turbidity value recorded in the surface water and spring discharges.</p> | <p>A review will be undertaken of the construction activities within the catchment area to the shaft platform or site compound, as appropriate up to and during the period of exceedance, and of the meteorological conditions during the period of the breach.</p> <p>A visual inspection of the ongoing construction works will be carried out including inspection of oil separators for hydrocarbon breaches, and of fuel, lubricant, hydraulics and salt storage facilities. The visual inspection will include observations on evidence of cloudy discharges and a record of the turbidity value recorded in the surface water and spring discharges.</p> |
| Consultation with Project Manager and Planning Remedial Actions | Environmental Engineer/ Project Manager | Evaluate findings of monitoring to determine the cause of the change in conditions and design the appropriate course of remedial action, if required. | Evaluate findings of monitoring to determine the cause of the change in conditions and design the appropriate course of remedial action if required. |
| Implementing Remedial Actions | Project Manager/ Environmental Manager/ Environmental Engineer | <p>Changes to working practices including management of fuel, lubricant, hydraulics and salt storage facilities</p> <p>Maintenance clearance of filter drains to the shaft platform areas, maintenance of oil separator, and maintenance of construction vehicles.</p> <p>Changes to working practices (CEMP) such as implementation of additional surface water management measures, such as additional filter drains, or oil separators.</p> | <p>Changes to working practices including management of fuel, lubricant, hydraulics and salt storage facilities</p> <p>Maintenance clearance of filter drains to the shaft platform areas, maintenance of oil separator, and maintenance of construction vehicles.</p> <p>Changes to working practices (CEMP) such as implementation of additional surface water management measures, such as additional filter drains, or oil separators.</p> <p>Temporary provision of tankered drinking water to Moorside Farm and to Soulgrave Farm, as necessary.</p> <p>Where groundwater pollution associated with the Phase 2 Works is determined to be the cause of a long term change to spring quality remediation of the groundwater pollution will be considered.</p> |
| Reporting | Environmental Engineer | Report to include details of exceedance, inspection, and remedial actions as per proforma in Appendix 3 | |
| Timescale | | 1 week to identify the cause and design and implement any remedial actions required. Remedial action of cloudy discharge or turbidity readings exceeding background quality within 48 hrs. | 1 week to identify the cause and to provide a tankered interim water supply, if necessary, and 1 month to design and initiate implementation of any pollution clean-up remedial actions required. |

Table 5 - PROCEDURE FOR ADDRESSING TRIGGER VALUE EXCEEDANCE FOR SURFACE WATER QUALITY AND GEOMORPHOLOGY

| Procedure | Responsibility | Control Value Breach | Compliance Value Breach |
|---|--|--|---|
| | | Surface Water Quality and Stream Geomorphology | Surface Water Quality and Stream Geomorphology |
| Inspection | Environmental Engineer | <p>A review will be undertaken of the construction activities within the catchment area to the shaft platform or site compound, as appropriate, up to and during the period of exceedance and of the meteorological conditions during the period of the breach.</p> <p>The visual inspection of the ongoing construction works will include inspection of oil separators for hydrocarbon breaches, inspection of surface drainage and of pond outfalls for evidence of cloudy discharges and to provide a record of the turbidity value recorded, geomorphological inspection for evidence of erosion, geotechnical failure, sediment accumulation, vegetation change, pollution and discolouration and construction litter.</p> | <p>A review will be undertaken of the construction activities within the catchment area to the shaft platform or site compound, as appropriate, up to and during the period of exceedance and of the meteorological conditions during the period of the breach.</p> <p>The visual inspection of the ongoing construction works will include inspection of oil separators for hydrocarbon breaches, inspection of surface drainage and of pond outfalls for evidence of cloudy discharges and to provide a record of the turbidity value recorded, geomorphological inspection for evidence of erosion, geotechnical failure, sediment accumulation, vegetation change, pollution and discolouration and construction litter.</p> |
| Consultation with Project Manager and Planning Remedial Actions | Environmental Engineer/ Project Manager | Evaluate findings of monitoring to determine the cause of the physical or chemical change in surface water conditions and design the appropriate course of remedial action, if required. | Evaluate findings of monitoring to determine the cause of the change in surface water conditions and design the appropriate course of remedial action if required. |
| Implementing Remedial Actions | Project Manager/ Environmental Manager/ Environmental Engineer | <p>Changes to working practices including implementation of silt fences and hay/heather bales.</p> <p>Maintenance clearance of filter drains to the shaft platform areas, maintenance of oil separator, and maintenance of construction vehicles.</p> <p>Changes to working practices (CEMP).</p> <p>Implementation of additional surface water management measures, such as additional filter drains, or oil separators.</p> | <p>Implementation of additional emergency surface water management measures including hay/heather bales, silt busters and silt fences, absorbent spill pads and boons, environmentally friendly coagulant, or additional oil separators, temporarily closing the penstock in the attenuation pond.</p> <p>Maintenance clearance of filter drains to site road, ponds including dredging or reprofiling, oil separators and of construction vehicles.</p> <p>Changes to working practices (CEMP)</p> <p>Implementation of additional surface water management measures, such as additional filter drains, clay stanks and the use of hydrobrakes to slow water flow and discharge rates down and to allow more settlement of suspended solids prior to discharge to Sneaton Thorpe Beck.</p> |
| Reporting | Environmental Engineer | Report to include details of exceedance, inspection, and remedial actions as per proforma in Appendix 3 | |
| Timescale | | 1 week to identify the cause, design and implement remedial actions required. Remedial action of cloudy discharge or elevated turbidity readings exceeding background quality are to be implemented within 48 hrs. | 48 hours to identify the cause and 1 week to design and implement the remedial actions required. |

APPENDIX 2

DRAWINGS



| | |
|---------------------------|--|
| NOTES / KEY | |
| SITE OWNERSHIP BOUNDARY | |
| NYM SAC | |
| SURFACE WATER | |
| BOREHOLES | |
| HYDROGEOLOGICAL RECEPTORS | |

| | |
|----------------------------------|---------------------|
| DRAWING TITLE | YORK POTASH PROJECT |
| HYDROGEOLOGICAL RECEPTORS | |
| PROJECT TITLE | YORK POTASH PROJECT |

| | |
|-----------------------|-----------------------|
| CLIENT | SIRIUS MINERALS PLC |
| STATUS | FINAL |
| PROJECT NUMBER | 1433Dev |
| DRAWN BY | CB |
| DATE | December 2016 |
| SCALE | 1:8,000@A3/1:4,000@A1 |
| DRG. No. | 1433DevOD231Rev.1 |

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UGGLEBARNBY
MOOR SAC

SNEATON THORPE
BECK

LITTLE
BECK

SNEATON LOW
MOOR SAC

1km

NOTES / KEY
SITE OWNERSHIP BOUNDARY 
NYM SAC 
SURFACE WATER 

DRAWING TITLE
DOVES NEST LOCATION PLAN

CLIENT
SIRIUS MINERALS PLC

STATUS
FINAL

PROJECT NUMBER
1433

PROJECT TITLE
YORK POTASH PROJECT

DRAWN BY
CB

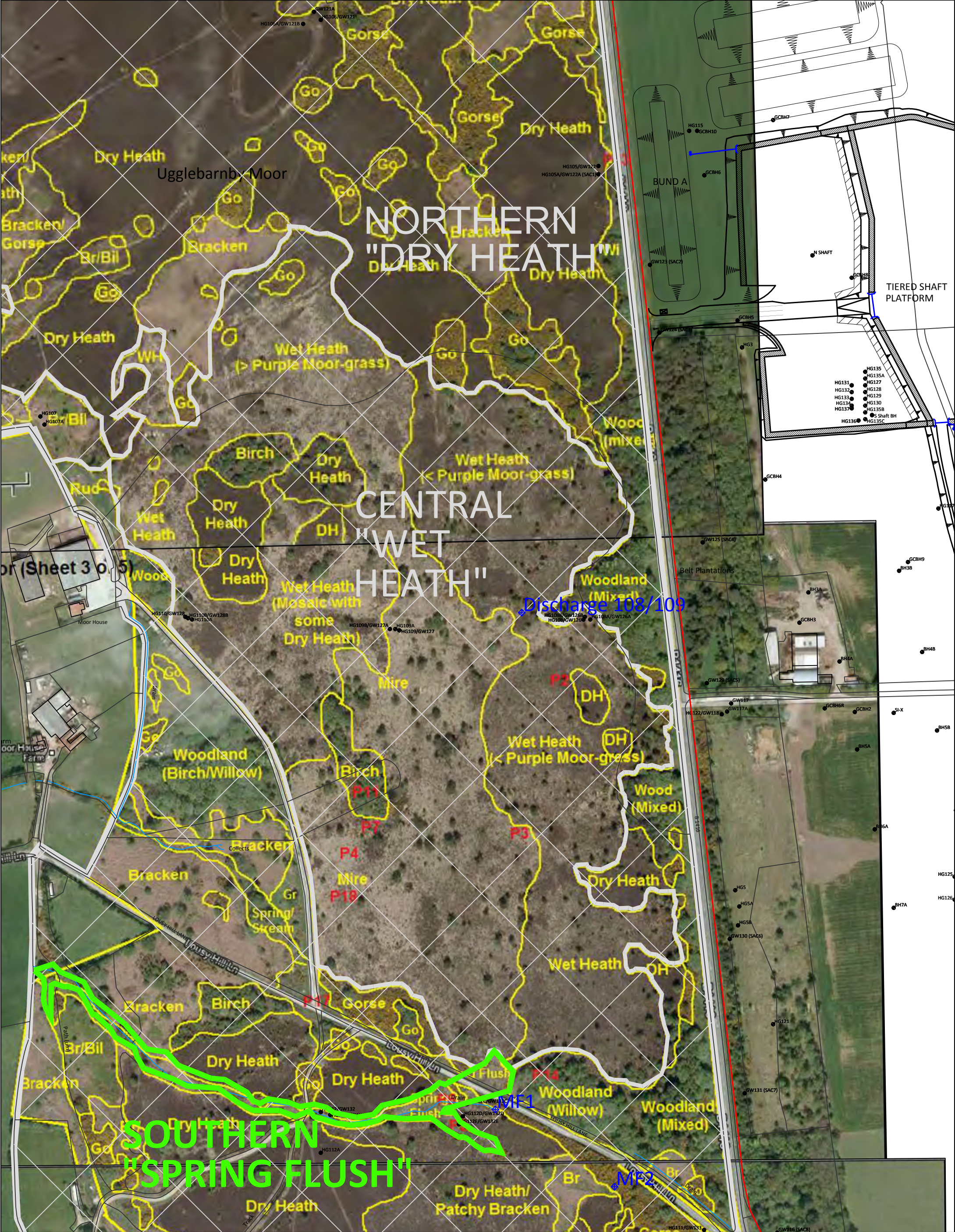
DATE
December 2016

SCALE
1:10,000 @ A3

DRG. No.
1433DevOD215Rev1

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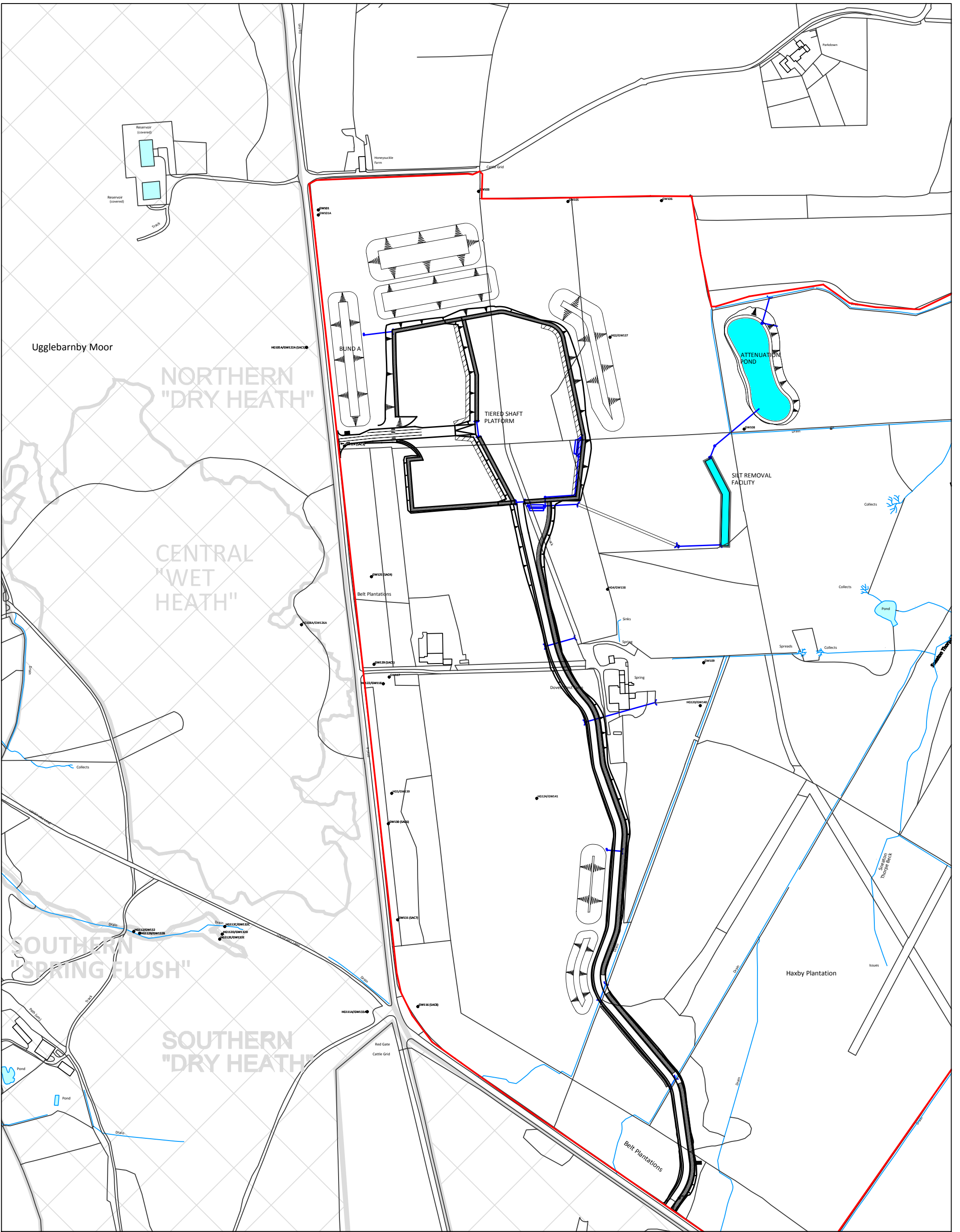
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| SURFACE WATER | |
| BOREHOLES | GCBH01 |
| HYDROGEOLOGICAL RECEPTORS | MF2 |
| SPRING FLUSH MONITORING AREA | |

| | |
|----------------------|------------------------------|
| DRAWING TITLE | SPRING FLUSH MONITORING AREA |
| PROJECT TITLE | YORK POTASH PROJECT |

| | | |
|-----------------|-----------------------|----------------------------------|
| CLIENT | SIRIUS MINERALS PLC | |
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| DRAWN BY | CB | DATE December 2016 |
| SCALE | 1:2,500@A3/1:1,250@A1 | DRG. No. 1433DevOD245 |

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| | |
|-------------------------|--|
| NOTES / KEY | |
| SITE OWNERSHIP BOUNDARY | |
| NYM SAC | |
| SURFACE WATER | |
| BOREHOLES | |

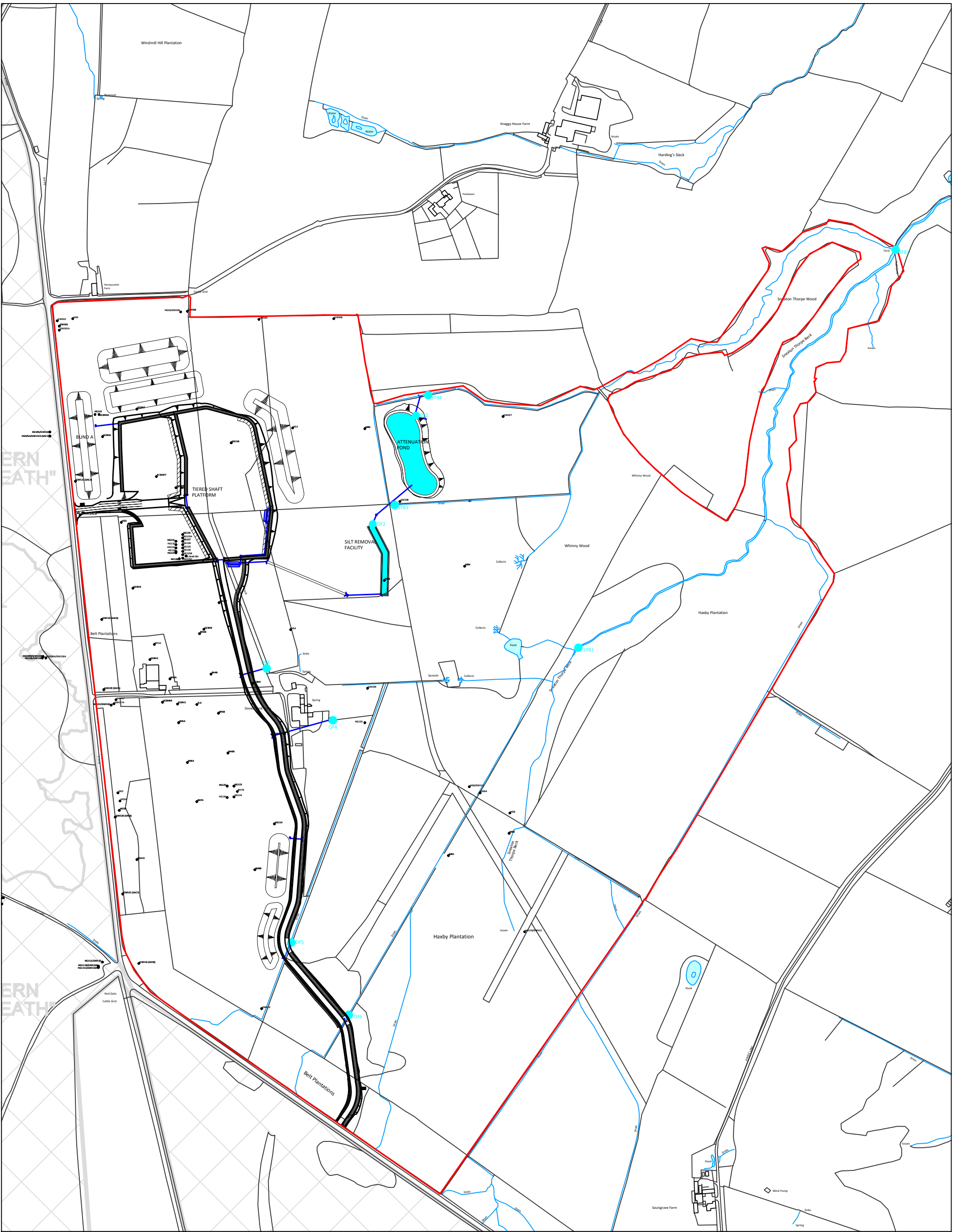
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| PROJECT TITLE | YORK POTASH PROJECT |

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| CLIENT SIRIUS MINERALS PLC | |
| STATUS FINAL | PROJECT NUMBER 1433Dev |
| DRAWN BY CB | DATE December 2016 |
| SCALE 1:4,000@A3/1:2,000@A1 | DRG. No. 1433DevOD242 |

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| |
|---|
| NOTES / KEY |
| SITE OWNERSHIP BOUNDARY — |
| NYM SAC |
| SURFACE WATER — |
| BOREHOLES + GCBH01 |
| SURFACE WATER MONITORING LOCATIONS ● OF1 |

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| SURFACE WATER MONITORING LOCATIONS |
| PROJECT TITLE |
| YORK POTASH PROJECT |

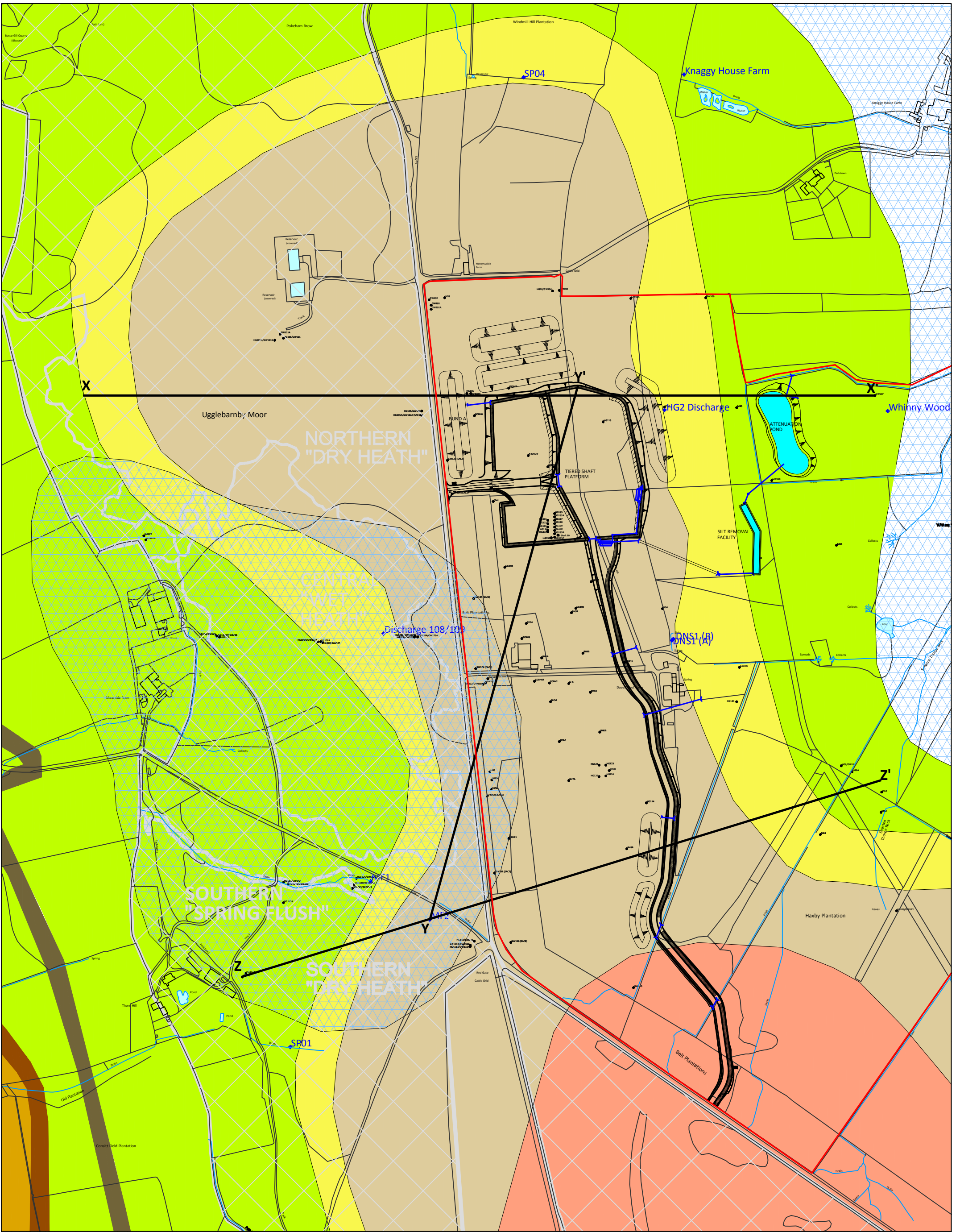
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| DATE | December 2016 |
| SCALE | 1:5,000@A3/1:2,500@A1 |
| DRG. No. | 1433DevOD241 |

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| | | | | | | | |
|--|---|--|---|--|--------------------------------------|----------------------------------|--|
| NOTES / KEY SITE OWNERSHIP BOUNDARY ——— NYM SAC ——— SURFACE WATER ——— BOREHOLES — GCBH01 HYDROGEOLOGICAL RECEPTORS — MF2 LINE OF CROSS SECTION CROSS SECTION X-X' DRAWING 1433DevOD220 CROSS SECTION Y-Y' DRAWING 1433DevOD217 CROSS SECTION Z-Z' DRAWING 1433DevOD236 | GEOLOGY GLACIAL TILL LONG NAB MOOR GRIT SCARBOROUGH FORMATION CLOUGHTON & SALTWICK FORMATION ELLER BECK FORMATION DOGGER FORMATION WHITBY MUDSTONE | | DRAWING TITLE GEOLOGICAL MAP AND LINE OF CROSS SECTIONS | | CLIENT SIRIUS MINERALS PLC | | |
| | | | PROJECT TITLE YORK POTASH PROJECT | | STATUS FINAL | PROJECT NUMBER 1433Dev | |
| | | | DRAWN BY CB | | DATE December 2016 | | |
| | | | SCALE 1:5,000@A3/1:2,500@A1 | | DRG. No. 1433DevOD237Rev1 | | |
| | | | | | | | |
| Merrington House Merrington Lane Industrial Estate Spennymoor County Durham DL16 7UT www.fwsconsultants.com | | | | | | | |

APPENDIX 3

RECORD OF TRIGGER VALUE BREACH AND REMEDIAL ACTIONS TO BE IMPLEMENTED

| NOTICE OF TRIGGER VALUE EXCEEDANCE AND REMEDIAL ACTIONS IMPLEMENTED | | | |
|--|--------------------------|-------------------------|--|
| Site: | Doves Nest Farm Minesite | | |
| Date: | | | |
| Inspected by: | | Site Manager: | |
| Environmental Engineer: | | Project Manager: | |
| Test data appended | Y | | |
| Report Sent to: | | | |

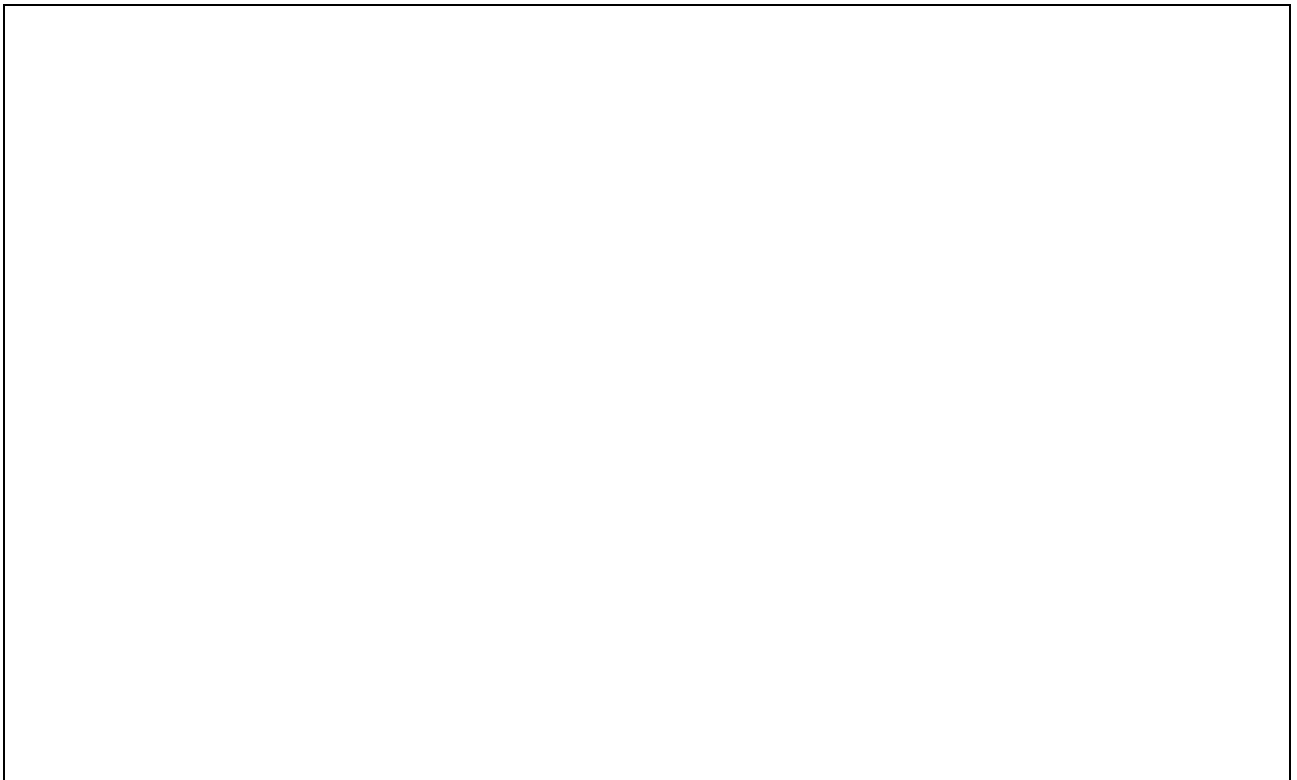
1 EXCEEDANCE – GROUNDWATER LEVELS

2 EXCEEDANCE – GROUND WATER QUALITY

3 EXCEEDANCE – SPRING FLOW RATES



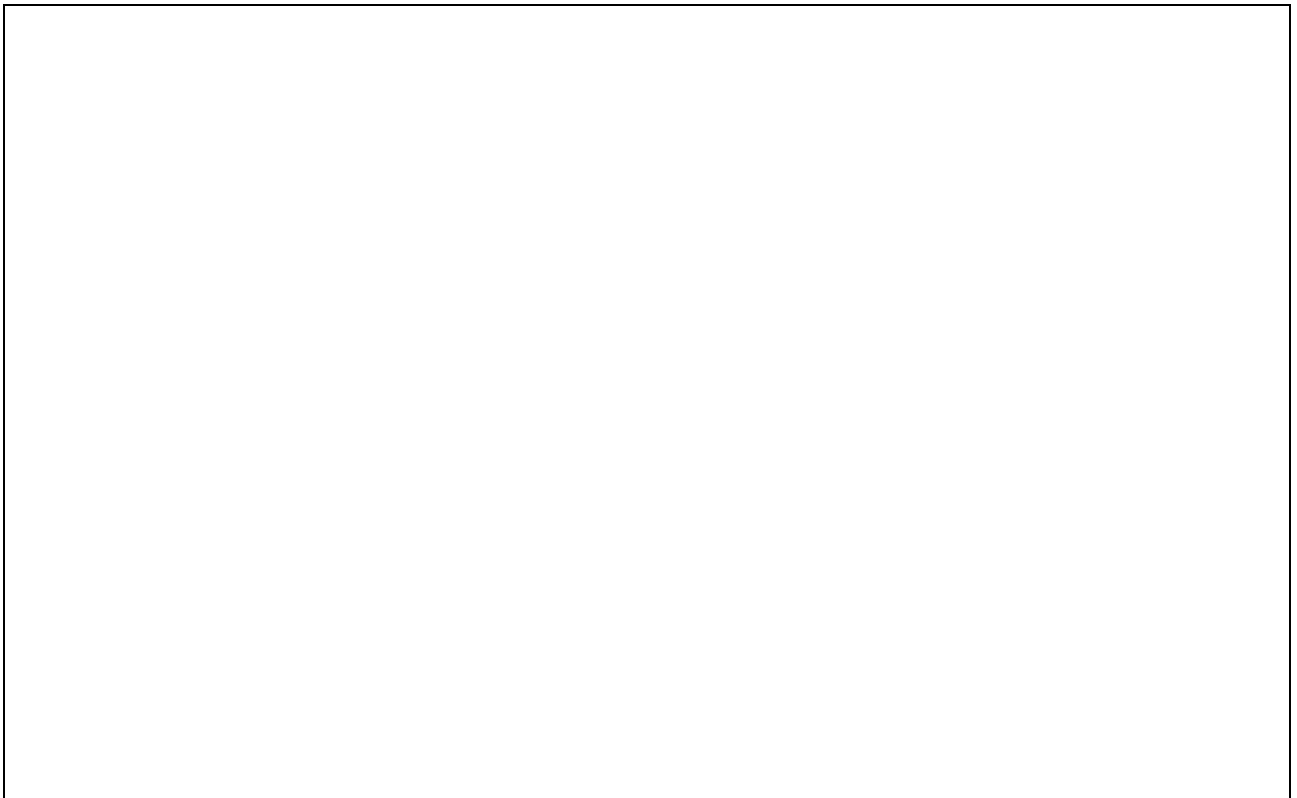
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5 EXCEEDANCE – SURFACE WATER QUALITY



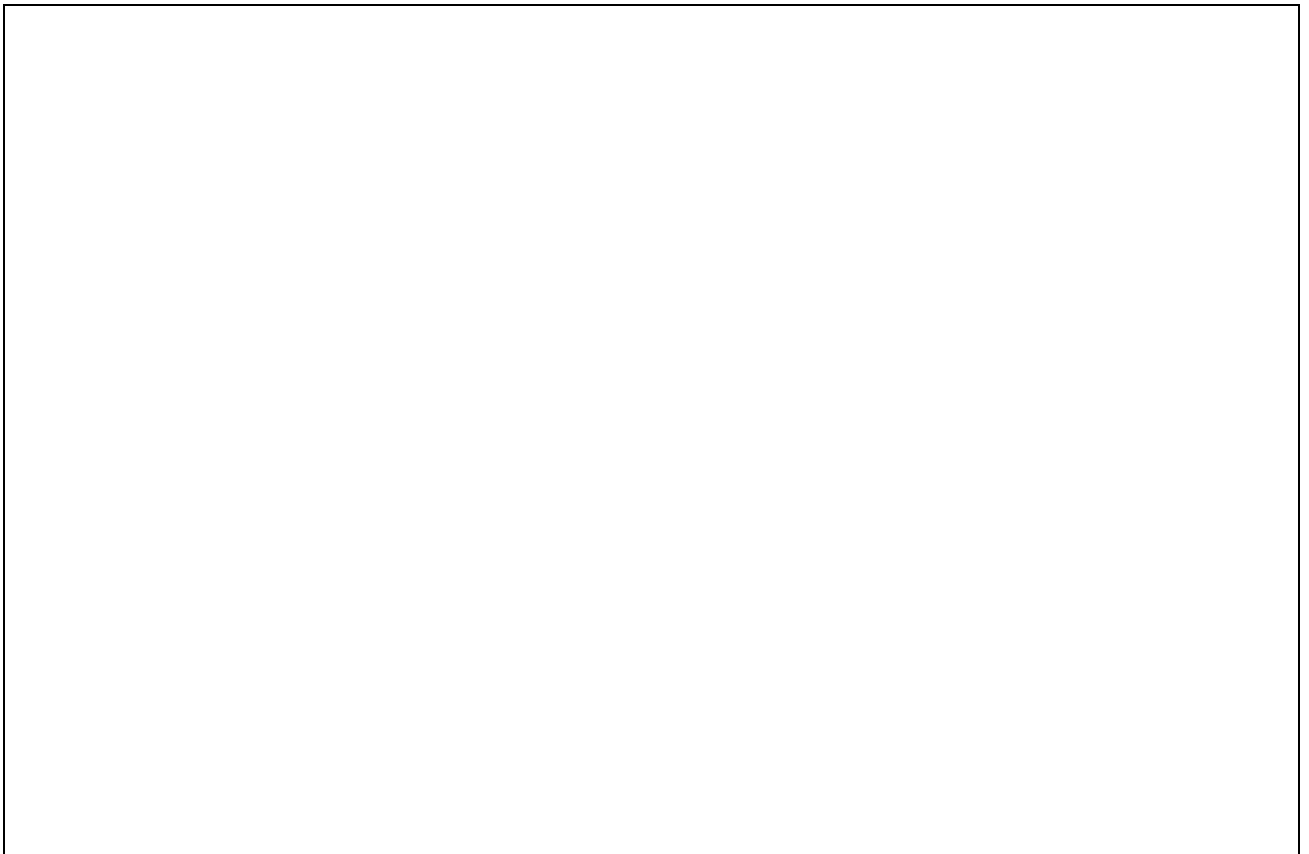
6 EXCEEDANCE – GEOMORPHOLOGY



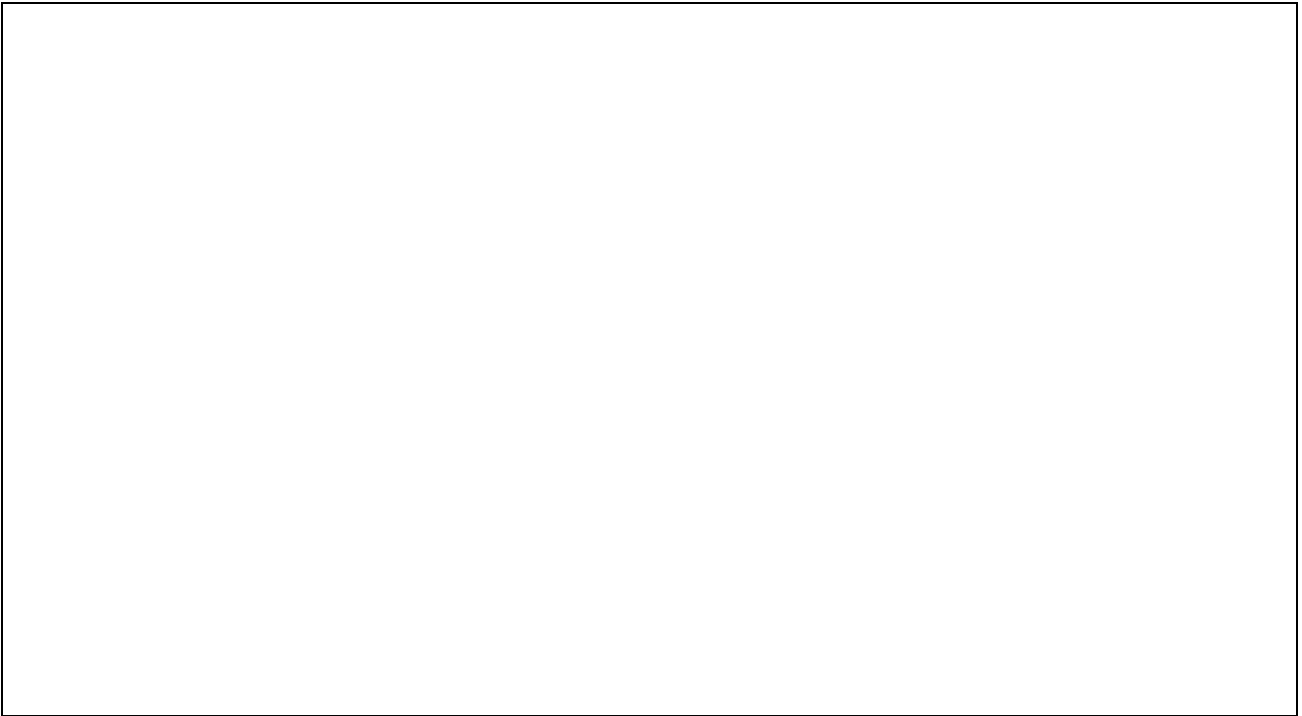
7 EXCEEDANCE – ECOLOGY



8 WEEKLY CONSTRUCTION ACTIVITIES



9 METEOROLOGICAL CONDITIONS

A large, empty rectangular box with a thin black border, intended for inputting meteorological data or observations.

10 SITE INSPECTION CHECK LIST

A large, empty rectangular box with a thin black border, intended for inputting site inspection check list details.

11 CAUSE OF BREACH

12 SPECIFIED REMEDIAL ACTIONS

| | | | |
|--------|-----------------|-------|--|
| Signed | | Dated | |
| | Project Manager | | |

13 RECORD OF REMEDIAL ACTIONS IMPLEMENTED

| | | | |
|--------|-----------------|-------|--|
| | | | |
| Signed | | Dated | |
| | Project Manager | | |