Permit with introductory note

The Environmental Permitting (England & Wales) Regulations 2010

Wolf Minerals (UK) Limited

Drakelands Mineral Processing Facility
Crownhill Down
Plympton
Devon
PL7 5BS

Permit number

EPR/GP3531EX

Drakelands Mineral Processing Facility
Permit number EPR/GP3531EX

Introductory note

This introductory note does not form a part of the permit

The main features of the permit are as follows.

This permit controls the operation of a mineral processing facility for the production of tungsten and tin ore concentrates which are produced from primary base mineral extracted from a separately authorised nearby surface mining/extraction operation (known as Hemerdon Tungsten Mine). The primary EPR listed activity taking place within the installation is Section 2.1 A(1)(a) – Roasting or sintering metal ore, including sulphide ore, or any mixture of iron ore with or without other minerals.

Tungsten and tin metal compounds are naturally present with iron oxide deposits within the extracted base mineral material, and it is the iron content within the extracted mineral that enables the final stages of separation into tungsten and tin ore concentrates.

Description of the Mineral Processing Facility

Mined mineral extracted from the mining operation is first processed in a primary crushing/screening plant to reduce the physical size of the ore material for subsequent processing. This operation takes place in an enclosed building equipped with a bag filter system to control dust emissions from the building ventilation system.

The size reduced mineral ore then undergoes a series of further physical treatment and separation processes within the main process building. These operations are essentially progressive water based suspension separation techniques which include dense media separation and froth flotation. The physical separation processes produce an ore pre-concentrate for subsequent drying and processing in the Reduction Kiln stage of the plant (the primary listed activity of the installation). The output from the Reduction Kiln is subject to further physical separation and drying operations to produce separate tungsten and tin ore concentrates which are then transported away from the site for refining into final metal products at separate off-site facilities.

Although the initial mined mineral input to the process is up to 500 tonnes per hour, the resultant ore pre-concentrate for processing through the dryer plant and Reduction Kiln elements of the process is less than 3 tonnes per hour. The dryer plant and Reduction Kiln utilise diesel or LPG fired combustion processes with the combustion flue gases being vented via 25 and 30 m flue stacks. Emissions from the Reduction Kiln are treated though a wet scrubber abatement system prior to release to air. Emissions from the pre-concentrate and tin concentrate dryer systems are treated through a bag filters prior to release to air.

The water based physical separation processes for the incoming crushed primary ore material involves high volumes and circulation flow rates through the various stages of the process (up to 2,200 m3 per hour). To maintain the process requirements within the various process stages the facility also includes a Water Treatment Plant (WTP) that can treat up to 500 m3 per hour of the circulating flow and return the cleaned process water to the system. The WTP also produces a solid filter cake waste that is collected and removed from the site for appropriate disposal. However, there are no process water discharges from the installation, the installation is a net consumer of water, mainly as a result of water losses included in the 'tailings' waste material transferred to the Mining Waste Facility (MWF).

The extended site at this location also includes a Mining Waste Facility (MWF) to accommodate the deposition of waste material produced by the mining operation and this installation. The MWF is subject to a separate permit issued by the Environment Agency and includes conditions to control the activities and operations associated with it.

The installation is centered at national grid reference SX 56884 58977 in a local area characterised by previous mining and quarrying operations. The city of Plymouth is located approximately 10 km to the south west and the town of Plympton approximately 3 km to the south west. Dartmoor SAC and South Dartmoor Woods SAC are located approximately 4 km to the north east and 5.4 km to the north west respectively. As a result of conditions included in the Planning Authorisation the nearest residential receptors will be located more than 800 m from the installation prior to any operations commencing at the site.

The status log of the permit sets out the permitting history, including any changes to the permit reference number.

Status log of the permit		
Description	**Date**	**Comments**
Application EPR/GP3531EX/A001	Duly made 05/02/14	Application for a mineral processing facility to produce tungsten and tin ore concentrates
Additional information received	01/05/14	Updated site baseline condition reference data
Response to further information request	29/05/14	Revised site boundary plan and information relating to containment measures
Additional information received	03/07/14	Information relating to the volume of 'tailings' slurry discharged to the MWF.
Permit EPR/GP3531EX issued	15/07/14	

Other Part A installation permits relating to this installation		
Operator	**Permit number**	**Date of issue**
Wolf Minerals (UK) Limited (Mining Waste Facility Permit)	EPR/FB3639RK	13/12/13
Wolf Minerals (UK) Limited (Pit dewatering water discharge permit)	EPR/QP3420XX	27/06/12

End of introductory note

Permit

The Environmental Permitting (England and Wales) Regulations 2010

Permit number
EPR/GP3531EX

The Environment Agency hereby authorises, under regulation 13 of the Environmental Permitting (England and Wales) Regulations 2010

Wolf Minerals (UK) Limited ("the operator"),

whose registered office is

New Bridge Street House
30 – 34 New Bridge Street
London
EC4V 6BJ

company registration number **06358670**

to operate an installation at

Drakelands Mineral Processing Facility
Crownhill Down
Plympton
Devon
PL7 5BS

to the extent authorised by and subject to the conditions of this permit.

Name	Date
M Bischer	**15/07/14**

Authorised on behalf of the Environment Agency

Conditions

1 Management

1.1 General management

1.1.1 The operator shall manage and operate the activities:

(a) in accordance with a written management system that identifies and minimises risks of pollution, including those arising from operations, maintenance, accidents, incidents, non-conformances, closure and those drawn to the attention of the operator as a result of complaints; and

(b) using sufficient competent persons and resources.

1.1.2 Records demonstrating compliance with condition 1.1.1 shall be maintained.

1.1.3 Any person having duties that are or may be affected by the matters set out in this permit shall have convenient access to a copy of it kept at or near the place where those duties are carried out.

1.2 Energy efficiency

1.2.1 The operator shall:

(a) take appropriate measures to ensure that energy is used efficiently in the activities;

(b) review and record at least every four years whether there are suitable opportunities to improve the energy efficiency of the activities; and

(c) take any further appropriate measures identified by a review.

1.3 Efficient use of raw materials

1.3.1 The operator shall:

(a) take appropriate measures to ensure that raw materials and water are used efficiently in the activities;

(b) maintain records of raw materials and water used in the activities;

(c) review and record at least every four years whether there are suitable alternative materials that could reduce environmental impact or opportunities to improve the efficiency of raw material and water use; and

(d) take any further appropriate measures identified by a review.

1.4 Avoidance, recovery and disposal of wastes produced by the activities

1.4.1 The operator shall take appropriate measures to ensure that:

(a) the waste hierarchy referred to in Article 4 of the Waste Framework Directive is applied to the generation of waste by the activities; and

(b) any waste generated by the activities is treated in accordance with the waste hierarchy referred to in Article 4 of the Waste Framework Directive; and

(c) where disposal is necessary, this is undertaken in a manner which minimises its impact on the environment.

1.4.2 The operator shall review and record at least every four years whether changes to those measures should be made and take any further appropriate measures identified by a review.

2 Operations

2.1 Permitted activities

2.1.1 The operator is only authorised to carry out the activities specified in schedule 1 table S1.1 (the “activities”).

2.2 The site

2.2.1 The activities shall not extend beyond the site, being the land shown edged in green on site plan B at schedule 7 to this permit.

2.3 Operating techniques

2.3.1 (a) The activities shall, subject to the conditions of this permit, be operated using the techniques and in the manner described in the documentation specified in schedule 1, table S1.2, unless otherwise agreed in writing by the Environment Agency.

(b) If notified by the Environment Agency that the activities are giving rise to pollution, the operator shall submit to the Environment Agency for approval within the period specified, a revision of any plan or other documentation (“plan”) specified in schedule 1, table S1.2 or otherwise required under this permit which identifies and minimises the risks of pollution relevant to that plan , and shall implement the approved revised plan in place of the original from the date of approval, unless otherwise agreed in writing by the Environment Agency.

2.3.2 Any raw materials or fuels listed in schedule 2 table S2.1 shall conform to the specifications set out in that table.

2.3.3 The operator shall ensure that where waste produced by the activities is sent to a relevant waste operation, that operation is provided with the following information, prior to the receipt of the waste:

(a) the nature of the process producing the waste;

(b) the composition of the waste;

(c) the handling requirements of the waste;

(d) the hazardous property associated with the waste, if applicable; and

(e) the waste code of the waste.

2.3.4 The operator shall ensure that where waste produced by the activities is sent to a landfill site, it meets the waste acceptance criteria for that landfill.

2.4 Improvement programme

2.4.1 The operator shall complete the improvements specified in schedule 1 table S1.3 by the date specified in that table unless otherwise agreed in writing by the Environment Agency.

2.4.2 Except in the case of an improvement which consists only of a submission to the Environment Agency, the operator shall notify the Environment Agency within 14 days of completion of each improvement.

2.5 Pre-operational conditions

2.5.1 The activities shall not be brought into operation until the measures specified in schedule 1 table S1.4 have been completed.

3 Emissions and monitoring

3.1 Emissions to water, air or land

3.1.1 There shall be no point source emissions to water, air or land except from the sources and emission points listed in schedule 3 tables S3.1, S3.2 and S3.3.

3.1.2 The limits given in schedule 3 shall not be exceeded.

3.1.3 Periodic monitoring shall be carried out at least once every 5 years for groundwater and 10 years for soil, unless such monitoring is based on a systematic appraisal of the risk of contamination.

3.2 Emissions of substances not controlled by emission limits

3.2.1 Emissions of substances not controlled by emission limits (excluding odour) shall not cause pollution. The operator shall not be taken to have breached this condition if appropriate measures, including, but not limited to, those specified in any approved emissions management plan, have been taken to prevent or where that is not practicable, to minimise, those emissions.

3.2.2 The operator shall:

(a) if notified by the Environment Agencythat the activities are giving rise to pollution, submit to the Environment Agency for approval within the period specified, an emissions management plan which identifies and minimises the risks of pollution from emissions of substances not controlled by emission limits;

(b) implement the approved emissions management plan, from the date of approval, unless otherwise agreed in writing by the Environment Agency.

3.2.3 All liquids in containers, whose emission to water or land could cause pollution, shall be provided with secondary containment, unless the operator has used other appropriate measures to prevent or where that is not practicable, to minimise, leakage and spillage from the primary container.

3.3 Odour

3.3.1 Emissions from the activities shall be free from odour at levels likely to cause pollution outside the site, as perceived by an authorised officer of the Environment Agency, unless the operator has used appropriate measures, including, but not limited to, those specified in any approved odour management plan, to prevent or where that is not practicable to minimise the odour.

3.3.2 The operator shall:

(a) if notified by the Environment Agency that the activities are giving rise to pollution outside the site due to odour, submit to the Environment Agency for approval within the period specified, an odour management plan which identifies and minimises the risks of pollution from odour;

(b) implement the approved odour management plan, from the date of approval, unless otherwise agreed in writing by the Environment Agency.

3.4 Noise and vibration

3.4.1 Emissions from the activities shall be free from noise and vibration at levels likely to cause pollution outside the site, as perceived by an authorised officer of the Environment Agency, unless the operator has used appropriate measures, including, but not limited to, those specified in any approved noise and vibration management plan to prevent or where that is not practicable to minimise the noise and vibration.

3.4.2 The operator shall:

(a) if notified by the Environment Agency that the activities are giving rise to pollution outside the site due to noise and vibration, submit to the Environment Agency for approval within the period specified, a noise and vibration management plan which identifies and minimises the risks of pollution from noise and vibration;

(b) implement the approved noise and vibration management plan, from the date of approval, unless otherwise agreed in writing by the Environment Agency.

3.5 Monitoring

3.5.1 The operator shall, unless otherwise agreed in writing by the Environment Agency, undertake the monitoring specified in the following tables in schedule 3 to this permit:

(a) point source emissions specified in tables S3.1, S3.2 and S3.3;

3.5.2 The operator shall maintain records of all monitoring required by this permit including records of the taking and analysis of samples, instrument measurements (periodic and continual), calibrations, examinations, tests and surveys and any assessment or evaluation made on the basis of such data.

3.5.3 Monitoring equipment, techniques, personnel and organisations employed for the emissions monitoring programme and the environmental or other monitoring specified in condition 3.5.1 shall have either MCERTS certification or MCERTS accreditation (as appropriate), where available, unless otherwise agreed in writing by the Environment Agency.

3.5.4 Permanent means of access shall be provided to enable sampling/monitoring to be carried out in relation to the emission points specified in schedule 3 tables S3.1, S3.2 and S3.3 unless otherwise agreed in writing by the Environment Agency.

4 Information

4.1 Records

4.1.1 All records required to be made by this permit shall:

(a) be legible;

(b) be made as soon as reasonably practicable;

(c) if amended, be amended in such a way that the original and any subsequent amendments remain legible, or are capable of retrieval; and

(d) be retained, unless otherwise agreed in writing by the Environment Agency, for at least 6 years from the date when the records were made, or in the case of the following records until permit surrender:

(i) off-site environmental effects; and

(ii) matters which affect the condition of the land and groundwater.

4.1.2 The operator shall keep on site all records, plans and the management system required to be maintained by this permit, unless otherwise agreed in writing by the Environment Agency.

4.2 Reporting

4.2.1 The operator shall send all reports and notifications required by the permit to the Environment Agency using the contact details supplied in writing by the Environment Agency.

4.2.2 A report or reports on the performance of the activities over the previous year shall be submitted to the Environment Agency by 31 January (or other date agreed in writing by the Environment Agency) each year. The report(s) shall include as a minimum:

(a) a review of the results of the monitoring and assessment carried out in accordance with the permit including an interpretive review of that data;

(b) the annual production /treatment data set out in schedule 4 table S4.2; and

(c) the performance parameters set out in schedule 4 table S4.3 using the forms specified in table S4.4 of that schedule.

4.2.3 Within 28 days of the end of the reporting period the operator shall, unless otherwise agreed in writing by the Environment Agency, submit reports of the monitoring and assessment carried out in accordance with the conditions of this permit, as follows:

(a) in respect of the parameters and emission points specified in schedule 4 table S4.1;

(b) for the reporting periods specified in schedule 4 table S4.1 and using the forms specified in schedule 4 table S4.4 ; and

(c) giving the information from such results and assessments as may be required by the forms specified in those tables.

4.2.4 The operator shall, unless notice under this condition has been served within the preceding four years, submit to the Environment Agency, within six months of receipt of a written notice, a report assessing whether there are other appropriate measures that could be taken to prevent, or where that is not practicable, to minimise pollution.

4.3 Notifications

4.3.1 (a) In the event that the operation of the activities gives rise to an incident or accident which significantly affects or may significantly affect the environment, the operator must immediately—

(i) inform the Environment Agency,

(ii) take the measures necessary to limit the environmental consequences of such an incident or accident, and

(iii) take the measures necessary to prevent further possible incidents or accidents;

(b) in the event of a breach of any permit condition the operator must immediately—

(i) inform the Environment Agency, and

(ii) take the measures necessary to ensure that compliance is restored within the shortest possible time;

(c) in the event of a breach of permit condition which poses an immediate danger to human health or threatens to cause an immediate significant adverse effect on

the environment, the operator must immediately suspend the operation of the activities or the relevant part of it until compliance with the permit conditions has been restored.

4.3.2 Any information provided under condition 4.3.1 (a)(i) or 4.3.1 (b)(i) where the information relates to the breach of a limit specified in the permit, shall be confirmed by sending the information listed in schedule 5 to this permit within the time period specified in that schedule.

4.3.3 Where the Environment Agency has requested in writing that it shall be notified when the operator is to undertake monitoring and/or spot sampling, the operator shall inform the Environment Agency when the relevant monitoring and/or spot sampling is to take place. The operator shall provide this information to the Environment Agency at least 14 days before the date the monitoring is to be undertaken.

4.3.4 The Environment Agency shall be notified within 14 days of the occurrence of the following matters, except where such disclosure is prohibited by Stock Exchange rules:

Where the operator is a registered company:

(a) any change in the operator's trading name, registered name or registered office address; and

(b) any steps taken with a view to the operator going into administration, entering into a company voluntary arrangement or being wound up.

Where the operator is a corporate body other than a registered company:

(a) any change in the operator's name or address; and

(b) any steps taken with a view to the dissolution of the operator.

In any other case:

(a) the death of any of the named operators (where the operator consists of more than one named individual);

(b) any change in the operator's name(s) or address(es); and

(c) any steps taken with a view to the operator, or any one of them, going into bankruptcy, entering into a composition or arrangement with creditors, or, in the case of them being in a partnership, dissolving the partnership.

4.3.5 Where the operator proposes to make a change in the nature or functioning, or an extension of the activities, which may have consequences for the environment and the change is not otherwise the subject of an application for approval under the Regulations or this permit:

(a) the Environment Agency shall be notified at least 14 days before making the change; and

(b) the notification shall contain a description of the proposed change in operation.

4.3.6 The Environment Agency shall be given at least 14 days notice before implementation of any part of the site closure plan.

4.4 Interpretation

4.4.1 In this permit the expressions listed in schedule 6 shall have the meaning given in that schedule.

4.4.2 In this permit references to reports and notifications mean written reports and notifications, except where reference is made to notification being made “without delay”, in which case it may be provided by telephone.

Schedule 1 - Operations

Table S1.1 activities		
Activity listed in Schedule 1 of the EP Regulations	**Description of specified activity**	**Limits of specified activity**
S2.1 A(1)(a) - Roasting or sintering metal ore, including sulphide ore, or any mixture of iron ore with or without other minerals	The thermal treatment and chemical reduction of ore pre-concentrate in a rotary reduction kiln using diesel or LPG fuel to produce a reduced mixed ore concentrate.	From receipt of dried ore pre-concentrate, reductant and fuel, to the collection of reduced ore concentrate, discharge of kiln flue gases via a cyclone, thermal oxidiser, heat recovery exchanger and alkali scrubber system and transfer of spent scrubber liquor to the waste water treatment plant.
S5.4 A(1)(a)(ii) – Treatment of non-hazardous waste in a plant with a capacity of more than 50 tonnes per day by physico-chemical treatment	Continuous treatment of process water in a waste water treatment plant by oxidation, coagulation, flocculation and filtering to remove solids and contaminants so that cleaned water can be returned to the process and the de-watered solids made suitable for disposal.	From receipt of contaminated process water and water treatment chemicals to return of cleaned water to the process and disposal of dewatered sludge cake from the facility.
S3.5 Part B (a) – Crushing , grinding or other size reduction of any designated mineral or mineral product.	Primary crushing and size reduction of base mineral material extracted from the mining operation so that it can be suitably processed in subsequent stages of the ore separation process.	From receipt of 'run of mine' base mineral ore to the transfer of crushed and graded material to subsequent stages of the main mineral separation process.
Directly Associated Activity		
Dense media separation (DMS)	Aqueous treatment of suspended ore solids according to density by cyclones, screening and gravity separation.	From receipt of crushed ore from the crushing plant to transfer to subsequent separation treatment processes and removal of waste material to the mining waste facility.
Grinding, Fines and Floatation separation	Aqueous separation processes to produce an enriched ore pre-concentrate for subsequent drying and ore processing in the Reduction Kiln.	From receipt of material fromthe DMS ore processing stage to production of de-watered ore filter cake for processing in the pre concentrate dryer.
Pre concentrate dryer	Drying of ore pre concentrate in a rotary dryer utilising heat from by the combustion of diesel or LPG.	Drying of de watered ore filter cake to emission of dryer flue gas via a bag filter abatement plant.
Magnetic separation	Separation of the tungsten and tin fractions of the reduced ore concentrate produced in the Reduction Kiln utilising the magnetic properties of the magnetite (iron) ore concentrate that contains the tungsten	Two stage magnetic separation of ore concentrate supplied from the Reduction Kiln to storage of final tungsten ore concentrate and transfer of tin ore concentrate for further processing.

Table S1.1 activities		
Activity listed in Schedule 1 of the EP Regulations	**Description of specified activity**	**Limits of specified activity**
Ore concentrate separation and final tin concentrate drying	Further separation, concentration and drying of the tin ore concentrate fraction from the reduction kiln in a rotary dryer utilising heat from the combustion of diesel or LPG.	Vacuum filtration and drying of resultant ore concentrate to the discharge of dryer flue gas via a bag filter abatement plant.

Table S1.2 Operating techniques		
Description	**Parts**	**Date Received**
Application EPR/GP3531EX/A001	• Parts B2 and B3 of the Application Form (including Appendix B2_1) • Supporting Information Document - Section 5, Sub Section 4 – Rsk Management Plans. • Supporting Information Document – Section 7, BAT Operating Techniques.	Duly Made 05/02/14
Further Information	Updated base line reference data for Site Condition Report	01/05/14
Response to Further Information Request	Updated Site Plan and emission point references Containment arrangements for aqueous media process material handing	29/05/14

Table S1.3 Improvement programme requirements		
Reference	**Requirement**	**Date**
IC1	The Operator shall undertake a study to investigate the variation in the arsenic content in the raw flue gas released from the reduction kiln and the efficiency of the kiln scrubber system in abating this emission. The study shall include reference to the quantity of asenic absorbed by the scrubber reagent and the concentration in the final release to air. A written report on the findings of the study and identification of the key performance and control measures for the operation of the scrubber plant shall be submitted to the Environment Agency for approval.	Within 9 months of the completion of commissioning
IC2	The Operator shall undertake a study to investigate the release of any radioactive substance from the Primary Crushing Plant and the potential for entrainment of any radioactive substance supplied to the subsequent processing operations within the facility. The study shall have consideration of and make reference to Pre-Operational Condition PO1 and Improvement Condition IC5 of Mining Waste Facility permit EPR/FB3639RK. A written report on the findings of the study shall be submitted to the Environment Agency.	Within 6 months of the completion of commissioning

Table S1.4 Pre-operational measures	
Reference	**Pre-operational measures**
PO1	Prior to the commencement of commissioning, the Operator shall provide a written commissioning plan, including timelines for completion, for approval by the Environment Agency. The commissioning plan shall include the expected durations of commissioning activities and the actions to be taken to protect the environment during commissioning. Commissioning shall be carried out in accordance with the commissioning plan as approved.
PO2	Pior to the commencement of commissioning the Operator shall update the on site Emergency Plan (as referenced in PO3 of Mining Waste Facility permit EPR/FB3639RK) to incorporate the additional risks and appropriate control measures introduced by the operation of the Mineral Processing Facility at the site. The updated Emergency Plan shall be submitted to the Environment Agency for approval.

Table S1.4 Pre-operational measures	
Reference	**Pre-operational measures**
PO3	Prior to the commencement of commissioning, the Operator shall submit to the Environment Agency for approval a protocol for the sampling and testing of the filter cake produced by the Water Treatment Plant for the purposes of assessing its hazard status. Sampling and testing shall be carried out in accordance with the protocol as approved.
PO4	Prior to the commencement of commissioning the Operator shall supply a written report to the Environment Agency that includes an 'as installed' site drainage plan, an inventory of installed storage tank volumes and their associated bunding capacities for the infrastructure of the water treatment plant (WTP) and the process plant wet bunded area (PPWBA). The report shall also include a summary of the accident response plan for any significant accidental release from equipment in these areas.

Schedule 2 - Waste types, raw materials and fuels

Table S2.1 Raw materials and fuels	
Raw materials and fuel description	**Specification**
Diesel fuel for reduction kiln and ore drying plant	Less than 0.1% sulphur content

Schedule 3 – Emissions and monitoring

Table S3.1 Point source emissions to air – emission limits and monitoring requirements						
Emission point ref. & location	**Parameter**	**Source**	**Limit (including unit)**	**Reference period**	**Monitoring frequency**	**Monitoring standard or method**
A1 [Point A1 on site plan in Schedule 7]	Particulate	Exhaust from primary crusher plant bag filter system	50 mg/m^3	Periodic over minimum 1-hour period	Quarterly in the first year. Then Annually	BS EN 13284-1
A2 [Point A2 on site plan in schedule 7]	Particulate	Exhaust from ore pre-concentrate dryer bag filter plant	50 mg/m^3	Periodic over minimum 1-hour period	Annual	BS EN 13284-1
	Oxides of Nitrogen (NO and NO_2 expressed as NO_2)	Exhaust from ore pre-concentrate dryer bag filter plant	No Limit Set	Periodic over minimum 1-hour period	Annual	BS EN 14792
	Sulphur dioxide	Exhaust from ore pre-concentrate dryer bag filter plant	No Limit Set	-	No monitoring requirement	-
A3 [Point A3 on site plan in schedule 7]	Particulate	Exhaust from Reduction Kiln abatement scrubber	5 mg/m^3	Periodic over minimum 1-hour period	Quarterly in the first year. Then Annually	BS EN 13284-1
	Oxides of Nitrogen (NO and NO_2 expressed as NO_2)	Exhaust from Reduction Kiln abatement scrubber	No Limit Set	Periodic over minimum 1-hour period	Annual	BS EN 14792
	Sulphur dioxide	Exhaust from Reduction Kiln abatement scrubber	No Limit Set	-	No monitoring requirement	-
	Arsenic	Exhaust from Reduction Kiln abatement scrubber	1 mg/m^3	Periodic over minimum 1-hour period	Quarterly in the first year. Then Annually	BS EN 14385
A4 [Point A4 on site plan in schedule 7]	Particulate	Exhaust from tin concentrate dryer bag filter plant	50 mg/m^3	Periodic over minimum 1-hour period	Quarterly in the first year. Then Annually	BS EN 13284-1

Table S3.1 Point source emissions to air – emission limits and monitoring requirements						
Emission point ref. & location	**Parameter**	**Source**	**Limit (including unit)**	**Reference period**	**Monitoring frequency**	**Monitoring standard or method**
A4 [Point A4 on site plan in schedule 7]	Oxides of Nitrogen (NO and NO_2 expressed as NO_2)	Exhaust from tin concentrate dryer bag filter plant	No Limit Set	Periodic over minimum 1-hour period	Annual	BS EN 14792
	Sulphur dioxide	Exhaust from tin concentrate dryer bag filter plant	No Limit Set	-	No monitoring requirement	-

Table S3.2 Point Source emissions to water (other than sewer) and land – emission limits and monitoring requirements						
Emission point ref. & location	**Parameter**	**Source**	**Limit (incl. unit)**	**Reference Period**	**Monitoring frequency**	**Monitoring standard or method**
W1 – as shown on site plan in Schedule 7	No parameters set	Uncontaminated surface water via oil interceptor and attenuation pond sump	No Limit Set	-	-	-
W2 – as shown on site plan in Schedule 7	No parameters set	Uncontaminated surface water via oil interceptor and attenuation pond sump	No Limit Set	-	-	-

Table S3.3 Point source emissions to sewer, effluent treatment plant or other transfers off-site– emission limits and monitoring requirements						
Emission point ref. & location	**Parameter**	**Source**	**Limit (incl. Unit)**	**Reference period**	**Monitoring frequency**	**Monitoring standard or method**
D1 – as shown on site plan in schedule 7	Volume of 'Tailings' discharged to MWF	From Fines Separation unit of the ore processing plant	7,000 m^3 per day	Aggregated daily volume	Continuous	

Schedule 4 - Reporting

Parameters, for which reports shall be made, in accordance with conditions of this permit, are listed below.

Table S4.1 Reporting of monitoring data			
Parameter	**Emission or monitoring point/reference**	**Reporting period**	**Period begins**
Emissions to air Parameters as required by condition 3.5.1.	A1, A2, A3 and A4	Quarterly in the first year of operation, then Annually	01 January 01 April 01 July 01 October
'Tailings' discharge to Mining Waste Facility Parameters as required by condition 3.5.1	D1	Quarterly in the first year of operation, then Annually	01 January 01 April 01 July 01 October

Table S4.2: Annual production/treatment	
Parameter	**Units**
Total extracted base mineral processed through Primary Crusher Plant	tonnes
Total ore pre-concentrate processed through Reduction Kiln	tonnes
Total process water treated through Water Treatment Plant	m^3
Total 'Tailings' discharge to MWF	m^3
Total coarse rejects from DMS and Primary Crusher deposited to MWF	tonnes
Total Water Treatment Plant 'filter cake' sent for disposal	tonnes

Table S4.3 Performance parameters		
Parameter	**Frequency of assessment**	**Units**
Total volume Make-Up Water imported	Monthly	m^3
Electrical energy usage	Quarterly	MWh
Diesel or LPG usage for kiln and dryers	Quarterly	litres
Total replacement water usage per tonne of concentrate processed through Kiln	Quarterly	m^3/tonne
Total electrical energy usage per tonne of concentrate processed through Kiln	Quarterly	MWh/tonne
Total diesel or LPG usage per tonne of concentrate processed through Kiln	Quarterly	litres/tonne

Table S4.4 Reporting forms		
Media/parameter	**Reporting format**	**Date of form**
Air	Form Air 1 or other form as agreed in writing by the Environment Agency	15/07/14
Water usage	Form Water Usage 1 or other form as agreed in writing by the Environment Agency	15/07/14
Energy usage	Form Energy 1 or other form as agreed in writing by the Environment Agency	15/07/14
Other performance indicators	Form Performance 1 or other form as agreed in writing by the Environment Agency	15/07/14

Schedule 5 - Notification

These pages outline the information that the operator must provide.

Units of measurement used in information supplied under Part A and B requirements shall be appropriate to the circumstances of the emission. Where appropriate, a comparison should be made of actual emissions and authorised emission limits.

If any information is considered commercially confidential, it should be separated from non-confidential information, supplied on a separate sheet and accompanied by an application for commercial confidentiality under the provisions of the EP Regulations.

Part A

Permit Number	**EPR/GP3531EX**
Name of operator	**Wolf Minerals (UK) Limited**
Location of Facility	**Drakelands Mineral Processing Facility**
Time and date of the detection	

(a) Notification requirements for any malfunction, breakdown or failure of equipment or techniques, accident, or emission of a substance not controlled by an emission limit which has caused, is causing or may cause significant pollution	
To be notified within 24 hours of detection	
Date and time of the event	
Reference or description of the location of the event	
Description of where any release into the environment took place	
Substances(s) potentially released	
Best estimate of the quantity or rate of release of substances	
Measures taken, or intended to be taken, to stop any emission	
Description of the failure or accident.	

(b) Notification requirements for the breach of a limit	
To be notified within 24 hours of detection unless otherwise specified below	
Emission point reference/ source	
Parameter(s)	
Limit	
Measured value and uncertainty	
Date and time of monitoring	
Measures taken, or intended to be taken, to stop the emission	

Time periods for notification following detection of a breach of a limit	
Parameter	**Notification period**

(c) Notification requirements for the detection of any significant adverse environmental effect	
To be notified within 24 hours of detection	
Description of where the effect on the environment was detected	
Substances(s) detected	
Concentrations of substances detected	
Date of monitoring/sampling	

Part B - to be submitted as soon as practicable

Any more accurate information on the matters for notification under Part A.	
Measures taken, or intended to be taken, to prevent a recurrence of the incident	
Measures taken, or intended to be taken, to rectify, limit or prevent any pollution of the environment which has been or may be caused by the emission	
The dates of any unauthorised emissions from the facility in the preceding 24 months.	

Name*	
Post	
Signature	
Date	

* authorised to sign on behalf of **Wolf Minerals (UK) Limited**

Schedule 6 - Interpretation

"accident" means an accident that may result in pollution.

"application" means the application for this permit, together with any additional information supplied by the operator as part of the application and any response to a notice served under Schedule 5 to the EP Regulations.

"authorised officer" means any person authorised by the Environment Agency under section 108(1) of The Environment Act 1995 to exercise, in accordance with the terms of any such authorisation, any power specified in section 108(4) of that Act

"disposal". Means any of the operations provided for in Annex I to Directive 2008/98/EC of the European Parliament and of the Council on waste.

"emissions to land" includes emissions to groundwater.

"EP Regulations" means The Environmental Permitting (England and Wales) Regulations SI 2010 No.675 and words and expressions used in this permit which are also used in the Regulations have the same meanings as in those Regulations.

"emissions of substances not controlled by emission limits" means emissions of substances to air, water or land from the activities, either from the emission points specified in schedule 3 or from other localised or diffuse sources, which are not controlled by an emission limit**.**.

"groundwater" means all water, which is below the surface of the ground in the saturation zone and in direct contact with the ground or subsoil.

"hazardous property" has the meaning given in Schedule 3 of the Hazardous Waste (England and Wales) Regulations 2005 No.894 and the Hazardous Waste (Wales) Regulations 2005 No. 1806 (W.138).

"Industrial Emissions Directive" means DIRECTIVE 2010/75/EU OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 24 November 2010 on industrial emissions

"MCERTS" means the Environment Agency's Monitoring Certification Scheme*.*

"quarter" means a calendar year quarter commencing on 1 January, 1 April, 1 July or 1 October.

"recovery" means any of the operations provided for in Annex II to Directive 2008/98/EC of the European Parliament and of the Council on waste.

"Waste Framework Directive" or "WFD" means Waste Framework Directive 2008/98/EC of the European Parliament and of the Council on waste

"year" means calendar year ending 31 December.

Where a minimum limit is set for any emission parameter, for example pH, reference to exceeding the limit shall mean that the parameter shall not be less than that limit.

Unless otherwise stated, any references in this permit to concentrations of substances in emissions into air means:

(a) in relation to emissions from combustion processes, the concentration in dry air at a temperature of 273K, at a pressure of 101.3 kPa and with an oxygen content of 3% dry for liquid and gaseous fuels, 6% dry for solid fuels; and/or

(b) in relation to emissions from non-combustion sources, the concentration at a temperature of 273K and at a pressure of 101.3 kPa, with no correction for water vapour content.

Schedule 7 - Site plan

The following site plans are included in this Schedule:

Site Plan (A) – Location of Mineral Processing Facility Installation in relation to extent of Planning and Mining Waste Facility boundaries.

Site Plan (B) – Mineral Processing Facility installation boundary extent and location of emission points.

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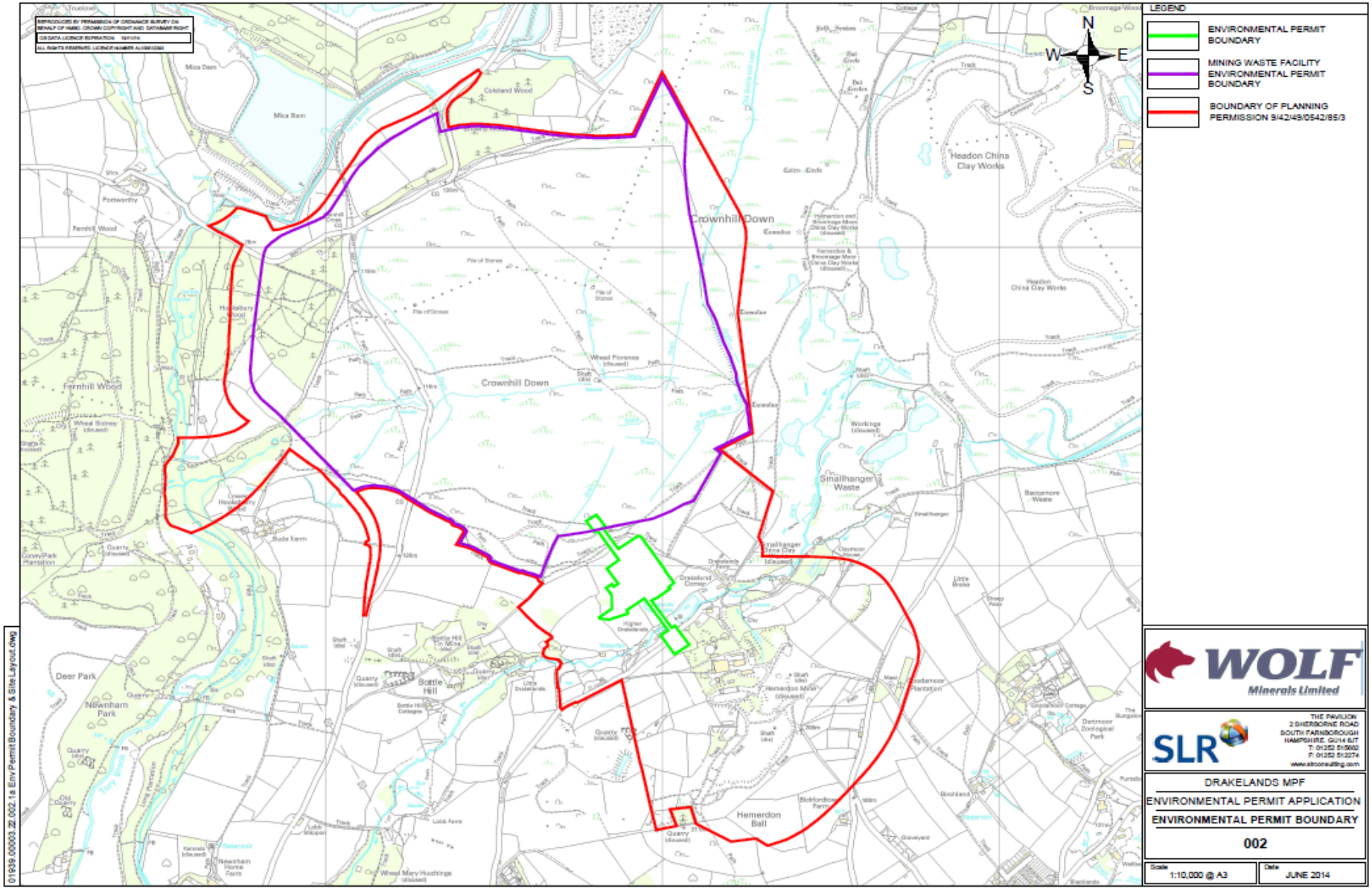
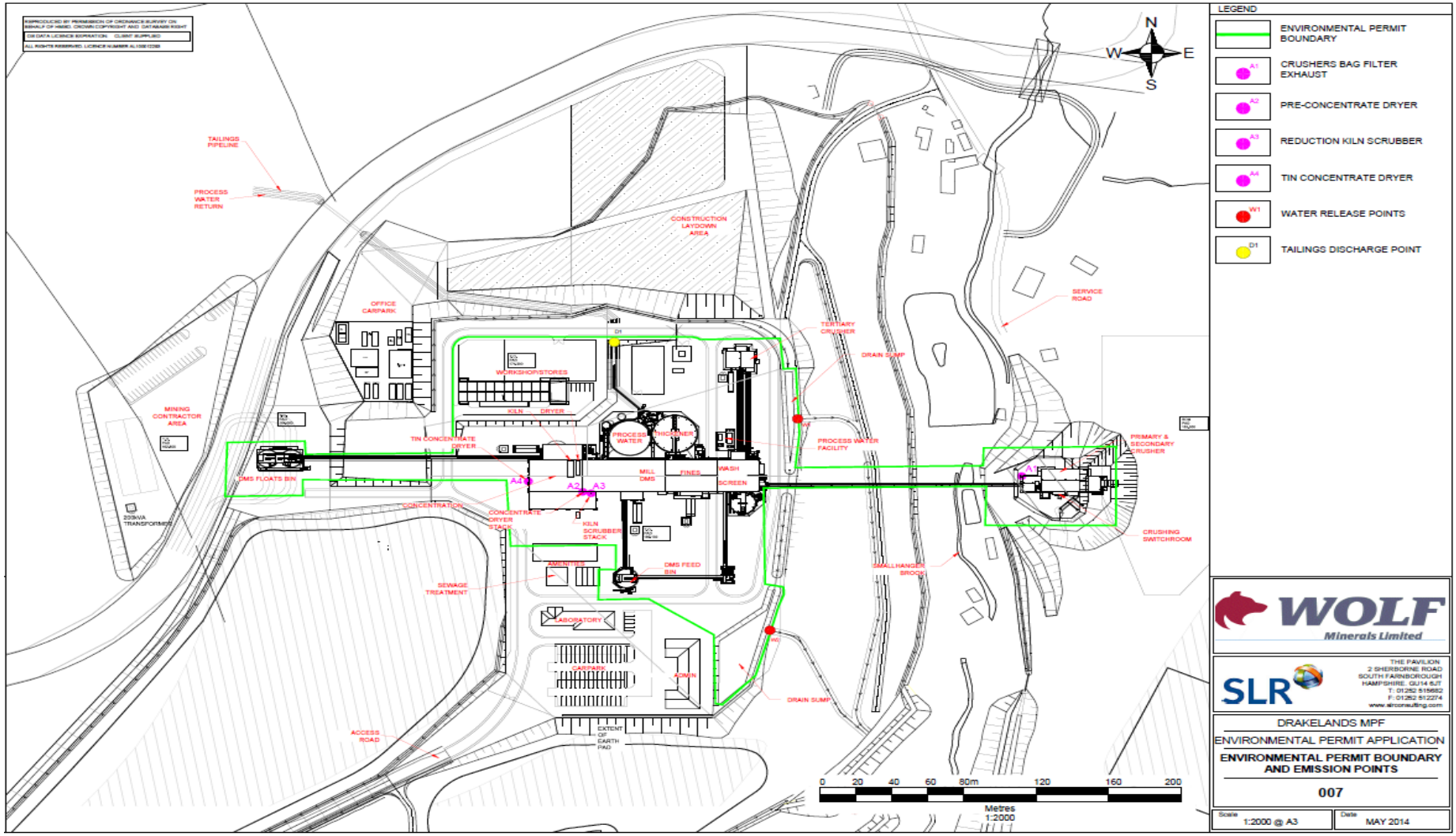
Site Plan (A) –Mineral Processing Facility Installation - site location in relation to extent of Planning and MWF boundaries



Site Plan (B) – Mineral Processing Facility - Installation Boundary and Emission Point Location



End of Permit