TUNGSTEN WEST

Application Support Document

Hemerdon Mineral Processing Facility- MFE

15th September 2026

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Author	Jessica Easterbrook
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Application Support Document

Hemerdon Mineral Processing Facility - MFE



Jessica Easterbrook
Senior Environmental Consultant



Steve Butler
Managing Director

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Acronyms and Abbreviations

Name	Description
EA	Environment Agency
MPF	Mineral Processing Facility
MWF	Mining Waste Facility
DAA	Directly Associated Activities
MFE	Mobile Front End
EMS	Environmental Management System
DEMMP	Dust and Emissions Minimisation Management Plan
LEP	Local Enforcement Position
SWMP	Surface Water Management Plan
NIA	Noise Impact Assessment
NMP	Noise Management Plan

NON-TECHNICAL SUMMARY

This document has been prepared on behalf of Drakelands Restoration Limited, ('DRL' hereafter), a subsidiary of Tungsten West PLC, by Sol Environment Limited and provides supporting evidence as required by Environmental Permit Application Forms Part C2 and C3 issued by the Environment Agency (EA).

DRL's Mineral Processing Facility (MPF) is located at Hemerdon Mine, Drakelands, Plympton, Plymouth, Devon. The MPF site is currently permitted under the conditions established by Environmental Permit, EPR/AP3203ML. The MPF Installation Environmental Permit requires a permit variation for operations to recommence on site.

The MPF is permitted as an Installation under the following Schedule References:

- Section 2.1 Part A(1)(a) '*Roasting or sintering metal ore, including sulphide pre, or any mixture of iron ore with or without other minerals'*;
- Section 5.4 Part A(a)(ii) *'Treatment of non-hazardous waste in a plant with a capacity of more than 50 tonnes per day by physio-chemical treatment'*; and
- Section 3.5 Part B(a) *'Crushing, grinding or other size reduction of any designated minerals or mineral product*'.

The site is also permitted to carry out a number of Directly Associated Activities (DAA) as well as several separate Environmental Permits which are detailed in Section 2 of this document.

DRL is making this application to carry out a '*substantial*' variation of their existing EPR permit under The Environmental Permitting (England and Wales) Regulations 2018 (as amended) in order to include the Mobile Front End (MFE) crushing and screening operations and to extend the site's Installation Boundary to incorporate the MFE.

A Local Enforcement Position (LEP) has been granted by the EA for the temporary crushing and screening operations associated with the MFE Phase one operations. The LEP is provided in *Annex J – Local Enforcement Position*. The MFE is proposed to initially process pre-existing stockpiles and soft in-situ ore, following which freshly mined ore or extractive residues classed as resources will be processed. The MFE will generate fine and coarse ore material into limited stages of the MPF. Following discussions between DRL and the EA, the EA has requested that the MFE is included within the MPF permit. DRL therefore propose that the MFE becomes a permanent operation on site. The MFE is proposed to be regulated under the current permitted Activity *Section 3.5 Part B (a) – crushing, grinding or other size reduction of any designated mineral or mineral product*.

This variation will result in an extension to the site's Installation Boundary to incorporate the MFE operations.

DRL operate and maintain a formal Environmental Management System (EMS). The EMS is subject to continual improvement and periodic review. DRL strive to achieve ISO 14001 certification by Q3 2027.

Emissions to Air

The MPF has five point source emissions to air:

- A1 – Exhaust from the ore pre-concentrate dryer bag and filter plant;

- A2 – Exhaust from the reduction kiln abatement scrubber;
- A3 – Exhaust from the tin concentrate dryer bag filter plant;
- A4 – Exhaust from the primary crusher plant bag filter system; and
- A5 – Exhaust from the secondary crusher plant bag filter system.

There will be no amendments or increases to any emission points to air as a result of this permit variation.

It is acknowledged that the MFE crushing and screening operations will have the potential to generate fugitive emissions to air. It should be noted that these emissions are existing at site and neither increase or change in nature as a result of this variation. The site will operate in accordance with the site's Dust and Emissions Minimisation Management Plan (DEMMP) which is provided in *Annex D- Dust and Emissions Minimisation Management Plan.*

Emissions to Controlled Water

There will be no changes to emissions to controlled water as a result of this permit variation. As currently permitted, all process effluent from the MPF that is not re-used within the process (i.e recirculated via the onsite water treatment plant) will be discharged to the Mining Waste Facility (MWF).

The site's Surface Water Management Plan (SWMP) has been updated to incorporate the MFE operations and the management and control of surface water within the proposed MFE area. Surface water runoff from within the MFE area will drain into a new catchpit (catchpit 24) and then gravity drain through the current surface water management system prior to discharge from Tory Pond. Discharges to surface water will be controlled in accordance with the MWF Permit, EPRJB3209MD.

The surface water plan is provided in *Annex A – Figures.*

Emissions to Sewer

There will be no changes to emissions to sewer as a result of this permit variation. All emissions to sewer will be controlled in accordance with the sewage treatment plant permit, EPR/WB3893DT.

Emissions to Land

There are no emissions to land arising from this permit variation.

Noise

A previous Noise impact Assessment (NIA) was submitted in November 2022 and approved by the EA during permit determination in June 2024. The updated NIA undertaken for this permit variation supersedes the 2022 report and is included in *Annex G – Noise Impact Assessment and Noise Management Plan.*

The NIA concludes that development noise impacts will have no effect at distant Noise Sensitive Receptors (NSRs) and the nature of the specific noise impacts for the proposed development are acceptable with respect to overarching and local requirements for planning and noise.

1. INTRODUCTION

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The MPF is permitted as an Installation under the following Schedule References:

- Section 2.1 Part A(1)(a) '*Roasting or sintering metal ore, including sulphide pre, or any mixture of iron ore with or without other minerals'*;
- Section 5.4 Part A(a)(ii) *'Treatment of non-hazardous waste in a plant with a capacity of more than 50 tonnes per day by physio-chemical treatment'*; and
- Section 3.5 Part B(a) *'Crushing, grinding or other size reduction of any designated minerals or mineral product*'.

The site is also permitted to carry out a number of Directly Associated Activities (DAA) as well as several separate Environmental Permits which are detailed in Section 2 of this document.

DRL is making this application to carry out a '*substantial*' variation of their existing EPR permit under The Environmental Permitting (England and Wales) Regulations 2018 (as amended) in order to include the Mobile Front End (MFE) crushing and screening operations and to extend the site's Installation Boundary to incorporate the MFE.

A Local Enforcement Position (LEP) has been granted by the EA for the temporary crushing and screening operations associated with the MFE Phase one operations. The LEP is provided in *Annex J – Local Enforcement Position*. The MFE is proposed to initially process pre-existing stockpiles and soft in-situ ore, following which freshly mined ore or extractive residues classed as resources will be processed. Following discussions between DRL and the EA, the EA has requested that the MFE is included within the MPF permit. DRL therefore propose that the MFE becomes a permanent operation on site. The MFE is proposed to be regulated under the current permitted Activity *Section 3.5 Part B (a) – crushing, grinding or other size reduction of any designated mineral or mineral product*.

This variation will result in an extension to the site's Installation Boundary to incorporate the MFE operations.

DRL operate and maintain a formal Environmental Management System (EMS). The EMS is subject to continual improvement and periodic review. DRL strive to achieve ISO 14001 certification by Q3 2027.

The remainer of this application support document is structured accordingly:

- Section 2: Provides a summary of the permitting history on site;
- Section 3: Provides specific nature of the proposed changes associated with the variation application;

- Section 4: Provides specific nature and detailed description of the emissions associated with the Installation;
- Section 5: Provides details of all monitoring associated with the Installation;
- Section 6: Provides an Environmental Impact and Assessment of the varied Installation.

All technical annexes associated with this permit variation are included within the following:

- Annex A: Figures;
- Annex B: Technical Information;
- Annex C: Environmental Risk Assessment;
- Annex D: Dust and Emissions Minimisation Management Plan;
- Annex E: EMS Summary;
- Annex F: Accident Management Plan;
- Annex G: Noise Impact Assessment and Noise Management Plan;
- Annex H: Site Condition Report;
- Annex I: Existing permit;
- Annex J: Local Enforcement Position; and
- Annex K: Enhanced Pre Application Advice.

The Site Location, and the current and proposed MPF Installation Boundary are provided overleaf in Figure 1.1, 1.2 and 1.3. Please refer to *Annex A - Figures* for the site layout and further site plans.



Figure 1.1 Site Location

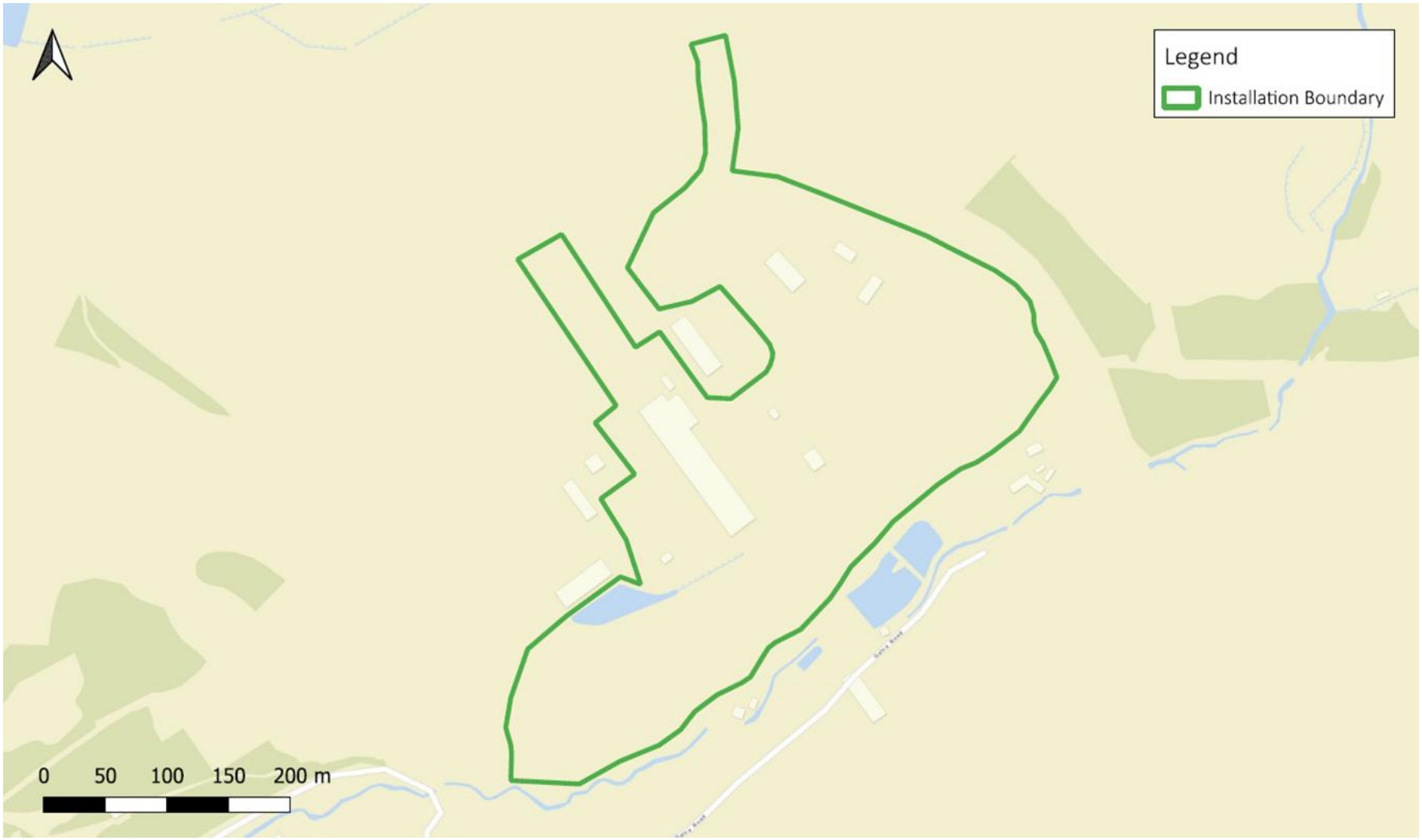


Figure 1.2 Current MPF Installation Boundary

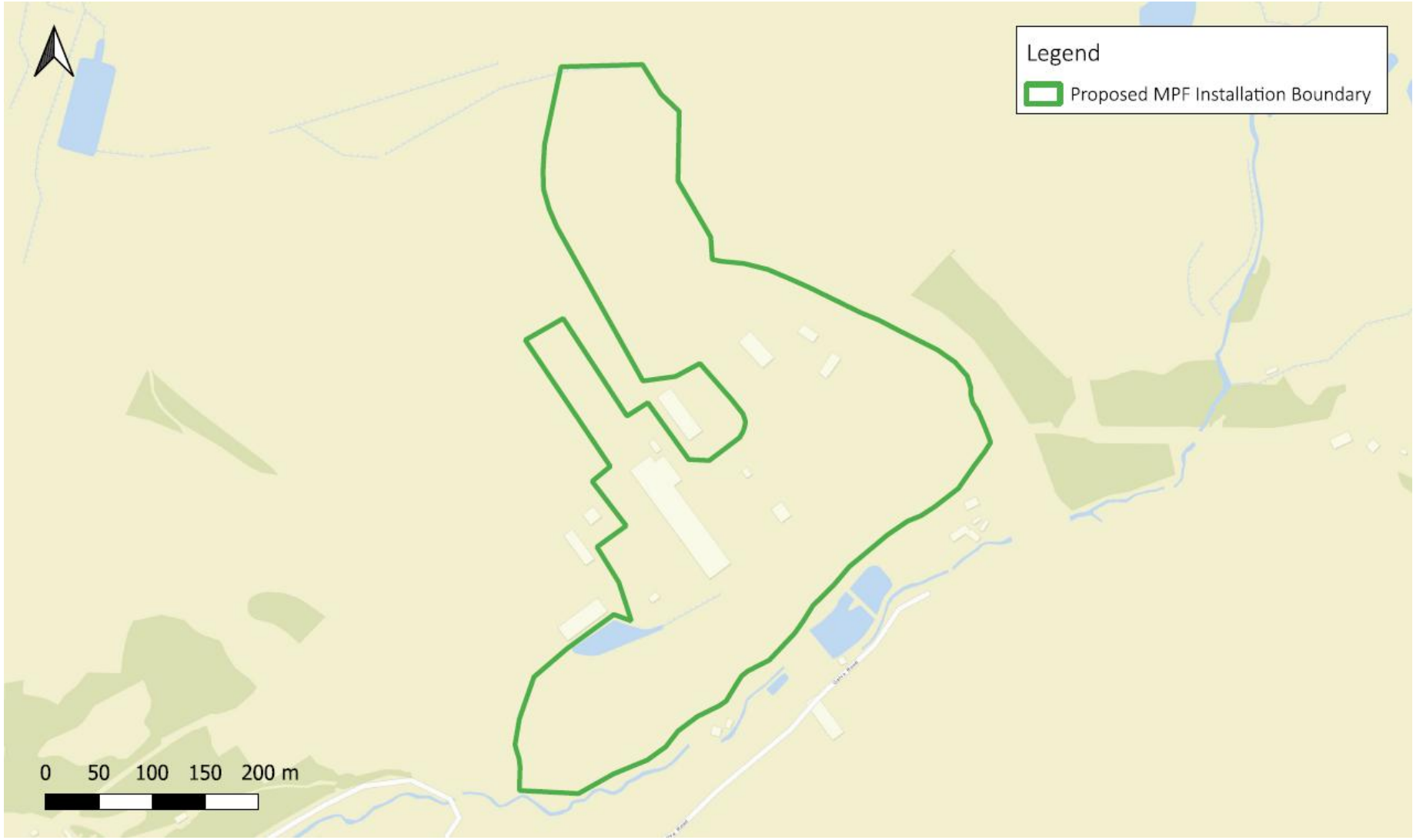


Figure 1.3 Proposed MPF Installation Boundary

2. PERMITTING HISTORY

The MPF is currently permitted under EPR/AP3203ML, as detailed within Table 2.1. The current permit has been included in *Annex I – Existing Permit*.

Table 2.1 Permitting History

Reference	Description	Status	Date Granted
EPR/AP3203ML/V002	Permit variation to extend the site's Installation Boundary and include MFE crushing and screening operations.	[T.B.C – this application]	
EPR/AP3203ML/A001	Application for the Mineral Processing Facility	Determined	Duly Made 17/09/2021 Determined 10/06/2024

Other Environmental Permits relating to site operations and the MPF Installation permit are provided in Table 2.2 below.

Table 2.2 Additional Environmental Permits

Reference	Description	Status	Date Granted
EPR/JB3209MD	Mining Waste Facility	Determined	09/12/2022
EPR/WB3893DT	Sewage Treatment Plant	Determined	30/03/2022
EPR/GB3597DR	MPF Sealed Sources	Determined	03/10/2025
EPR/QP3420XX	Smallhanger South and North Tank Discharge	Determined	18/02/2025
EPR/DB3290RH	Elfords Pond Discharge	Determined	14/12/2021
SW/047/0002/005	Loughter Mill Impoundment	Determined	29/12/2021
SW/047/0002/023	Loughter Mill Abstraction	Renewal submitted 01/10/25	
SW/047/0002/003	Tory Pond Impoundment	Determined	29/12/2021
SW/047/0002/022	Tory Pond Abstraction	Renewal submitted 01/10/25	
SW/047/0002/020	Pit Abstraction (dewatering)	Determined	23/11/2022

3. DESCRIPTION OF VARIED CHANGES

3.1 Description of Proposed Changes

The MPF site is currently permitted under the conditions established by Environmental Permit, EPR/AP3203ML.

DRL is making this application to carry out a '*substantial*' variation of their existing EPR permit under The Environmental Permitting (England and Wales) Regulations 2018 (as amended) in order to include the Mobile Front End (MFE) crushing and screening operations and to extend the site's Installation Boundary to incorporate the MFE.

A LEP has been granted by the EA for the temporary crushing and screening operations associated with the MFE Phase one operations. The LEP is provided in *Annex J – Local Enforcement Position*. The MFE is proposed to initially process pre-existing stockpiles and soft in-situ ore, following which freshly mined ore or extractive residues classed as resources will be processed. The MFE will generate fine and coarse ore material into limited stages of the MPF. Following discussions between DRL and the EA, the EA has requested that the MFE is included within the MPF permit. DRL therefore propose that the MFE becomes a permanent operation on site. The MFE is proposed to be regulated under the current permitted Activity *Section 3.5 Part B (a) – crushing, grinding or other size reduction of any designated mineral or mineral product*.

This application is being made following the provision of pre-application advice by the EA dated 24/08/2026 and subsequent meetings where it was generally agreed that the variation relating to the MFE would be considered a 'Substantial Variation'. The application advice has been provided in *Annex K – Enhanced Pre Application Advice.*

The permitted Activities at site are detailed within Table 3.1 below.

Table 3.1 Listed Activities

Activity Listed in Schedule 1 of the EP Regulations	Description of Specified Activity	Limits of Specified Activity
AR1 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	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.
AR2 Section 5.4 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	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	From receipt of contaminated process water and water treatment chemicals to return of cleaned water to the process and removal of dewatered sludge cake from the facility and transported to the Mining Waste Facility (Permit reference EPR/JB3209MD).

	de-watered solids made suitable for disposal.	
AR3 Section 3.5 Part B (a) - Crushing, grinding or other size reduction of any designated mineral or mineral product.	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 Activities		
AR4 Dense Media Separation (DMS)	Aqueous treatment of suspended ore solids according to density by cyclones, screening and gravity separation.	From receipt of crushed ore to transfer to subsequent separation treatment processes and temporary storage and removal of waste material to the mining waste facility (Permit reference EPR/JB3209MD).
AR5 X-Ray transmission ore sorting	X-Ray transmission ore sorting of ore solids to reject barren ore.	From receipt of crushed ore to transfer to subsequent separation treatment processes and temporary storage and removal of reject material to the mining waste facility (Permit reference EPR/JB3209MD) or transferred off site.
AR6 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 from the DMS ore processing stage to production of de-watered ore filter cake for processing in the pre concentrate dryer.
AR7 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.
AR8 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.
AR9 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.

AR10 Storage of excavated material and crushed ore	Storage of excavated material and crushed ore pending.	From receipt of excavated material or crushed ore, to transfer to subsequent treatment processes. All excavated material and crushed ore shall be stored on an impermeable surface with a sealed drainage system.
AR11 Storage of ore sorter rejects	R13: Storage of waste pending any of the operations numbered R1 to R12 (excluding temporary storage, pending collection, on the site where it is produced).	From receipt of ore sorter reject to transfer to the Mining Waste Facility (EPR/JB3209MD) or transferred off site. The material shall be stored on an impermeable surface with a sealed drainage system.
AR12 Raw Material Storage	Storage of raw materials including lubrication oil, antifreeze, diesel.	From the receipt of raw materials to despatch for use within the facility.
AR13 Surface Water collection and storage	Collection and storage of roof and site surface water in attenuation ponds.	From the collection of roof and site surface water to re-use within the facility or discharge off-site through the surface water discharge permitted activity EPR/QP3420XX or EPR/JB3209MD.

3.2 Installation Boundary

The site's current proposed Installation Boundary is shown above in Figure 1.2, 1.3 and *Annex A- Figures.*

The proposed Installation Boundary will overlap with the MWF Installation Boundary as shown below in Figure 3.1.

Due to changes to the Installation Boundary, an updated Site Condition Report is provided within *Annex H – Site Condition Report.*

In accordance with Pre-Operational Condition 05 of the MPF Permit, an updated Site Condition Investigation report including baseline conditions was undertaken and submitted to the EA on 27th February 2026, prior to operations recommencing on site.

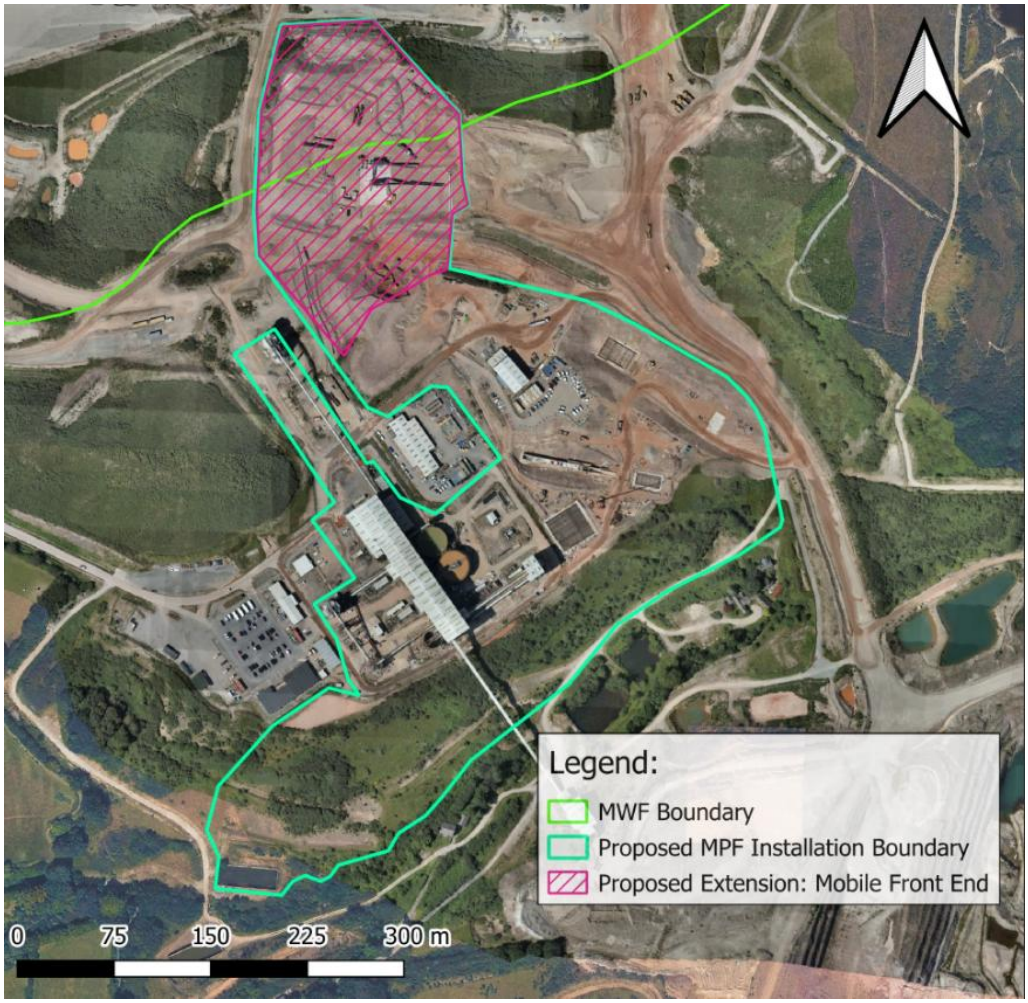


Figure 3.1 Proposed MPF Installation Boundary

3.3 Site Infrastructure and Design

All areas internally within the MPF are entirely sealed hardstanding with a fully contained and sealed drainage system.

No waste water from inside the building will be discharged to the surface water management system. Waste water will be recirculated via the water treatment plant or discharged to the MWF.

All site infrastructure (roads, drainage systems, concrete hardstanding and buildings) are inspected on a weekly basis by a competent person. Any faults and repairs will be carried out as soon as practicable and recorded on site.

The MFE site layout shown below in Figure 3.2 and is included in *Annex A – Figures*.

The site orientation shown in Figure 3.2 will be in operation for the vast majority of the MFE operations. However, to retain flexibility in site operations, the layout of the stockpiles and processing area is not fixed, and can be altered if necessary.

The additional infrastructure for the Mobile Front End will include:

- 2 Mobile Trommels;
- A Rinsing Screen;

- A Wash Plant;
- A Cone Crusher;
- 2 Compact Sand Screens; and
- A Mobile IPJ.

Technical information for the proposed MFE operations are provided in *Annex B -Technical Information*.



Figure 3.2 MFE Site Layout

3.4 Raw Materials

Table 3.2 below lists the main raw materials used within the MPF. Additionally, the site will utilise small amounts of general purpose materials such as wood, aggregate, metal, cement etc for routine repairs.

No additional raw materials are required as a result of this permit variation.

Table 3.2 Inventory of Raw Materials

Reagent	Use	Average Annual Consumption	Storage Method	Maximum Quantity Stored on Site
Ferric Sulphate (30-60% Solution)	Water Treatment Plant coagulant	160,963L	Bulk liquid stored in specialist tanks	21,000L
Ferrosilicon	Process	125.97t	1 tonne bags	20t
Hydrogen Peroxide (~35% Solution)	Water Treatment Plant oxidiser	34.99m^3	1m^3 IBC stored in shed / container	9,000L
Diesel	MPF – concentrate pre dryer, kiln burners, kiln reductant, incinerator, tin dryer.	2,764,368L	Self bunded containerised diesel tank	160,000L[1]
Diesel	MFE - generators	730,000L	Self bunded containerised diesel tank	2 x 9000L
Sulphuric Acid (35% Solution)	ASTP pH Control	230,947L	Bulk liquid stored in specialist tanks	8,500L
Grinding Media	Primary and Regrind Milling	232.35t	1L Steel drums, stored externally	20 drums
Flocculant	Process	69.98t	750kg bulk delivery	15t
Copper Sulphate	Process	0.56t	50kg bag storage	100kg
Potassium Amyl Xanthate	Process	1.12t	Bulk chemical storage area	300kg
Frother – Interfroth	Process	56.55L	Bulk chemical storage area	60L

[1] Combined volume of the kiln diesel tank and the storage diesel tank on site.

Hydrated Lime Putty (43%)	Process	31.49t	Bulk chemical storage area	10t
Potable Water	Various	500L	South West Water (SWW) Mains	-
Raw Water	Top up & process	936,000L	Flat bottom Steel tank	150m^3
Process Water	Process		Flat bottom Steel tank	2800m^3
Compressed Air	Flotation Blower	-	-	-
LPG	Various	1	86 & 34KG bottles held in the bottle store	86kg bottles – 4 bottles 34kg bottles – 5 bottles
Lubricating Oil	Various	3	25L and 205L drums in the Bunded oil store	Various in small quantities
Hydraulic Oil	Various	2.5	25L and 205L drums in the Bunded oil store	Various in small quantities

Water Usage

The site benefits from a water balance model for all water requirements on site including the water requirements and availability for dust suppression.

The water balance model (Reference - UK0043922.5487.RP01.B0_Hemerdon Mine_Surface Water Management Plan and Site Wide Water Balance Modelling) confirms that there is sufficient water supply to meet the demands of all operational and environmental water requirements in addition to dust suppression requirements.

The site also benefits from a SWMP which manages surface water across the entire site and associated discharges off site.

3.5 Description of the Proposed Process

3.5.1 Mobile Front End

The MFE is currently regulated through an LEP, until 4th January 2027 and will comprise of a washing, screening and a tertiary crushing circuit with a separate mobile IPJ Circuit. The LEP is provided in *Annex J – Local Enforcement Position*. The EA has requested that these operations are regulated and included within the MPF permit.

The MFE will be operated in two phases with different materials to be processed during each (Phases 1A and 1B respectively):

- Phase 1A: Initially, it is planned to process existing ROM ore and low grade stockpiles left over from previous site operators. The ROM stockpiles contain a mix of ore types, with high clay and iron content; and
- Phase 1B: Once the ROM ore stockpiles are sufficiently depleted (predicted 3 months of operation), the MFE will also be fed with transitional and fresh granite ore types. There is also future potential for recovery of mineral extraction residues from the MWF. However this will be dependent on the suitability of the material and necessary approvals.

The MFE will consist of the following:

- Fine Ore Preparation: Feed material will be screened and washed using mobile trommels, rinsing screens, wash plant and mobile crusher(s). Fine material (approximately <0.8 mm) will be pumped to the existing Fine Gravity Separation Circuit in the MPF. Coarse material (~0.8mm to 7mm) will be fed into the Coarse Ore Preparation process step.
- Coarse Ore Preparation: Coarse material between (~0.8 mm to 7 mm) will be processed through a smaller scale and mobile IPJ unit to recover ore bearing material. The majority of feed will report as non-ore bearing and will be used as construction material on site. Pre-Concentrate from this stage will report to the DMS Circuit within the MPF.

During Phase 1B, the MFE facility will be set up to produce 3 products:

- Jig concentrate (-7+0.8mm) – to be pumped to the MPF for further processing;
- Jig tailings (-7+0.8mm) – which will be used for construction on the wider mine site -MWF base material, ROM pad construction material, or as an aggregate product; and
- Fine (-0.8mm) – which will be pumped to the MPF for further processing.

Figure 3.3 provides a process flow for Phase 1.

Phase 1A

The current ROM Pad ore stockpiles will be processed using a trommel to remove the +100mm material. The trommel undersize material (-100mm) will then be transferred to the MFE for processing.

The undersize material (-100mm) at the MFE then goes through a sandwash plant (scrubber trommel). The output material from the scrubber trommel is then processed through a cone crusher, before finally passing through a fine rinsing screen (double deck screen).

The final output materials are then processed as described above in Section 3.5.1.

The EA limited the throughout during the commissioning phase through the LEP to 200tph. DRL request an increase to 250tph for full production.

Phase 1B

Once the pre existing ore stockpiles are depleted, the MFE will be fed with transitional and fresh granite ore types supplied by the wider pit mining activities.

Ore will be processed through the MFE as shown in Figure 3.3 below.

The -0.8mm fraction (approximately 100t/h solids) from the Sand Screens will be pumped to the MPF for processing in the fine gravity section. Tailings from fine gravity will be pumped to the Tailing Storage Facility (TSF).

The -7 +0.8mm fraction (approximately 100t/h solids) will be processed through the MFE IPJ equipment. Additional feed for the IPJ process will be sourced from Phase 1A stockpiles and pit mining operations.

Jig Floats (solid waste from IPJ process) will be utilised for drainage requirements on the MWF. Concentrate from the IPJ process will be pumped to the MPF for further upgrading using the Secondary DMS plant.

The MFE is designed to have a front-end feed capacity of 250t/h plus additional capacity with the IPJ process including feed from Phase 1A stockpiles and in-pit mining operations.

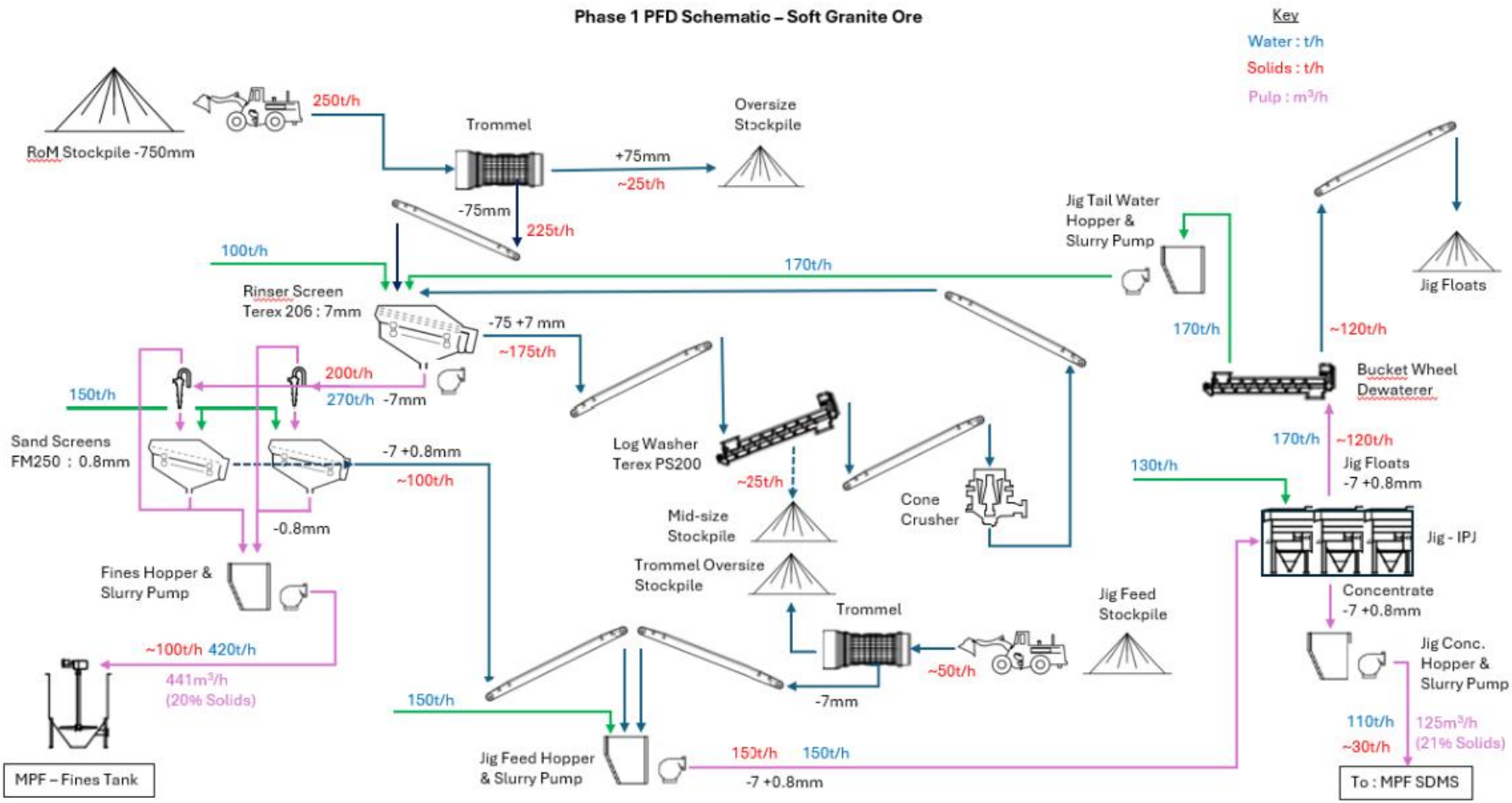


Figure 3.3 Phase 1 Process Flow

The proposed general arrangement of the MFE during Phase 1A and 1B is shown below in Figures 3.4 and 3.5.

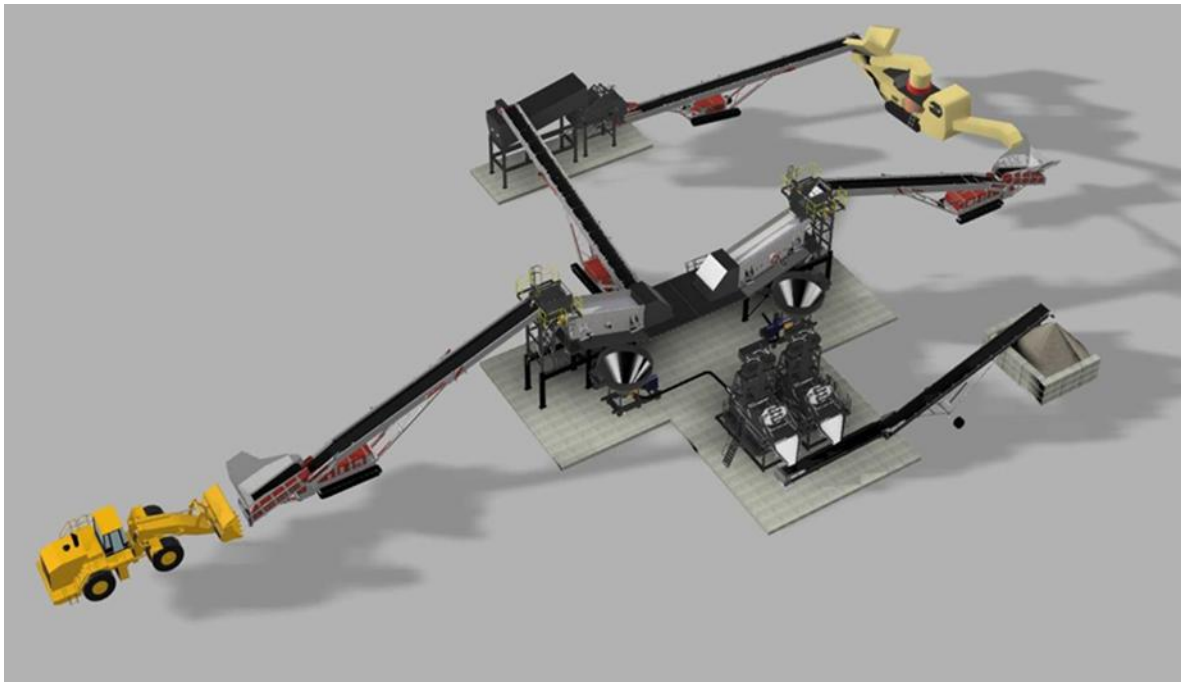


Figure 3.4 General arrangement for the MFE during Phase 1A

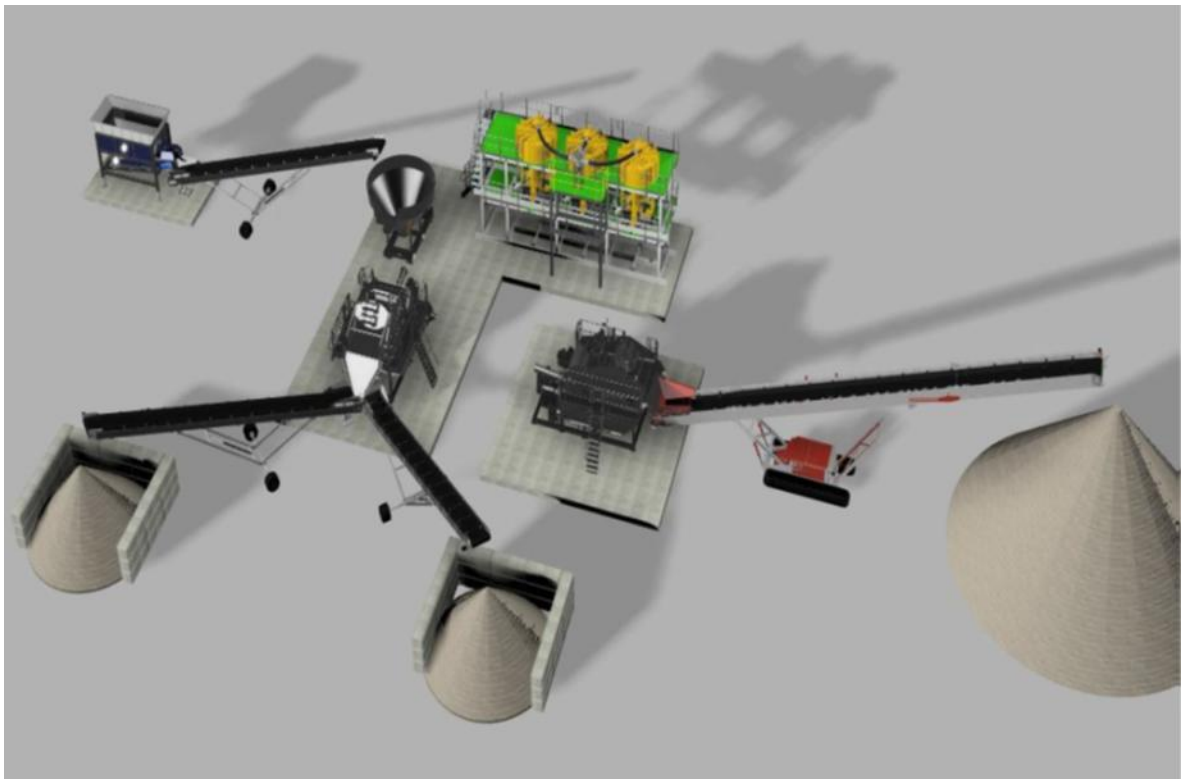


Figure 3.5 General arrangement of the MFE during Phase 1B

3.6 Energy Efficiency

There are no proposed changes to the site's overall energy requirements as a result of this permit variation. The MFE will initially operate on generators fuelled by HVO Biofuel.

The MPF will use electrical and heat energy to process the mineral and to transfer materials between equipment. Electrical power from the grid will largely be used to drive motors, pumps, feeders, fans etc. for the transfer of product, water, conveyors, cyclones, screens etc.

Fossil fuel use will include diesel to provide heat energy for use in the Rotary Dryer, the Reduction Kiln and the Off-gas Oxidiser (incinerator). The plant is initially expected to operate on diesel (light fuel oil) but alternative cleaner fuels will be investigated at a later date, including Therma 35 and LPG.

There will be planned plant shutdowns to enable routine or planned maintenance to take place. Equipment will be shutdown during this period. Plant will be protected against unexpected electrical blackouts with uninterruptable supplies as appropriate.

Plant will be provided with appropriate interlocks and supported by staff training such that relevant equipment can be shutdown in the event of power or plant failure.

The MPF is designed to optimise the recovery and reuse of energy. Key aspects of energy management are:

- Unsuitable material will be removed as early as possible in the process, through the introduction of x-ray transmission ore sorting, preventing energy (and raw materials) being used in treatment of such material;
- Equipment will be gravity driven where possible including spirals, screens and water reception sumps and ponds to minimise energy used for pumps and motors;
- Heat energy from fuel burnt in the kiln and the pre-dryer will be recovered from the flue gas to provide heat energy to the pre-dryer;
- Pumps, motors and drives will be selected to include equipment with variable speed drives and a low energy use footprint;
- Equipment not in use will be turned off or put onto reduced duty;
- Low energy light fittings will be used, with the need for lighting being minimised by the inclusion of translucent roof and wall panels in the main buildings; and
- Equipment will be regularly serviced and maintained to keep it in good condition. This will include a weekly maintenance programme. Regular maintenance ensures that equipment continues to operate at optimum energy efficiency and that energy consumption does not increase due to inefficient performance.

DRL will implement the following management measures:

- Energy use will be monitored, recorded and periodically reviewed to identify areas of improvement and to ensure that inefficiency is investigated and improvement actions are implemented;
- Staff will undergo awareness training in energy efficient practices; and

- Due to the nature of the activities, opportunities for further energy efficiency measures are limited. However, the importance of minimising energy consumption is recognised and future reviews for energy saving techniques will be undertaken.

3.7 Best Available Technique Justification

The existing Best Available Techniques (BAT) justification remains applicable to site operations. The proposed variation does not alter current compliance with BAT requirements.

Table 3.3 below provides a BAT justification in accordance with Defra *Process Guidance Note 3/16(12): Statutory guidance for mobile crushing and screening*. Table 3.3 blow outlines the key requirements of the guidance document and demonstrates how the site will meet these requirements.

Table 3.3 Best Available Techniques Justification – PGN 3/16 (12)

Guidance – source of dust	Guidance – Control Techniques	Justification
Loading and unloading processes ▪ transfer of materials	Containment Suppression Reduced drop heights ▪ use of variable height conveyors ▪ use of chutes ▪ Appropriate siting - away from site boundary especially if ▪ near residential or other sensitive receptors	Use of mobile crushing and screening equipment is fitted with integrated water suppression systems at primary dust generation points which are identified within the DEMMP. Continuous operation and maintenance of water suppression systems during processing activities. The MFE is located away from the wider sites boundary and away from residential properties. Material drop heights will be minimised and maintained below tray height during loading and material handling.
Double handling transfer points	Site and process design	Due to the nature of the operation, material will be double handed but this will be managed to minimise unnecessary double handling and material movements.
Aggregate stockpiles	Appropriate siting - away from site boundary especially if near residential or other sensitive receptors Wind dynamics management ▪ use of fencing, bunding, profiling etc ▪ Reduced drop heights ▪ Suppression	The MFE is located away from the wider sites boundary and away from residential properties. Drop heights will be minimised and maintained below tray height during loading and material handling. Material moisture content will be monitored daily and maintained at an appropriate level to minimise dust generation.

	▪ water and/or suppressants ▪ sufficient coverage by sprays ▪ Covering ▪ below ground or covered stock bins ▪ dust covers ▪ housing	Use of mobile crushing and screening equipment is fitted with integrated water suppression systems at primary dust generation points which are identified within the DEMMP. Continuous operation and maintenance of water suppression systems during processing activities. Stockpiles will be managed to minimise the area of exposed loose material by maintaining stable side slopes, avoiding unnecessary spreading of material, and recovering or processing material as soon as operationally practicable. During dry or windy conditions, exposed stockpile surfaces will be routinely inspected and water suppression applied where visible dust is observed or where stockpile moisture content falls below the operational trigger level. The site will be subject to continuous visual dust inspections and daily dust risk assessments during elevated-risk conditions.
Crushing, grinding, screening and separation	Containment Dust arrestment Suppression Appropriate siting - away from site boundary especially if near residential or other sensitive receptors	Mobile crushing and screening equipment will be fitted with integrated water suppression systems at primary dust generation points. Suppression systems will operate continuously during processing and be maintained appropriately. Operations may be suspended or modified during high dust-risk conditions. Full details are provided within the Dust and Emissions Minimisation Management Plan provided in *Annex D – Dust and Emissions Minimisation Management Plan* of this application. Processing areas will be inspected and cleaned each shift to prevent accumulation of fine material.
Conveyors, conveyor transfer points	Containment ▪ wind boards Appropriate siting - away from site boundary especially if near residential or other sensitive receptors	Use of mobile crushing and screening equipment is fitted with integrated water suppression systems at primary dust generation points which are identified within the DEMMP.

		Continuous operation and maintenance of water suppression systems during processing activities. The MFE benefits from sprinkler system, water cannon suppression and transfer point containment, full details including locations of each are provided within the DEMMP.
Roadways including haulage roads	Suppression ▪ appropriate siting and process design	All roadways including haul roads will be maintained and kept in a good state of repair. Water bowsers and mobile spray systems will be used to dampen roadways and haul roads during dry weather. Site speed limits are implemented and enforced on access and haul roads, taking account of weather and ground conditions
External operations ▪ conveyors ▪ stockpiles ▪ roadways	Appropriate siting - away from site boundary especially if near residential or other sensitive receptors Wind dynamics management ▪ use of fencing, bunding, profiling etc.	The MFE is located away from the wider sites boundary and away from residential properties. The extensive detailed DEMMP details all mitigation measures and the monitoring scheme implemented on site.
Vehicles – bodies and wheels	Wheel-wash Exhausts that do not point vertically down	All vehicles including mobile plant will be fully maintained and subject to pre operational checks to identify any potential defaults. Site access and haul-road speed limits will be enforced, with road surfaces dampened during dry conditions. All vehicles that leave site will have access to the site's wheel wash.
Asbestos	Exclude from feedstock	Not applicable – there will be no processing of asbestos on site.

In addition to the measures detailed above in Table 3.3 and control measures detailed within the DEMMP, BAT will be applied through the effective management and operation of site equipment and activities. All operators receive appropriate training in the correct use of equipment and understand their responsibilities for safe and effective operation. Equipment is routinely inspected and effectively maintained to ensure it

remains in good working condition, operates efficiently and minimises the potential for emissions and leaks or spills.

Effective management procedures are implemented to ensure all equipment and mobile plant is operated in accordance with established controls and manufacturer recommendations.

The site is subject to housekeeping procedures to minimise the risk of pollution, prevent the accumulation of materials/dust, and ensure the site remains clean, free from fugitive emissions and well managed.

Any dust complaints or monitoring results indicating elevated dust levels will be investigated and appropriate corrective actions implemented in accordance with the DEMMP.

3.8 Environmental Management System

The site will be operated in accordance with corporate standards and procedures as part of an Environmental Management System (EMS). The system has been designed to meet the requirements of ISO 14001 with the aim of certification by Q3 2027.

All assets owned and operated by DRL will be operated in accordance with a suite of procedures, policies and controls. All aspects of the site operations will be managed in accordance with the management system through a lifecycle approach.

The EMS will be structed to meet the requirements of the Environmental Permitting Regulations and associated pollution prevention guidance. The EMS is designed to ensure:

- The identification of all foreseeable environmental impacts and risks that the operators activities pose to the environment;
- Prevention or minimisation of any identified risks to practical minimum;
- Legal compliance assurance;
- Identification of risks of pollution including those arising from operations, maintenance, accidents, incidents, non-conformances and complaints, and how these will be minimised;
- Activities at the site will be managed in accordance with the management system, which will be subject to continuous review, audit and improvement. Specific detailed management system reviews will take place if there is a significant change to the activities, following an accident or if a non-compliance is found; and
- Furthermore, the whole management system will be subject to an annual external audit by a competent third party.

The keys aspects of the EMS for the site will include:

- Preventative maintenance;
- Operator requirements;
- Training and competence;
- Emergency response and incident management; and
- Monitoring, measurement and reporting.

The EMS and procedures have been written to ensure that the environmental risk and impact of the normal running of the site activities are documented and minimised.

Site Maintenance

All maintenance activities on site are carried out in accordance with the manufacturers' recommendations and integrated within the company's EMS.

The key aspects of the maintenance management programme includes:

- A programme of Planned Preventative Maintenance (PPM) is undertaken to ensure ongoing management and replacement of key plant and equipment rather than waiting for the equipment to fail and the maintenance of any critical environmental equipment;
- The inspection and maintenance schedules that the manufacturer recommends are adhered to, including any period of recommended shut-down;
- Predictive maintenance is carried out to prevent any catastrophic breakdown; and
- Real time data collection and plant condition monitoring.

The detailed management system operated by the site will include procedures for ensuring that adequate maintenance is undertaken at the site.

The maintenance programme will ensure that all equipment or infrastructure that is deemed essential in the prevention of pollution to the environment (e.g. hard standing, bunds, abatement plant etc) or the prevention of local nuisance impacts (e.g. noise abatement equipment etc) is maintained and kept in good operating condition.

All maintenance activities for critical pollution control equipment (abatement etc) will form a key part of the certified EMS that will be established prior to the commencement of operations at site.

3.9 Operating Hours

The MPF and proposed MFE will continue to operate 24/7. However, the Site is restricted when certain operations can be undertaken as outlined below.

- 07:00 to 19:00 – All crushing and processing activities operational, including the MFE with the exception of the loading shovel on the ROM pad. Haul trucks from the pit to the ROM and directly tipping into the Primary Crusher.
- 19:00 to 22:00 - All crushing and processing activities operational including the MFE and the loading shovel on the ROM pad including the movement of dump trucks from the extraction area.
- 22:00 to 07:00 – All processing activities operational, including the MFE but no primary and secondary crushing activities or mobile plant movements.

3.10 Operator Competence

The facility is fully automated to the point that all process activities are PLC controlled and SCADA monitored. The installation has on-line monitoring which can be administered remotely to ensure the process is optimised and operating correctly.

Notwithstanding the above, the site is staffed at all times by the Operations team. The primary role of day staff is to ensure and oversee plant operations and management.

Additional activities include general site housekeeping and administration activities. Additional staff attending the site will be visiting engineers from the equipment manufacturers who are adequately trained to perform their duties at site. The operator maintains written operation instructions for all plant and monitoring equipment present on site.

All personnel working at the facility are trained in the necessary sections of the EMS and any associated Procedures. All staff working for and on the behalf of the site are suitably trained and competent (e.g. professional maintenance engineers, electricians, equipment operators etc.).

There will be a MPF Manager and a number of Supervisors on site at all times as the technically competent people, who will hold the necessary qualifications.

3.11 Site Security

On-site security measures are in place and implemented on site to prevent acts of vandalism that may result in damage or harm to the site. These include:

- The security team will operate in accordance with the Security Management Plan;
- Site will be manned 24/7 by a dedicated site security team, who undertake site wide security patrols;
- Security lighting is operational on site;
- The entire site is enclosed by a perimeter fence and signage. Site access is via the main entrance / security cabin and barrier;
- Gates and fencing are inspected daily by the security team to identify deterioration and damage and the need for repair;
- Fencing and gates are maintained and repaired as needed to ensure their continued integrity. If damage is sustained, repair will be made within the same working day. If this is not possible, suitable measures will be taken to prevent unauthorised access to the site and permanent repairs will be affected as soon as is practicable;
- All visitors to site will report to the security cabin to sign in / out, thereby minimising the risk of unauthorised visitors on the site; and
- Operational procedures have been implemented including regular inspections, ensuring continual monitoring of security provision at the site.

3.12 Accident and Emergencies

DRL has developed an Accident Management Plan based around the specific risks associated with the site operations.

The key aspects of the Sites Accident Management Plan are:

- Reviewed by the Site Management annually and as soon as practicable after an accident.
- Considers hazards presented by:

- Actions in case of fire / explosion / emergencies;
- Radiation exposure;
- Failure of mains services;
- Failure of any equipment / operator error;
- Spillages and uncontrolled release;
- Plant or equipment failure;
- Extreme weather events;
- Vandalism; and
- Flooding.

- Identifies events or failures that could damage the environment.
- Assesses the likelihood and the potential environmental consequences from accidents at the site.
- Proposes action to minimise the potential causes and consequences of accidents.

In the event of an accident, the EA will be immediately informed and necessary measures to limit the environmental impact of the accident will be carried out, as well as measures to prevent further possible accidents.

The sites Accident Management Plan has been included in *Annex F – Accident Management Plan*.

Additionally, DRL has established, implemented and maintains a procedure to identify potential emergency situations and potential accidents that can have an impact on the environment. The Emergency Preparedness and Response Plan details how the company will respond to emergencies, preventing or mitigating any associated environmental impacts. This emergency plan is reviewed every year and if required will be revised after the occurrence of accidents or emergency situations.

DRL also operate in accordance with the site's Internal and External Emergency Plans.

4. EMISSIONS AND THEIR ABATEMENT

4.1 Emissions to Air

The MPF has five point source emissions to air:

- A1 – Exhaust from the ore pre-concentrate dryer bag and filter plant;
- A2 – Exhaust from the reduction kiln abatement scrubber;
- A3 – Exhaust from the tin concentrate dryer bag filter plant;
- A4 – Exhaust from the primary crusher plant bag filter system; and
- A5 – Exhaust from the secondary crusher plant bag filter system.

There will be no amendments or changes to the emissions profile to any emission points to air as a result of this permit variation.

Fugitive Dust Emissions

An updated DEMMP is provided within *Annex D – Dust and Emissions Minimisation Management Plan* and outlines all the dust controls and mitigation measures that are implemented on site.

In accordance with Defra *Process Guidance Note 3/16(12): Statutory guidance for mobile crushing and screening,* DRL will operate the MFE to ensure there will be no visual dust emissions beyond the site Installation Boundary.

The MFE is not a fully enclosed process but is operated in accordance with BAT as detailed in Section 3.7 above. However, the MFE is a wet mineral treatment process which limits the potential for dust generation and benefits from the following dust mitigation measures:

- Use of mobile crushing and screening equipment fitted with integrated water suppression systems at primary dust generation points;
- Continuous operation and maintenance of water suppression systems during processing activities;
- Use of water bowsers and mobile spray systems to dampen haul roads, stockpiles, processing areas and vehicle movements during dry weather conditions, particularly during the summer months when the site is dry;
- Management of material moisture content will be monitored daily to minimise dust generation during handling and processing;
- Minimisation of material drop heights to below the tray height during loading, crushing, screening and stockpiling activities;
- Stockpiles will be managed to minimise the area of exposed loose material by maintaining stable side slopes, avoiding unnecessary spreading of material, and recovering or processing material as soon as operationally practicable. During dry or windy conditions, exposed stockpile surfaces will be routinely inspected and water suppression applied where visible dust is observed or where stockpile moisture content falls below the operational trigger level;

- Inspection and cleaning of processing areas on each shift to prevent accumulation of fine material;
- Speed limits, will be implemented on site on all access and haul roads and must be adhered to with due regard to weather and ground conditions;
- Suspension or modification of operations during high dust potential conditions;
- Continuous visual inspections of dust emissions by operational personnel throughout the working day;
- Daily dust risk assessments during dry, windy or otherwise elevated dust risk conditions; and
- Investigation and implementation of corrective actions in response to any dust complaints or monitoring results indicating elevated dust levels.

4.2 Emissions to Controlled Water

There will be no changes to emissions to controlled water as a result of this permit variation. As currently permitted, all process effluent from the MPF that is not re-used within the process (i.e recirculated via the onsite water treatment plant) will be discharged to the Mining Waste Facility (MWF).

The site's Surface Water Management Plan (SWMP) has been updated to incorporate the MFE operations and the management and control of surface water within the proposed MFE area. Surface water runoff from within the MFE area will drain into a new catchpit (catchpit 24) and then gravity drain through the current surface water management system prior to discharge from Tory Pond. Discharges to surface water will be controlled in accordance with the MWF Permit, EPRJB3209MD.

4.3 Emissions to Sewer

There will be no changes to emissions to sewer as a result of this permit variation. All emissions to sewer will be controlled in accordance with the sewage treatment plant permit, EPR/WB3893DT.

4.4 Emissions to Land

There are no emissions to land as a result of this permit variation.

4.5 Noise Emissions

The operational noise levels from the MFE have either been determined through an operational survey of a similar facility located at Aberdo Quarry in north Wales, or of the MFE itself; this is due to the fact that not all the noise sources associated with the MFE were operating at the time of the NIA. Full details are provided within the updated NIA in *Annex G – Noise Impact Assessment and Noise Management Plan.*

The MFE benefits from the following mitigation measures:

- Screen Enclosures - The screen decks will be vented and each screen will be housed in a steel-plate enclosure. This was a requirement with regards to Low Frequency Noise (LFN), though it is considered that the enclosure will also provide mitigation for audible noise;
- Earth Bunds - It has been confirmed that a 6m high earth bund (the base of which is relative to the level of the pad on which the MFE is sited) will be located on the southern boundary of the MFE, which has been included within the noise model.

An additional 4 m high earth bund will also be located on the MFE pad to the north of the trommels and associated excavator;

- Plant On-times - It has been assumed that all the external plant and plant contributing to the internal levels set out in Table H of the NIA are operating with 100% on-time, though the crushing activities will be limited to the daytime period only;
- Roller shutter doors - it has been assumed that these would be open for 50% of the time during the daytime and evening periods and 10% of the time during the night-time period;
- Equipment will be operated by trained, competent and experienced staff;
- Site operational times will be adhered to at all times;
- All fixed and mobile plant will be maintained through preventative maintenance programmes;
- Defective equipment generating abnormal noise will be removed from service until repaired;
- Procurement of new equipment will consider noise performance and BAT requirements; and
- Minimisation of material drop heights to below the tray height during loading, crushing, screening and stockpiling activities.

5. ENVIRONMENTAL MONITORING

5.1 Emissions to Air

In accordance with the DEMMP provided in *Annex D – Dust and Emissions Minimisation Management Plan*, DRL will undertake a proactive monitoring programme to establish the dust environment for Hemerdon Mine. The monitoring programme utilises, visual monitoring, dust frisbee deposition gauges and real time $PM_{10/2.5}$ monitors which are located within the curtilage of the mine site and at or near receptors in the vicinity of the site.

There are no proposed changes to emissions to air as a result of this permit variation. Therefore, all emissions to air monitoring will remain as currently permitted and monitoring will be in accordance with Table S3.1 – Point Source Emissions to Air and Table S3.4 – Ambient Air Monitoring Requirements listed in the Environmental Permit and shown below in Table 5.1 and 5.2.

Table 5.1 Point Source Emissions to Air Monitoring Requirements

Emission point reference	Source	Parameter	Limit	Monitoring frequency
A1	Exhaust from ore pre-concentrate dryer bag filter plant	Particulate	50 mg/m^3	Annual
	Exhaust from ore pre-concentrate dryer bag filter plant	Oxides of Nitrogen (NO and NO^2 expressed as NO^2)	No Limit Set	Annual
	Exhaust from ore pre-concentrate dryer bag filter plant	Sulphur dioxide	No Limit Set	No monitoring requirement
A2	Exhaust from Reduction Kiln abatement scrubber	Particulate	5 mg/m^3	Quarterly in the first year. Then Annually
	Exhaust from Reduction Kiln abatement scrubber	Oxides of Nitrogen (NO and NO_2 expressed as NO_2)	No Limit Set	Annual
	Exhaust from Reduction Kiln abatement scrubber	Sulphur dioxide	No Limit Set	No monitoring requirement

	Exhaust from Reduction Kiln abatement scrubber	Arsenic	1 mg/m^3	Quarterly in the first year. Then Annually
A3	Exhaust from tin concentrate dryer bag filter plant	Particulate	50 mg/m^3	Quarterly in the first year. Then Annually
	Exhaust from tin Concentrate dryer bag filter plant	Oxides of Nitrogen (NO and NO_2 expressed as NO_2)	No Limit Set	Annual
	Exhaust from tin concentrate dryer bag filter plant	Sulphur dioxide	No Limit Set	No Monitoring required
A4	Exhaust from primary crusher plant bag filter system	Particulate	50 mg/m^3	Quarterly in the first year. Then Annually
A5	Exhaust from secondary crusher plant bag filter system	Particulate	50 mg/m^3	Quarterly in the first year. Then Annually

Table 5.2 Ambient Air Monitoring Requirements

Location or description of point of measurement	Parameter	Monitoring frequency
In accordance with the Dust and Emissions Management Plan	PM_{10}	Continuous
	Deposited particulate matter	Continuous
	Visual Dust checks	Daily

5.2 Emissions to Controlled Water

There are no proposed changes to emissions to controlled water as a result of this permit variation. Therefore, all emissions to controlled water will remain as currently permitted and monitoring will be in accordance with Table S3.2 – Point source Emissions to Water (other than sewer) and Land listed in the Environmental Permit and shown below in Table 5.3.

Discharges to surface water will be controlled in accordance with the MWF Permit, EPRJB3209MD.

Table 5.3 Point Source Emissions to Water Monitoring Requirements

Emission point reference and location	Source	Parameter	Limit	Monitoring frequency
W1 – as shown on site plan in Schedule 7 emission to Smallhanger Brook [note 1]	Site surface water via oil interceptor and attenuation ponds	No parameters set	No limit set	-
W2 – as shown on site plan in Schedule 7 emission to Tory Brook [note 2]	Site surface water	No parameters set	No limit set	
[note 1] discharge will be subject to requirements of environmental permit EPR/QP3420XX				
[note 2] discharge will be subject to requirements of environmental permit EPR/JB3209MD				

5.3 Emissions to Sewer

There are no proposed changes to emissions to sewer as a result of this permit variation. Therefore, all emissions to sewer will remain as currently permitted and monitoring will be in accordance with Table S3.3 – Point Source Emissions to sewer, effluent treatment plant or other transfers off-site listed in the Environmental Permit which is stated to be in accordance with the requirements of environmental permit EPR/JB3209MD.

Other emissions to sewer on site will consist of secondary treated sewage effluent from a package sewage treatment plant which serves offices and welfare facilities. This is permitted separately under Environmental Permit EPR/WB3893DT. Monitoring will be in accordance with Table S3.1 requirements listed in this Environmental Permit.

5.4 Emissions to Land

There are no emissions to land as a result of this permit variation. Therefore, no monitoring is required.

5.5 Noise

In accordance with the Noise Management Plan provided in *Annex G- Noise Impact Assessment and Noise Management Plan*, DRL will undertake a proactive monitoring programme to establish the background noise environment for Hemerdon Mine. The monitoring programme utilises both continuous on site noise monitors and scheduled off site noise monitoring at selected NSRs.

Noise will be monitored in accordance with Table S3.5 – Noise Monitoring Requirements listed in the Environmental Permit and shown below in Table 5.4.

Table 5.4 Noise Monitoring Requirements

Location or description of point of measurement	Parameter	Monitoring frequency
In accordance with the Noise Management Plan	Noise	Annually

6. IMPACT TO THE ENVIRONMENT

6.1 Impacts to Air

There are no impacts to air arising from this permit variation.

The MFE is operated in accordance with BAT and the DEMMP which provides details on the control and migration measures implemented on site to minimise potential fugitive dust emissions.

The proposed IPJ circuit is located internally, an aqueous process and is fully enclosed eliminating the potential for fugitive emissions to air.

6.2 Impacts to Controlled Water

There are no impacts to controlled water arising from this permit variation.

The site's SWMP has been updated to incorporate the MFE operations and the management of surface water within the proposed area.

As currently permitted, all process effluent from the MPF that is not re-used within the process (i.e recirculated via the onsite water treatment plant) will be discharged to the MWF. Discharges to surface water will be controlled in accordance with the MWF Permit, EPRJB3209MD.

6.3 Impacts to Sewer

There are no impacts to sewer arising from this permit variation.

The site will continue to operate in accordance with the MPF Environmental Permit and Sewage Treatment Plant Permit, EPR/WB3893DT.

6.4 Impacts to Land

There are no impacts to land arising from this permit variation.

The DMS Cyclone circuit requires ferrosilicon and a magnetic storage area which is controlled under the site's CoSHH management procedures. The proposed IPJ circuit does not increase the potential impact to land as no hazardous substances are required for operation and the IPJ circuit will be installed within a fully bunded area.

6.5 Noise Impacts

The NIA concludes that development sound will have no effect at distant NSRs and the range of noise impacts for the proposed development are acceptable with respect to overarching and local requirements for planning and noise.