

Permitting decisions

Bespoke permit

We have decided to grant the permit for South Crofty Mine operated by Western United Mines Limited.

The permit number is EPR/PP3936YU/A001.

We consider in reaching that decision we have taken into account all relevant considerations and legal requirements and that the permit will ensure that the appropriate level of environmental protection is provided.

Purpose of this document

This decision document provides a record of the decision making process. It summarises the decision making process in the decision checklist to show how all relevant factors have been taken in to account.

This decision document provides a record of the decision making process. It:

- highlights [key issues](#) in the determination
- summarises the decision making process in the [decision checklist](#) to show how all relevant factors have been taken into account
- shows how we have considered the [consultation responses](#).

Unless the decision document specifies otherwise we have accepted the applicant's proposals.

Read the permitting decisions in conjunction with the environmental permit. The introductory note summarises what the permit covers.

Key issues of the decision

This Permit allows treatment and discharge of up to 25,000m³ per day of mine water from South Crofty mine and discharge into the Red River. This permit also incorporates the flood risk activities associated with the discharge into the Red River. The purpose is to dewater the mine in preparation for reopening and to maintain low water levels during operation of the mine. The dewatering process will be achieved by pumping the water out from within the mine which is anticipated to take 18-24 months.

The installation is located at Dudnance Lane, Pool, Redruth with a central grid reference of SW 66400 40650. The site is located within 300 meters of West Cornwall Bryophytes, a site of special scientific interest. The Red River Valley local nature reserve and Roskear local wildlife site are located within 10,000m of the downstream discharge into the Red River from the installation.

Treatment of mine water falls subject to; Section 5.4 Part A(1) (a) (ii) Disposal of non-hazardous waste with a capacity exceeding 50 tonnes per day involving physico-chemical treatment of the Environmental Permitting Regulations. The treatment of mine water is to improve the water quality prior to discharge into the Red River. A high density sludge process is used to treat the mine water to reduce heavy metal concentrations and peroxide is dosed to facilitate arsenic removal. Sludge produced from the treatment is temporarily stored onsite prior to removal for further treatment offsite.

The treated effluent is discharged into the Red River at two discharge locations; Tuckingmill and Dolcoath Adit. The operator has submitted an effluent treatment plant monitoring plan detailing proposed monitoring of the effluent and Red River to ensure that discharges from the treatment plant do not deteriorate the river quality when compared to current levels and to check that the mine water treatment remains effective.

The operator is working towards an ISO14001 certified environmental management system. A noise impact assessment, flood risk assessment and geomorphology survey have all been submitted and reviewed with the application for this permit.

This permit supersedes the previous discharge permit for South Crofty NRA-SW-5211.

The key issues associated with this permit are:

1. The modelling of the increased discharge to the Red River
2. Geomorphology
3. Flood Risk
4. Noise Impact
5. Effluent treatment plant monitoring plan
6. Waste classification of the sludge produced from the ETP.
7. Containment.

1. Modelling the proposed discharge on the Red River

Abandoned mines are a significant source of hazardous pollutants, notably metals such as iron, lead, zinc, cadmium and copper, and anions such as chloride and sulphate. They contribute to more than 1,500km of rivers failing to achieve good ecological status in surface waters. Research has shown that half of the total metals' load discharged to our rivers arises from abandoned mines. Defra policy stresses that abandoned mines need to be tackled for us to comply with our Water Framework Directive obligations and objectives.

We have carefully considered the potential impacts of effluent discharge from the Effluent Treatment Plant (ETP) into the Red River.

The initial proposal was to treat and discharge 10,000m³/day at Tuckingmill into the Red River, which was now been revised to up to 25,000m³/day to enable a faster dewatering process of the mine in readiness for reopening. There are two discharge locations proposed up to 10,000m³/day at Tuckingmill and up to 15,000m³/day into the Dolcoath Adit.

The treatment of the abstracted mine water is to improve the water quality prior to discharge into the Red River. The operator has designed a high density sludge process to treat the mine water to reduce heavy metal concentrations and peroxide is dosed to assist with arsenic removal. A waste sludge will be produced from the treatment process, which will be temporarily stored onsite prior to removal for further treatment offsite. The ETP design is proposed to have three identical parallel treatment lines, to enable the plant to treat the volumes required. And to provide contingency if one plant were to fail, the mine could remain operating the other two lines to continue with dewatering.

Various parameters have been identified as a potential risk to surface water and have been considered in the determination (Arsenic, Copper, Cadmium, Lead, Manganese, Iron, Aluminium, Zinc and Nickel).

This application is for a new bespoke installation, therefore the proposed ETP is not yet constructed. The operator conducted a large scale pilot trial of the treatment described above and submitted the results to the Environment Agency with this application for consideration. Due to the complexity of the discharge we have agreed to carry out the modelling of the impact of the treated mine water on the Red River for the operator. For the purpose of the modelling we have only used the results from the pilot trial obtained from a UKAS accredited laboratory.

The Red River is a heavily polluted water course from historical mining works. It has a water framework directive (WFD) ecological potential of moderate and fails chemical status. The Red River is currently predicted to fail to meet good status under WFD by 2027. For modelling we have used actual gauging flows rather than estimates for the Red River.

The flow from the Dolcoath Adit is comprised of the overspill water from several mining activities, which are too complex to split with any certainty. The operator has provided a mean flow of the Dolcoath Adit to be 14,300 m³/day. The current overspill from the South Crofty mine has been calculated by the operator to be 70 l/s, 6,048m³/day. To allow modelling of the impact we have assumed that this is a constant removal rate so have subtracted this flow from the Dolcoath Adit to give an estimate of the discharge from the other contributing mines. We have also assumed that each contributing mine is contributing overspill mine water of the same chemical composition.

The risk assessment consists of a two stage process, 1) a precautionary screening phase which is designed to establish which substances are insignificant and therefore require no further assessment, and 2) a detailed modelling stage for substances not screened out in stage 1. All hazardous pollutants considered with the exception of arsenic, zinc and copper, were screened out in the risk assessment as insignificant in stage 1. As a result, all substances with the exception of copper, zinc and arsenic are deemed low risk and do not require specific permit control.

Cadmium concentrations in the effluent have not been measured to an appropriate concentration (the results show below limit of detection) therefore we could not carry out meaningful analysis. We have modelled on the limit of detection (LOD) and half LOD values.

Lead and Nickel concentrations in the effluent have also not been measured at an appropriate concentration the data provided showed below LOD and not a quantitative figure. Additionally river data is also below the LOD for Lead.

Using the data for upstream of the Dolcoath Adit and the proposed 25,000m³/day discharge from the de-watering activities the table below shows the modelling prediction of the impact on the Red River with respect to the substances of not screened out at stage 1 as outlined above.

Location	Flow m ³ /day	Copper µg/l		Zinc µg/l		Arsenic µg/l	Cadmium µg/l
		Total	Bioavailable	Total	Bioavailable		
Upstream of Tuckingmill	10,368	285.88	24.4	100.38	56.7	12.37	0.25
Calculated upstream of Dolcoath Adit	38,824	84.6	11.3	44.4	28.4	52.27	0.16
Downstream concentration in Red River including 25,000m ³ /day modelled discharge	47,076	104.3	14.0	161.9	103.7	104.44	0.38
Current concentration below Dolcoath Adit		256.56		413.78		165.61	3.22
River flows at Tuckingmill SW 66133 40887 mean 0.120l/s and Q95 0.022 and Roscroghan SW65035 42011 mean 0.160 Q95 0.030.							

The table above shows that the result of adding the treated mine water to the natural flow of the Red River results in an improvement in the water quality for all substances which did not screen out at stage 1 and Cd.

Setting Limits

We have decided that emission limits should be set for pH, total daily volume of total discharge, daily volume of discharge for each outlet (Tuckingmill and Dolcoath Adit), Copper and Arsenic, as described below.

It is considered that the numeric limits described below will prevent significant deterioration of receiving waters. We have imposed numeric limits because either of a requirement of a relevant environmental quality or an operational standard. We have made our decision in accordance with our guidance document 17_13 'Permitting of hazardous pollutants in discharges to surface waters'.

The pH 6-9 matches the pH range set out in the Water Framework Directive.

The flow is limited to the maximum volume applied for by the operator and modelled in this study at 25,000m³/day.

Copper (Cu)

Our guidance document 17_13 states the inland surface waters annual average environmental quality standard (AA-EQS) limit for Copper (dissolved) is 1µg/l bioavailable. We have set a limit for 10µg/l for total Cu. Using the samples from upstream in the Red River a ratio of total Cu to bioavailable was calculated. Using these ratios a total Cu value of 10µg/l calculates to a bioavailable value of 0.8µg/l. 0.8µg/l is less than the EQS of 1µg/l for bioavailable Cu and therefore we consider this limit to be appropriate. Within the ETP pilot trial within the final most stable month the operator achieved a mean Cu value of 1.65µg/l. The operator has also stated a warning level at 5µg/l within their ETP monitoring plan.

We recognise the ratio of total to bioavailable was measured upstream and not from the treated effluent we have included the limit of 10µg/l for the permit issue and the operator is required under an improvement condition (IC1) to submit a report of the effluent quality achieved post commissioning of the ETP, if the review indicates the discharge is causing deterioration of the Red River the operator is required to review the limits set in table S3.2 of the permit.

Arsenic (As)

Our guidance document 17_13 states the Arsenic AA-EQS to be 50 µg/l. The last month of the pilot trial showed stable results with a mean of 25.6 µg/l for Arsenic and the operator has stated a warning level of 20-30 µg/l and a trigger/action level of 50 µg/l within the ETP monitoring plan. We have set the Arsenic limit as 50 µg/l within the permit and consider this limit to be appropriate for the discharge.

Zinc (Zn)

Our guidance document 17_13 states the Zinc AA-EQS to be 10.9 µg/l bioavailable plus the ambient background concentration (µg/l) dissolved. The Red River is heavily polluted from historical mining activities and the background concentration is very high for Zinc. Therefore setting a limit for this discharge would be skewed by the background level and would be meaningless to what the operators proposed ETP can achieve. The operator has set a warning level at >10µg/l for Zinc within the ETP monitoring plan. Using the data from the pilot trial we consider the Zn concentrations to improve the water quality. Therefore we have decided not to set a limit for Zinc in this permit at this time.

Following completion of IC1 a limit may be considered in the future based on actual results achieved by the operators ETP.

Suspended Solids (SS)

During normal flow conditions the SS levels within the Red River are very low at around 2mg/l, additionally the measured feed water levels are also low at 14mg/l. The ETP process will further reduce the SS levels within the treated effluent, the pilot trial achieved results of around 5mg/l. We have no concerns about the SS levels in the Red River or the treated effluent and the WFD does not require us to set a limit on the discharge for SS. Therefore we have decided to not set a limit for suspended solids.

All other parameters

We have not set limits for any other parameters at the time of permit issue. The operator is required to submit a report to the Environment Agency under improvement condition IC1 to demonstrate that once the ETP is operational the achieved water quality is causing no deterioration on the Red River. If the report indicates deterioration of the Red River the operator is required to review the limits set within the permit to ensure no deterioration of the receiving water course. The report shall include quantifiable data for Lead, Nickel, Dissolved Organic Carbon and Cadmium, for all of which qualitative data was not submitted from the pilot ETP trial.

2. Geomorphology Survey

The operator is proposing to discharge up to 25,000m³/day into the Red River. We expressed our concerns to the operator with the stability of the river banks and potential for scouring the banks from the increased discharge. We requested the operator carry out a Geomorphology survey specifically between Tuckingmill and Keive Mill to identify any sections of the channel vulnerable to erosion, exhibiting sensitive habitats and to consider mitigation operations (if necessary).

The operator used a third party consultant Geomorphologist to complete the survey. A walkover survey between Tuckingmill and Kieve Mill on the Red River, approximately 4.5km in length, was undertaken on 12th-13th September 2017. Upon completion of the field survey the Geomorphologist provided a summary of the field survey which was followed up with a full written report received on 03/10/17.

In summary the survey concludes there are no serious concerns regarding the potential for increased erosion. The channel is predominantly stable along its length either through bank reinforcement or very dense vegetation. The channel's primary function is transfer and along much of the watercourse, there is an armoured (not mobile) bed substrate, mostly comprising cobbles. There are no extensive signs of incision (vertical scour) or lateral adjustment. There are no sensitive in-channel or riparian habitats at risk as none were identified in the channel during the field survey.

The upper reach where the new regeneration road crosses is probably the most vulnerable to erosion, but this is in part due to the new realignment still adjusting, poor drainage from the road (scouring the bank as it enters the channel), and localised failing of the block stone at pinch points.

The proposed discharge at Tuckingmill upstream will not exacerbate this significantly – the channel will accommodate the increased flow. The realignment design includes a lower berm either side (to create a two-stage channel), so any higher flood flows would inundate this lower level and the energy will be dissipated. Weirs/ponds (bed checks) are also evident in this reach will limit the vertical scour

There are localised pockets of adjustment further downstream where the channel is not constrained such as within Reach 004 but the channel is still considered geomorphologically stable and there are no assets at risk in this area.

The Dolcoath Adit discharge point at Roscroggan is robust and will not be impacted by the proposed elevated flows. The channel downstream is over-deep and vegetated with gorse, brambles, shrubs and some trees. There are no bare earth banks that are vulnerable to erosion and no assets/ infrastructure at risk. The operator carried out an inspection of the Dolcoath Adit in 2008, the report was submitted with the application.

Recommendations include geomorphological support in the positioning and design of the Tuckingmill outfall to minimise scour potential and monitoring pre-and during dewatering operation to help develop a robust pumping regime and allow adaptive management, should it be required.

We have reviewed the report and agree with the conclusions that there are no significant risks proposed from the discharge with regards to the detail listed above. Within the flood risk assessment the operator has identified operating procedures to reduce or cease flows during periods of high flows. Under pre-operational condition PO1 the operator is required to provide further information on the location and design of proposed discharge points and infrastructure and location and proposed working and communication methods of water level monitoring points in the Red River. The current condition of the Dolcoath Adit itself is also included within the scope of PO1, which we have not reviewed at permit determination. The pre-operational condition covers all recommendations made within the survey. We have required no further information from the operator on this matter.

3. Flood Risk Assessment (FRA)

The FRA submitted with the application did not reflect the current proposals for the permit. We sent a Schedule 5 request for information on 12/07/17 asking for a revised FRA of the current proposals. The FRA submitted with the application (dated 2010) was based on a discharge of 10,000m³ per day and not the proposed 25,000m³ per day. A revised FRA was submitted on 27/07/17. Upon review the FRA did not provide sufficient information. We request further information to be included within the FRA. A revised FRA was submitted on 19/09/17, 21/09/17 and version 3 on the 03/10/17 containing the information requested.

We have reviewed version 3 of the Flood Risk Assessment associated with pumping discharge to the Red River from a proposed mine water treatment plant at South Crofty Mine. With reference to appropriate flow modelling the document adequately demonstrates negligible additional flow compared to base flows when 25,000m³ per day is discharged from the ETP, split between two locations: Tuckingmill (up to 10,000m³ per day) and the Dolcoath Adit (up to 15,000m³ per day). We understand the discharge is intended for 18-24 months once de-watering of the existing facility has started and then the levels abstracted will drop to just maintain low levels within the mine.

The operator proposes to deploy flood risk management measures in the format of controlling discharge relative to river flows, decreasing this discharge proportionately with river levels. This reduces chance of out of bank flows as a result of discharge and mitigates this residual flood risk by introducing flow monitoring and pumping controls.

The document does not include a quantitative assessment of flood risk to all properties, but we understand the area specifically upstream of Pendarves Culvert is likely to include great uncertainty.

The FRA identifies (Section 2.14) how the facility could accommodate for future discharges from other mining operations. Any future discharges are to be considered separately from this permit or as a variation.

Section 5.10 of the FRA identifies Environment Agency Flood Warnings for this area. At the time of permit issue, there are no flood warnings specific to this reach of the Red River.

Further correspondence from the applicant indicates land agreement has been obtained. Therefore, we understand this can be achieved in principle.

For the purpose of providing robust procedures to mitigate flood risk to properties, the environment and infrastructure as a direct result of proposed pumping regime we have incorporated a pre-operational condition (PO1) into the permit to ensure the operator gains approval from the Environment Agency prior to commencement of constructing the flood risk management measures.

We consider residual flood impact to property, environment and infrastructure is acceptable in principle. We do not consider a separate Flood Risk Activity permit is required for this.

4. Noise Impact Assessment (NIA)

We requested an updated noise impact assessment by sending a schedule 5 request for information, the NIA provided with the application did not represent the current proposals. The revised NIA was submitted on the 03/08/17 and subsequent noise input files on the 09/08/17. The NIA was carried out in line with the British standard for methods for rating and assessing industrial and commercial sound (BS4142).

There is no history of noise complaints, however it is noted that the site has not been in operation since 1997. The scope of this assessment was the abstraction, treatment and discharge of mine water only. Any mining activities fall outside the scope of this assessment.

The NIA details the process components of the ETP plant set up and equipment to be placed within the installation. Residential receptors are located around the installation. The assessment has modelled the noise levels at these closest receptors.

The NIA concludes the construction of the new East West link road (A3047 Kerrier Way) and presence of the main London to Penzance railway line, do not appear to raise general noise levels in the area of the

proposed plant and background levels are still fairly rural, although the exposed location of the proposed Church View Farm development experiences more urban noise levels.

The BS4142 assessment, apart from No's 1&2 Railway Villas, shows little impact from the assessed proposed plant, in the context of the general low predicated noise levels the impact of the proposed plant is considered to be minor adverse.

Considering the operators predications, our check modelling and the context, we agree with the conclusions of the NIA that adverse impacts are unlikely. A noise management plan has not been requested for the installation, we consider the generic noise condition to be appropriate for the management of noise from this installation at the time of permit issue.

5. Effluent treatment plant monitoring plan (ETPMP)

We requested via a Schedule 5 request for information for the operator to submit an ETPMP to detail the ongoing monitoring to be carried out to demonstrate ETP performance and ensure no deterioration of the receiving water course, identify warning and / or trigger levels for all monitored parameters and identify the emergency protocol to be followed if a trigger level is reached.

The operator will be monitoring various parameters at the inlet from the South Crofty mine into the ETP and at the final effluent sampling point prior to discharge into the Red River via either Tuckingmill or Dolcoath Adit. The operator has identified warning levels and / or trigger levels for each parameter which we feel are appropriate to be used in conjunction with the limits set within table S3.2 of the permit.

Warning alarm levels will be set for process monitoring, requiring investigative checks, manual intervention in accordance with the operating procedures and if necessary emergency action. Some parameters have both warning levels and trigger levels. Warning levels would indicate a series of process checks are required. A trigger level is the highest warning level and the operator has identified the following emergency actions would be taken in order of implementation:

1. Specific process checks
2. Reduction of flow to a process stream
3. Reduction of flow to the treatment plant in order to shut down a process stream
4. Temporary diversion of the treated effluent to discharge into the mine i.e. to recirculate to the abstraction pumping point at New Cooks Kitchen
5. Cessation of the flow to the treatment plant.

The ETPMP also details monitoring to be carried out on the Red River by weekly spot samples at 4 locations within the Red River. The locations include upstream of the discharges, downstream of Tuckingmill, downstream of Dolcoath adit and monitoring of the Dolcoath adit itself.

The ETPMP was requested to provide us with the confidence the operation had appropriate operating techniques and planned monitoring in place to prevent the deterioration of the receiving water course, the Red River. We consider the ETPMP to cover the information required and to be appropriate for the proposed discharge at the time of permit issue.

6. Waste Classification of sludge provided from the ETP

We have advised the operator that the following European Waste Catalogue (EWC) codes are relevant for the sludge produced from the ETP.

01	Wastes resulting from exploration, mining, quarrying, and physical and chemical treatment of minerals
01 03	wastes from physical and chemical processing of metalliferous minerals

01 03 05*	other tailings containing hazardous substances
19	Wastes from waste management facilities, off-site waste water treatment plants and the preparation of water intended for human consumption and water for industrial use
19 08	wastes from waste water treatment plants not otherwise specified
19 08 13*	sludges containing hazardous substances from other treatment of industrial waste water

7. Containment.

The operator has confirmed the following control measures will be adopted for storing fuel, oil and chemicals.

- All containers will be locked inside a secure container.
- All containers will have a secondary containment system that is able to contain at least 110% of the total capacity stored
- Spill kits will be located on site and staff trained accordingly.

The mine water treatment plant comprises of the following principle process components:

- Pre-treatment in a Stage I Gas Stripping Tank(s) into which air is injected to strip off any mine gasses present.
- Addition of hydrogen peroxide to oxidise arsenic in the mine water.
- Stage II Reactor Tank(s) in which the mine water is mixed with recirculated sludge to raise the pH of the mine water.
- Stage III Reactor Tank(s) in which pH adjustment is achieved.
- In-line static mixer(s) for flocculation injection.
- Clarifier / Thickener Units with sludge recirculation and surplusing pumps.
- Treated water pH adjustment, using CO₂.
- Quick Lime / Hydrated Lime storage silo, slaker and lime slurry dosing system.
- Air Blower Package – to provide oxygen for iron oxidation.
- Polymer storage, make up and dosing system.
- Carbon Dioxide Storage and dosing for pH correction.
- Sludge holding tanks.
- Filter press dewatering, (possibly augmented with thickener tanks).
- Dewatered sludge cake holding bin.
- Interconnecting pipe work.
- PLC control system, including software and HMI system.
- Telemetry / Instrumentation.
- Combined Effluent Monitoring Station and Discharge Chamber.
- On site laboratory, workshop and welfare facilities.

The operator has confirmed the ETP will adhere to the guidance and methodology of the CIRIA publication C736 'Containment systems for the prevention of pollution'. We consider following CIRIA C736 to be appropriate to meet our requirements.

Decision checklist

Aspect considered	Decision
Receipt of application	
Confidential information	A claim for commercial or industrial confidentiality has not been made.
Identifying confidential information	We have not identified information provided as part of the application that we consider to be confidential. The decision was taken in accordance with our guidance on confidentiality.
Consultation	
Consultation	<p>The consultation requirements were identified in accordance with the Environmental Permitting Regulations and our public participation statement.</p> <p>The application was publicised on the GOV.UK website.</p> <p>We consulted the following organisations:</p> <ul style="list-style-type: none"> • The Centre for Environment, Fisheries and Aquaculture Science (CEFAS) • Natural England • Cornwall Council – Planning & Environmental Protection Department. • Marine Management Organisation • Local Sewerage Undertaker (South West Water) • Health & Safety Executive • Inshore Fisheries & Conservation Authorities (IFCA) <p>South West Water responded with 'no comments' and no other responses were received.</p> <p>We attended the first liaison meeting on the 26th September 2017 held by Western United Mines Limited at South Crofty mine offices. The general feeling from the invited audience (councillors and members of the public) was one of support. The main questions from the residents were in regards to flooding of land and the state of the river banks. No concern was raised over flooding to properties. We have reviewed flood risk and geomorphology within this determination, see key issues for further information.</p>
Operator	
Control of the facility	We are satisfied that the applicant (now the operator) is the person who will have control over the operation of the facility after the grant of the permit. The decision was taken in accordance with our guidance on legal operator for environmental permits.
The facility	

Aspect considered	Decision
The regulated facility	<p>We considered the extent and nature of the facility at the site in accordance with RGN2 'Understanding the meaning of regulated facility'.</p> <p>The extent of the facility is defined in the site plan and in the permit. The activities are defined in table S1.1 of the permit.</p>
The site	
Extent of the site of the facility	<p>The operator has provided plans which we consider are satisfactory, showing the extent of the site of the facility including the discharge points. The plan is included in the permit.</p>
Site condition report	<p>The operator has provided a description of the condition of the site, which we consider is satisfactory. The decision was taken in accordance with our guidance on site condition reports and baseline reporting under the Industrial Emissions Directive.</p> <p>The operation has surface activities; the mine water treatment plant. The SCR has provided a site investigation which assesses the condition of the land at ground level which may be affected by these surface activities.</p> <p>The SCR provides a satisfactory summary of the geology, hydrogeology and surface waters, and reports the result of the site investigation and sampling of ground conditions. As expected in this area affected by historical mining, metals including arsenic, copper and zinc are found to be elevated. The site investigation has also reported leachability analysis for these metals allowing for the assessment of risks to controlled waters. A satisfactory number of locations have been sampled, with appropriate determinands selected for chemical analysis.</p> <p>Given the proposed mine water treatment scheme to reduce metal concentrations prior to discharge (and the improvement of existing discharge conditions), we consider there no need for the operator to report the condition of the land within the deep mine with respect to metals.</p>
Biodiversity, heritage, landscape and nature conservation	<p>The application is within the relevant distance criteria of a site of heritage, landscape or nature conservation, and/or protected species or habitat.</p> <ul style="list-style-type: none"> • West Cornwall Bryophytes Site of Special Scientific Interest • Red River Valley Local Nature Reserve • Roskear Local Wildlife Site <p>We have assessed the application and its potential to affect all known sites of nature conservation, landscape and heritage and/or protected species or habitats identified in the nature conservation screening report as part of the permitting process.</p> <p>We consider that the application will not affect any sites of nature conservation, landscape and heritage, and/or protected species or habitats identified.</p> <p>We sent Natural England our Habitats Regulations assessment for information only, no comments were received. Our SSSI assessment has</p>

Aspect considered	Decision
	<p>been filed for audit.</p> <p>An additional Appendix 4 SSSI assessment was completed for the discharge point of the Red River into St Ives Bay and sent to Natural England for information – no comments were received.</p> <p>See key issues for further information on the Geomorphology survey on the stretch of river from Tuckingmill to Keive Mill.</p>
Environmental risk assessment	
Environmental impact assessment	In determining the application we have considered the Environmental Statement.
Environmental risk	<p>We have carried out a risk assessment on behalf of the operator.</p> <p>The assessment shows that, applying the conservative criteria in our guidance on environmental risk assessment, all modelled emissions may be categorised as environmentally insignificant with the exception of Copper, Zinc and Arsenic. See key issues for further information.</p>
Operating techniques	
General operating techniques	<p>We have reviewed the techniques used by the operator and compared these with the relevant guidance notes and we consider them to represent appropriate techniques for the facility.</p> <p>The operating techniques that the applicant must use are specified in table S1.2 in the environmental permit.</p> <p>See key issues for further information.</p>
Operating techniques for emissions that do not screen out as insignificant	<p>Emissions of Copper, Zinc and Arsenic cannot be screened out as insignificant. We have assessed whether the proposed techniques are BAT.</p> <p>The proposed emission levels for Arsenic that does not screen out as insignificant are in line with the techniques and benchmark levels contained in the technical guidance and we consider them to represent appropriate techniques for the facility.</p> <p>The proposed emission levels for Copper that does not screen out as insignificant depart from the techniques and benchmark levels contained in the technical guidance. See key issues for further information.</p> <p>We have not set limits for Zinc, see key issues for further information.</p> <p>The operator has submitted an ETP monitoring plan which provides warning and / or trigger levels for various parameters within the treated effluent. When these levels are reached remediation action takes place to prevent pollution of the Red River, see key issues for further information.</p>
Operating techniques for emissions that screen out as insignificant	<p>Emissions of Cadmium, Lead, Manganese, Iron, Aluminium and Nickel have been screened out as insignificant, and so we agree that the applicant's proposed techniques are BAT for the installation.</p> <p>We have not set limits for any of the parameters which screen out as insignificant. See key issues for further information.</p>

Aspect considered	Decision
Noise management	<p>We have reviewed the noise management plan in accordance with our guidance on noise assessment and control.</p> <p>We consider that the noise management plan is satisfactory.</p> <p>See key issues for further information.</p>
Permit conditions	
Pre-operational conditions	<p>Based on the information in the application, we consider that we need to impose pre-operational conditions.</p> <p>PO1. Flood Risk Activities</p> <p>The operator must gain Environment Agency approval prior to commencing construction of the flood risk management measures, the operator must submit the proposal as detailed in the pre-operational condition PO1 for approval.</p> <p>PO2. ETP Commissioning</p> <p>The operator has not submitted a commissioning plan for the proposed ETP. Prior to commencing commissioning of the ETP the operator shall submit a plan to the Environment Agency for approval.</p> <p>See key issues for further information.</p>
Improvement Conditions	<p>We have imposed an improvement condition (IC1) for the operator undertake a review of the effect of the discharge on water quality of the Red River. The modelling of this discharge was carried out on the results achieved from the ETP pilot trial and therefore, post commissioning, we require the operator to complete a review with the actual results achieved from the ETP.</p> <p>If the review indicates any deterioration to the Red River the operator is required to review the limits set within table S3.2 and provide mitigation proposals with timescales to ensure no deterioration of the Red River.</p>
Emission limits	<p>We have decided that emission limits are not required in the permit for the following parameters;</p> <p>Total Suspended Solids, Dissolved Organic Carbon, Calcium, Cadmium, Lead, Manganese, Iron, Aluminium, Zinc and Nickel. See key issues for further information.</p> <p>ELVs based on BAT have been set for pH.</p> <p>ELVs based on our technical guidance have been set for Arsenic and Copper.</p> <p>We have also set a limit on total daily volume of discharge at 25,000m³/day this based on the operators application and modelling carried out.</p> <p>Improvement condition (IC1) requires the operator to review the limits set in table S3.2 of the permit if the discharge is causing deterioration of the Red River.</p> <p>See key issues for further information.</p>

Aspect considered	Decision
Monitoring	<p>We have decided that monitoring should be carried out for the parameters listed in the permit, using the methods detailed and to the frequencies specified.</p> <p>These monitoring requirements have been imposed in order to prevent deterioration to the receiving water course.</p> <p>We made these decisions in accordance with the water framework directive (WFD)</p> <p>Based on the information in the application we are satisfied that the operator's techniques, personnel and equipment have either MCERTS certification or MCERTS accreditation as appropriate.</p>
Reporting	We have specified reporting in the permit.
Operator competence	
Management system	<p>There is no known reason to consider that the operator will not have the management system to enable it to comply with the permit conditions.</p> <p>The decision was taken in accordance with the guidance on operator competence and how to develop a management system for environmental permits.</p>
Technical competence	<p>Technical competence is required for activities permitted.</p> <p>We are satisfied that the operator is technically competent.</p>
Relevant convictions	<p>The Case Management System and National Enforcement Database has been checked to ensure that all relevant convictions have been declared.</p> <p>No relevant convictions were found. The operator satisfies the criteria in our guidance on operator competence.</p>
Financial competence	There is no known reason to consider that the operator will not be financially able to comply with the permit conditions.
Financial provision	Financial Provision is only required for category A mining waste facility and would be limited to that part of any facility. The volumes of hazardous waste stored will be minimal for the scope of this permit, and therefore is not considered a category A mining waste facility and financial provision is not required.
Growth Duty	
Section 108 Deregulation Act 2015 – Growth duty	<p>We have considered our duty to have regard to the desirability of promoting economic growth set out in section 108(1) of the Deregulation Act 2015 and the guidance issued under section 110 of that Act in deciding whether to grant this permit.</p> <p>Paragraph 1.3 of the guidance says:</p> <p>“The primary role of regulators, in delivering regulation, is to achieve the regulatory outcomes for which they are responsible. For a number of regulators, these regulatory outcomes include an explicit reference to development or growth. The growth duty establishes economic growth as a</p>

Aspect considered	Decision
	<p>factor that all specified regulators should have regard to, alongside the delivery of the protections set out in the relevant legislation.”</p> <p>We have addressed the legislative requirements and environmental standards to be set for this operation in the body of the decision document above. The guidance is clear at paragraph 1.5 that the growth duty does not legitimise non-compliance and its purpose is not to achieve or pursue economic growth at the expense of necessary protections.</p> <p>We consider the requirements and standards we have set in this permit are reasonable and necessary to avoid a risk of an unacceptable level of pollution. This also promotes growth amongst legitimate operators because the standards applied to the operator are consistent across businesses in this sector and have been set to achieve the required legislative standards.</p>