



CRoW Act 2000: Natural Resources Wales application for permission - Formal Notice

Natural Resources Wales Formal Notice.

Requirements of Section 28I of the Wildlife & Countryside Act 1981 as amended by the Countryside and Rights of Way Act (CRoW) 2000.

Duty in relation to granting any consent, licence or permit for activities likely to damage Sites of Special Scientific Interest (SSSI).

Guide to filling in this form for Natural Resources Wales staff:

To be completed by Permitting Officers for any applications for a permission which the Natural Resources Wales has considered under S28G duties to protect and enhance SSSIs. This applies to all proposed permissions within a SSSI, and to operations outside the SSSI boundary which are likely to damage its special features.

Refer to OI 140_10 'Applying the Countryside and Rights of Way (CRoW) Act 2000 to applications for permits with potential for impact on Sites of Special Scientific Interest (SSSI)', including the flowchart in Appendix 2.

Pink italic text – drafting notes, to be deleted before completion/consultation.

Blue text – examples, to be replaced with permission-specific information.

Ensure you have completed all sections.

1. Natural Resources Wales area/region/NPS hub:	Bridgend, Rhondda Cynon Taff and Merthyr Tydfil Environment team
2. Name of SSSI:	- Rhos Tonyrefail - Llantrisant Common and Pastures
3. Type of permission:	Environmental Permit
4. Date for Natural Resources Wales permit determination:	27/10/2022
5. Predicted 28 day date for response from NRW conservation/ecology (under S28 I(4)):	25/10/2022
6. Natural Resources Wales reference no:	ERP/KP3135KV/V005 (PAN-016079)
7. National grid reference:	ST 03810 84840

8. Description of proposal:

Royal Mint are applying for a variation to their site to permit a new brass plating line to their which will be located on the site of a now decommissioned nickel-plating line (line 2).

The main features of the site's permit that will change as a result of the variations are:

- 1) Introduction of emissions to air of hydrogen cyanide (after it has been through a cyanide scrubber) through emission point A9.
- 2) Introduction of emissions to air of sulphuric acid and sodium hydroxide through an acid scrubber (emission point A10).
- 3) Installation of a cyanide destruction plant to treat the cyanide solution prior to being treated at the effluent treatment plant. The operator proposed to use an ozone destruction technique in line with the relevant current best available techniques for surface treatment sector (published 2006).

The key issues for assessment of the permit determination are from the new emissions to air of trace amounts, following abatement, of sulphuric acid mist (H₂SO₄), hydrogen cyanide (HCN), sodium hydroxide and ozone (O₃) from the cyanide destruction facility.

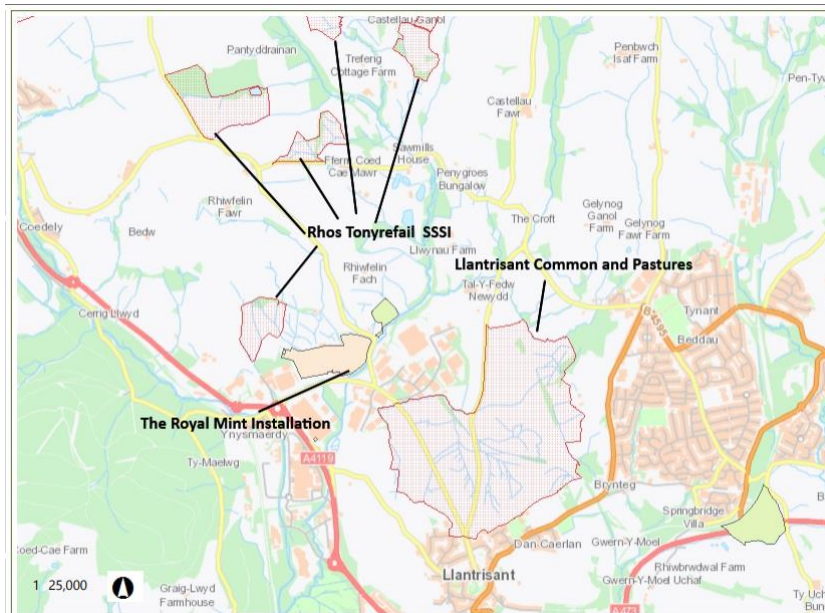
There would be no change in emissions of NO_x and NH₃ from the site as a result of this variation. The variation will also remove emission point A14, the only permitted source of particulate matter from the site.

The only change to discharge to surface water is that the total volume of non-contact cooling water (discharge point W1) which will reduce to 20 m³/hour as a result of the new process. Currently there is no permitted limit for total volume. There are no changes any other limits or monitoring.

All process effluent is treated by the effluent treatment plant and discharge to sewer under a trade effluent consent which is to remain unchanged.

The new plant will be built on impermeable ground and all tanks will be banded in accordance with CIRIA 736 Guidance.

9. Is the proposed activity within (wholly or partially) the SSSI boundary?



No - installation located 100 meters from Rhos Tonyrefail and approximately 300 meters from Llantrisant common and pasture. The emission sources are located in the eastern proportion of the installation.

10. Has there been any pre-application discussion or correspondence with NRW conservation/ecology

No

11. What aspect(s) of the proposed permission may damage the features which are of special interest for the SSSI?

The following 'Operations Requiring Consent' (or other activities associated with the permission) that may cause damage) are relevant to the proposed permission.

Dumping, spreading or discharging of any materials- through emissions to air of H_2SO_4 and SO_2 potentially leading to an acid deposition impact (in conjunction with other sources of Nitrogen and Sulphur) and toxic contamination through SO_2 which has an environmental standard (ES) for ecological receptors of $10-20 \mu g/m^3$ (annual mean) ([Air emissions risk assessment for your environmental permit - GOV.UK \(www.gov.uk\)](#)).

H_2SO_4 HCN, O_3 , NaOH, Cu and Zn do not have an environmental standard and therefore have not been assessed further for the impacts on ecological sites. However, these substances have been assessed for human health at the closet point to the emission stack and had screened out as insignificant either at the process contribution or the predicted environmental concentration at the source of the emissions. Therefore, we can conclude that as the emissions screen out as insignificant for human health they do not pose a risk to the features of the designated sites,

The pathways that has a potential impact (from air) is the emissions of SO_2 to atmosphere and the acidification through the deposition of sulphuric acid and sulphur dioxide onto the sites.

All process effluent is treated at the site's effluent treatment plant prior to discharge to sewer. Cyanide effluent from the brass plating is to be treated using ozone oxidation prior to treatment at the effluent treatment plant.

The following SSSI features have been considered to assess the likelihood of damage from modelled air emissions impact:

Llantrisant Common and Pastures

- Marshy grassland
- Acid flush
- Acid grassland
- Species-rich neutral grassland
- Cornish moneywort
- Bog earwort

Rhos Tonyrefail

- marshy grassland,
- acid flush,
- species-rich
- neutral grassland,

- acid grassland
- wet heath
- blanket mire

Mechanisms of impact

The main mechanism of impact to the designated features of the SSSIs is through the increase in atmospheric concentration of SO₂ which can lead toxic contamination of the site and increase in acidity due to the emissions of very small amounts of H₂SO₄ and SO₂ (from the existing emission point A9) which can contribute towards acidification of the designated sites.

The acid critical load is the acid deposition from both nitrogen and sulphur sources. The process contribution has taken into account total acidity from both sulphur and nitrogen sources but only the acidity from sulphur will be increasing as part of the proposal, with the nitrogen acidity originating from already existing sources.

The operator has submitted air quality modelling which has included emissions from both the new proposed emission sources and the existing sources (those that will not be changed as a result of the variation) and have used the highest emissions concentrations to present the most conservative values for assessing impacts on designated sites.

Definitions

CLMaxS	Critical load maximum sulphur Is the critical load of sulphur when there is no nitrogen acidification
CLMaxN	Critical load maximum Nitrogen Is the critical load of nitrogen when there is no sulphur acidification
CLminN	Critical load minimum nitrogen Value above which an increase in nitrogen deposition will contribute to acidity
Total Acidity	The combined acidity from nitrogen and sulphur acid deposition
Minimum acid critical load (MinCLMaxS minCLMaxN minCLminN)	The lowest acid critical load values of the designated site
Maximum critical load (MaxCLmaxS, MaxCLmaxN maxCLminN)	The highest acid critical load values of the designated site.

Llantrisant Common and Pastures

Sulphur dioxide

The applicant has modelled the predicted worst case scenario of emissions of sulphur dioxide from the new process (scrubber A9) to atmosphere. The process contribution of the emissions of sulphur dioxide was calculated to be 0.0071 µg/m³ which approximate to 0.1% of the most stringent environmental standard (ES) for sulphur dioxide of 10 µg/m³. As the process contribution is less than 1% of the ES, the impact from atmospheric sulphur dioxide can be screened out as insignificant.

Acidification

The modelling submitted assumed that the minimum critical loads for acid grassland of Llantrisant commons and pastures to be sulphur maximum of 0.22 kgeq/ha/yr, Nitrogen minimum to be 0.366 kg/ha/yr and nitrogen maximum to be 0.586 kgeq/ha/yr. These values for Llantriant commons and pastures were confirmed by a search on APIS. This search also gave the maximum critical loads for acidity. This is shown in the figure below. The definition for the figure are shown in the definition section above.

Site/Feature Information

Site Name: LLANTRISANT COMMON AND PASTURES

Interest Name: Acid grassland - (Acid Grassland)

EUNIS Habitat: Critical loads for nitrogen are based on the EUNIS habitat classification. The EUNIS classes corresponding with the BAP habitat you have selected ('Acid Grassland') are listed in the box below. Therefore please select below the EUNIS class that best fits the particular habitat type at the SSSI you have selected. If you have more detailed habitat classification at your site (e.g. NVC class) you can use the [habitat correspondence table](#) to look up the corresponding EUNIS class. If you do not have this information, then for the purpose of a screening assessment, you are advised to select the first habitat in the list which is the most sensitive.

You can find out more information on interest feature(s) at your selected A/SSSI by using the country agency websites - NIEA, SNH, Natural England, & CCW

Select a EUNIS Habitat: E1.9: Non-Mediterranean dry acid and neutral open grassland, including inland dune grassland

[Note: Habitats in the select menu above may give the same nitrogen and acidity values]

Enter a grid reference >>

Impacts and Critical Loads

Deposition & Critical Load Graphs

Source Attribution

Nutrient Nitrogen

Habitat sensitive to Nitrogen? Yes

Relevant Nitrogen Critical Load Class: Inland dune pioneer grasslands

①

Empirical Critical Loads: 8-15 kg N/ha/yr [see [table](#) for guidance on applying critical loads in impact assessments]

Guidance: Use the lower end of the range with low base availability; use the higher end of the range with high base availability.

Uncertainty in these values? expert judgement

EUNIS ecosystem class: E1.94

Exceedance Impacts: Decline in lichens, increase in biomass.

Acidity

Habitat sensitive to Acidity? Yes

Acidity Class: Acid grassland

①

Exceedance Impacts: Leaching will cause a decrease in soil base saturation, increasing the availability of Al³⁺ ions, mobilisation of Al³⁺ may cause toxicity to plants and mycorrhiza, may have direct effect on lower plants (bryophytes and lichens).

Acidity Critical Loads (keq):

MaxCLminN: 0.581 MaxCLMaxN: 2.88 MaxCLMaxS: 1.65

MinCLminN: 0.366 MinCLMaxN: 0.586 MinCLMaxS: 0.22

Figure 1: Critical loads for Llantrisant Commons gathered by air pollution information system (APIS)

Modelling results show that the total acidification has a process contribution of 2.1% of the minimum critical load of acidity towards acidification which means that the emissions do not screen out at this stage.

The predicted environmental concentration (PEC) using the moorland acidity from APIS showed shows that the total acid deposition for site average is 1.5 kgeq/ha/yr. The breakdown gathered from UK CEH Edinburgh (used by APIS) for sulphur and nitrogen acidity are shown below:

AVG_NO2_NO3_MOO RLAND/ kgeq/ha/yr	AVG_NH3_NH4_MOO RLAND/ kgeq/ha/yr	N-Acidity	AVG_SO2_SO4_NM_MO ORLAND/ kgeq/ha/yr
0.313558872	0.877575901	1.191135	0.262087764

As the acid deposition has does not screen out as insignificant, a further assessment was carried out using the maximum critical loads for acidity which was worked out using the APIS acidity tool (see figure below) to determine if the acid deposition would result in adverse impact on the designated features of the site. The tool calculated the process contribution (nitrogen and sulphur acidity) from the proposal was as 0.4% of the maximum critical load for acidity.

As this is less than 1% of the maximum acidity critical load, we can conclude that the contribution of total acid deposition from the proposal will not be significant and will not cause an adverse impact on the designated features of the site.

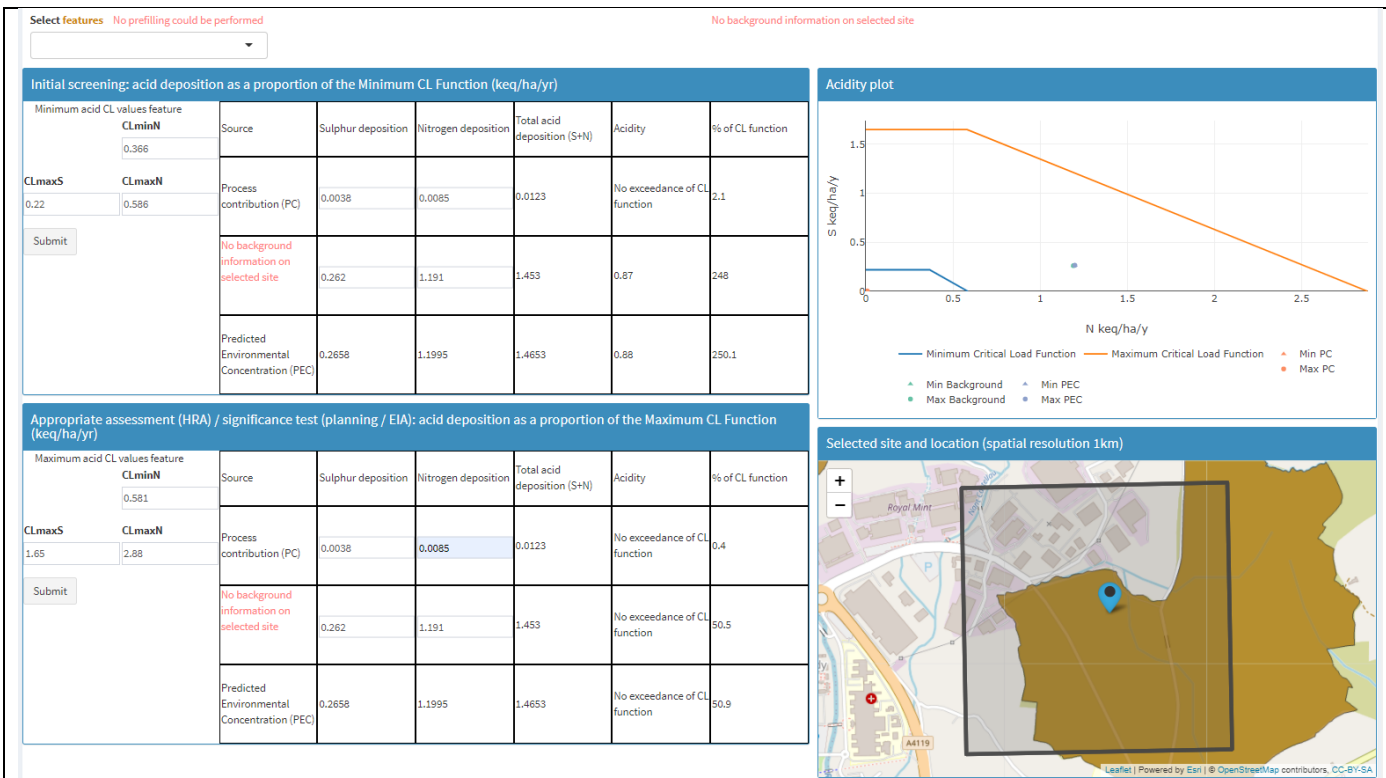


Figure 2: APIS Acidity plot using both the minimum and maximum critical load values for nitrogen, sulphur and total acidity. The background values for the site were obtained separately from UK CEH Edinburgh

Rhos Tonyrefail

Modelling done by the operator has shown that the process contribution for total acidification (sulphur and nitrogen) is 0.7% of the minimum critical load (total 0.586 kg/ha/year). As this is less than 1% of the critical load, the emissions contributing to acidification can be screened out as insignificant.

The predicted maximum sulphur dioxide concentration at the nearest point of Rhos Tonyrefail was 0.0028 $\mu\text{g}/\text{m}^3$ which is 0.028% of the environmental standard (ES) for sulphur dioxide (of 10 $\mu\text{g}/\text{m}^3$). As this is significant less than 1% of the ES the impact of emissions of sulphur dioxide from the proposal screens out as insignificant.

12.Decision

i) The proposed permission is **not likely to damage** any of the flora, fauna or geological or physiological features which are of special interest.

Llanstrisant commons:

- **Acidity**-Although the process contribution was more than 1% of the minimum acid critical load (and not screened out as insignificant), further appropriate assessment has shown that the process contribution of the new proposal was 0.4% of the maximum critical load for acidification. Therefore, it can be concluded that the proposal would not lead to any significant adverse impact to the designated features of the site.
- **Sulphur dioxide** – The process contribution of sulphur dioxide at the site from the proposal is less than 1% of the ES, therefore the impact from the emission can be screened out as insignificant.

Rhos Tonyrefail:

- **Acidity**- Process contribution of the emissions towards total acidification is less than 1% of the critical load (total acidification) and therefore the emission from the proposal screens out as insignificant.
- **Sulphur dioxide** – The process contribution of sulphur dioxide from the proposal is less than 1% of the ES at the site, therefore the impact from the emission can be screened out as insignificant.

Natural Resources Wales is minded to:
Issue the permission

13.Name and job title of Natural Resources Wales officer:	William Wallace Permitting Officer
14.Date form sent to NRW conservation/ecology	08/08/2022 (original) 27/09/2022 (revised)
For Natural Resources Wales use only, once NRW conservation/ecology response received	
15.NRW conservation/ecology comment on assessment:	<i>Please delete as appropriate:</i> i) NRW conservation/ecology advise the operation can go ahead ii) NRW conservation/ecology advise the operation can go ahead with conditions iii) NRW conservation/ecology advise against permitting the operation Please ensure that the NRW conservation/ecology response is attached to this Formal Notice.
16.Name and job title of NRW conservation/ecology officer:	
17.Date of receipt of NRW conservation/ecology response:	