HPI Decision Document

Determination of an Application for an Environmental Permit under the Environmental Permitting (England & Wales) Regulations 2016

Decision document recording our decision-making process.

The Permit Number is:	EPR/XP3832NV/V004
The Applicant / Operator is:	Angus Fire Limited
The site is located at:	Station Road, High Bentham, North Yorkshire, LA2 7NA

What this document is about

This is a decision document, which accompanies a Permit.

It explains how we have considered the Applicant's Application, and why we have included the specific conditions in the Permit we are issuing to the Applicant. It is our record of our decision-making process, to show how we have considered all relevant factors in reaching our position. Unless the document explains otherwise, we have accepted the Applicant's proposals.

We try to explain our decision as accurately, comprehensively and plainly as possible. Achieving all three objectives is not always easy, and we would welcome any feedback as to how we might improve our decision documents in future. A lot of technical terms and acronyms are inevitable in a document of this nature: we provide a glossary of acronyms for ease of reference, this can be found towards the beginning of this document.

There are several minor changes made to Permit referenced in this document following the additional period of external consultation from 5th March 2006 to 8th April 2026. These changes do not reduce the level of environmental protection provided by the Permit.

1. An additional condition 1.1.4 has been added to the Permit, “The operator shall comply with the requirements of an approved competence scheme”. This is added as a consequence of the permit variation notice adding a new waste operation.
2. The preamble, “For the following activities referenced in schedule 1, table S1.1 (AR1 to AR3)…” has been removed from condition 2.3.1 to demonstrate that the requirement to operate to the techniques and manner described in Table S1.2 (Operating Techniques) applies to all operations in Table S1.1, AR1 to AR4.
3. Waste disposal operation, D15, “Storage pending any of the operations numbered D1 to D14 (excluding temporary storage, pending collection, on the site where the waste is produced)” is removed from waste operation, AR4, in Table S1.1 as this is not required. No third-party wastes will be imported onto the site and hence storage will be integral to the treatment operation.
4. The limits of the waste operation, AR4, in Table S1.1 are amended to reflect that, in the unlikely event that the treated stormwater cannot achieve PFOS concentrations <10ng/l, meaning it cannot be emitted to the River Wenning, it may have to be removed from site for further treatment elsewhere. This was already reflected in the Permit in Table S1.2, Operating Techniques, reference “Q18 on management of treated stormwater that exceeds PFOS limit for emission”.
5. A restriction has been added to waste operation, AR4, limits stating “Daily treatment of stormwater shall not exceed 50 tonnes (50m^3)”. This was already the case in the Permit as the PFAS treatment had been permitted as a waste operation (<50m^3/day) rather than an installation (>50m^3/day), but this makes the restriction more explicit.
6. References to discharges from the waste operation have been replaced by references to emissions from the waste operation.

Contents

Preliminary information and use of terms

We gave the application the reference number EPR/XP3832NV/V004. We refer to the application as “the **Application**” in this document.

The number we have given to the permit is EPR/XP3832NV. We refer to the proposed Permit as “the Permit” in this document.

The Application was duly made on 27/06/2025.

The Permit was issued on 08/05/2026.

The applicant is Angus Fire Limited. We refer to Angus Fire Limited as “the **Applicant**” in this document. Where we are talking about what would happen after the Permit is granted, we call Angus Fire Limited “the **Operator**”.

The Operator’s facility is located at Station Road, High Bentham, North Yorkshire, LA2 7NA. We refer to this as ”the regulated facility” in this document.

Links to guidance documents

The list below provides links to the key guidance documents referred to in this document. The links were correct at the time of producing this document.

- Risk assessments for your environmental permit
- Non-hazardous and inert waste: appropriate measures for permitted facilities - Guidance - GOV.UK
- Directive - 2010/75 - EN - EUR-Lex (Industrial Emissions Directive)

Glossary

Glossary of acronyms used in this document

BAT	Best Available Technique(s)
BAT-AEL	BAT Associated Emission Level
BREF	Best Available Techniques (BAT) Reference Documents for Waste Incineration
BAT-C	BAT conclusions
CCW	Countryside Council for Wales
CROW	Countryside and rights of way Act 2000
DAA	Directly associated activity – Additional activities necessary to be carried out to allow the principal activity to be carried out
DD	Decision document
EAL	Environmental assessment level
ELV	Emission limit value
EMAS	EU Eco Management and Audit Scheme
EMS	Environmental Management System
EPR	Environmental Permitting (England and Wales) Regulations 2016 (SI 2016 No. 1154) as amended
EQS	Environmental Quality Standard
ES	Environmental Standard
FSA	Food Standards Agency
GWP	Global Warming Potential
HPI	High public interest
IED	Industrial Emissions Directive (2010/75/EU)
LADPH	Local Authority Director(s) of Public Health
LNR	Local nature reserve
MCERTS	Monitoring Certification Scheme
MP	Member of Parliament
PC	Process Contribution
PEC	Predicted Environmental Concentration
PHE	Public Health England (now UKHSA – UK Health Security Agency)
POP(s)	Persistent organic pollutant(s)
PPS	Public participation statement
PR	Public register
RGN	Regulatory Guidance Note
SAC	Special Area of Conservation
SHPI(s)	Site(s) of High Public Interest
SPA(s)	Special Protection Area(s)

SSSI(s)	Site(s) of Special Scientific Interest
SWMA	Specified waste management activity
TGN	Technical guidance note
TOF	Total organic fluorine
TOPA (TOP Assay)	Total oxidisable precursor assay
UKHSA	UK Health Security Agency

Glossary of acronyms of PFAS used in this document

FHxSA	Perfluorohexane sulfonamide
PFBA	Perfluorobutanoic acid
PFDA	Perfluorodecanoic acid
PFHpA	Perfluoroheptanoic acid
PFHxA	Perfluorohexanoic acid
PFHxS	Perfluorohexane sulfonic acid
PFNA	Perfluorononanoic acid
PFOA	Perfluorooctanoic acid
PFOS	Perfluorooctane sulfonate
PFPeA	Perfluoropentanoic acid
6:2 FTAB	6:2 fluorotelomer sulfonamide alkylbetaine
6:2 FTS	6:2 fluorotelomer sulfonate
8:2 FTS	8:2 fluorotelomer sulfonate

1 · Our decision

We have decided to grant the permit variation to the Applicant. This will allow it to operate the regulated facility, subject to the conditions in the Permit.

We consider that, in reaching that decision, we have taken into account all relevant considerations and legal requirements and that the permit variation will ensure that a high level of protection is provided for the environment and human health.

The permit variation contains conditions, including the relevant Annexes. We developed these conditions in consultation with industry, having regard to the legal requirements of the Environmental Permitting Regulations (EPR) and other relevant legislation. This document does not therefore include an explanation for these standard conditions. Where they are included in the permit variation, we have considered the Application and accepted that the details provided are sufficient and satisfactory to make use of the standard condition acceptable and appropriate.

Introduction to Permit Variation.

Permitting and Operational History of Site.

An environmental permit (EPR/BU5593IL) under the Pollution Prevention and Control (England & Wales) Regulations 2000 was issued to Kidde Products Limited (Bentham Fire Fighting Chemicals site) on 02/04/2007 authorising the manufacture of a range of fire-fighting foams and operation of two boilers with an aggregated thermal input capacity of 11MW.

The Environment Agency issued an Agency Initiated Variation (AIV) on 10/10/2007 to correct the schedule reference number to S4.7 Part A(1)(b) [any activity for the manufacture of a chemical that may result in the release of ammonia into air other than an activity in which ammonia is only used as a refrigerant].

The permit was transferred from Kidde Products Limited to Eurostar Tradeco Limited (EPR/XP3832NV) effective from 21/06/2013.

Eurostar Tradeco Limited was renamed as Angus Fire Limited on 03/07/2013 [as per company information on Companies House].

The permit was varied on 20/11/2013 to authorise the inclusion of an allophanate production process.

The Environment Agency issued an AIV on 03/12/2015 as an administrative variation to re-introduce annual process efficiency reporting.

Fire-fighting foams were produced at the Applicant’s site, and the foams and delivery hoses were also tested on areas of the site. These fire-fighting foams contained PFAS (per- and polyfluoroalkyl substances) which have contaminated areas of site in which they were produced or used.

PFAS are a large and diverse class of synthetic organofluorine chemicals. They have been used globally since the 1950s in a wide array of industrial processes

and consumer products, valued for their water, oil and stain-repellent properties. The carbon–fluorine (C–F) bond is among the strongest in organic chemistry, making PFAS highly resistant to chemical, thermal, and physical degradation and hence they are extremely persistent in the environment or degrade to substances that are extremely persistent. This stability, combined with low surface tension and water- and oil-repellent properties, means they are used in applications such as fire-fighting foam, non-stick cookware, waterproof clothing, cosmetics and food packaging.

The Applicant's operations associated with the manufacture and testing of fluorinated firefighting foams ceased by the following dates:

- Manufacture and sale ceased by the end of March 2024.
- Testing ceased by the end of April 2022.
- Storage of fluorosurfactant raw materials ceased by the end of May 2024.
- Retention and storage of all rainwater falling on the high-risk (potentially PFAS contaminated) areas of site commenced in approximately May 2024.

Angus Fire Limited applied for this current permit variation to install a treatment train to treat PFAS compounds in site stormwater (duly made, 27/06/2025).

Summary of proposed variation to Environmental Permit.

The Applicant has submitted an application for a variation to its environmental permit to:

- Add, as a waste operation, a new effluent treatment train using surface active foam fractionation (SAFF) and powdered activated carbon (PAC) for the removal of PFAS from stormwater.
- Add a new release point to the River Wenning, W2, with emission limit values for emission of treated stormwater.
- Correct the scheduled activity or the manufacture of potassium allophanate from S4.7 Part A(1)(b) to S4.7 Part A(1)(a) in line with the current version of the Environmental Permitting (England and Wales) Regulations.
- Remove emission points A1, A2, A3, A4, A5, A6 and A8 from Table S3.1.
- Remove a reference to 'fire-fighting foam' from Table S1.1.
- Remove the statement 'including thermal oxidiser treatment' from Table S1.1.
- Amend the description of W1 in Table S3.2 to state 'Uncontaminated roof drainage and uncontaminated run-off'.
- Remove Table S3.4 (Process monitoring requirements).
- Remove emission points A1, A3, A4 and A5 from Table S4.1.
- Remove Table S4.2.
- Include a more appropriate location for W1 as SD 66580 69047.

Further changes, such as monitoring and reporting requirements and general administrative changes, are also made to the permit variation notice because of these changes.

Nature of Proposed PFAS Treatment at Applicant's Site.

We have decided to issue this permit variation as the first stage of a proposed remediation project to be managed by the Operator to address the historic PFAS contamination on their site at High Bentham caused by the previously referenced historic production and testing of fire-fighting foams that contained PFAS compounds.

This stage of the remediation project incorporates a proven treatment train (a sequence of treatment stages which stormwater goes through to reduce the PFAS emission load). In this case, the treatment train consists of surface-active foam fractionation (SAFF) and powdered activated carbon (PAC) to reduce the PFAS in the stormwater (essentially rainwater falling on high-risk areas of site contamination). After treatment, the stormwater will be emitted to the River Wenning once its PFOS concentration has been confirmed to be no greater than 10ng/l.

PFOS represents perfluorooctane sulfonate which is a perfluoroalkyl acid (PFAA) within the PFAS groups of substances.

PFOS is the only PFAS that has a published Environmental Quality Standard (EQS) value and is currently the only PFAS classified as a priority hazardous substance under the Water Framework Directive.

In addition to reducing the concentration of PFOS in the stormwater to no greater than 10ng/l, the treatment train will also reduce the overall concentration of all the PFAS in the stormwater by at least 90%.

Assessment of permitted emission to River Wenning.

The Environment Agency uses a risk assessment methodology, defined on our gov.uk internet pages and commonly known as a H1 risk assessment, to assess the impact of emissions into receiving environments. A detailed description of how this risk assessment operates and how it has been used to assess the potential impact of the emission to the River Wenning is given in Section 7.2.1 of this document.

Timescale for operation and permitting of the treatment train.

There is currently a significant risk to the environment, if this treatment train is not permitted to operate and enable the betterment of the receiving water, i.e., the lack of an appropriate treatment system in place would lead to an emission of PFAS in stormwater (including PFOS at concentrations up to approximately 4,000ng/l) as this volume of PFAS containing stormwater would no longer be

able to be retained by the Operator on site due to capacity constraints. The Applicant has already filled all fixed storage tank capacity on site and further rainfall is being captured in IBCs (intermediate bulk containers - $1m^3$ plastic containers) which are being stored across the site. However, even the storage space on site for retention of IBCs is limited. This rainfall, if uncollected, would be released by natural flow from the site into the wider environment and eventually into the River Wenning.

The Environment Agency has assessed the impact of the permitted emission of PFOS and concludes that it will not cause significant pollution of the environment or harm to human health (see Section 7.2.1).

It is the decision of the Environment Agency that, to remove this significant risk to the receiving environment from untreated emission of PFAS containing stormwater, we are permitting the operation of the PFAS treatment train proposed by the Applicant.

2 · How we reached our decision

2.1 Receipt of Application

The Application was duly made on 27/06/2025. This means we considered it was in the correct form and contained sufficient information for us to begin our determination but not that it necessarily contained all the information we require to determine the Application: see section 2.6 Requests for Further Information.

2.2 Confidential information

A claim for commercial or industrial confidentiality has not been made by the applicant.

2.3 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.

2.4 Consultation on the Application

We carried out consultation on the Application in accordance with the EPR, our statutory Public Participation Statement (PPS) and our own internal guidance RGN 6 for Determinations involving Sites of High Public Interest. RGN 6 was withdrawn as external guidance, but it is still relevant as Environment Agency internal guidance.

We consider that this process satisfies and frequently goes beyond the requirements of the Aarhus Convention on Access to Information, Public Participation in Decision-Making and Access to Justice in Environmental Matters, which are directly incorporated into the Industrial Emissions Directive (IED), which applies to the regulated facility and the Application. We have also taken into account our obligations under the Local Democracy, Economic Development and Construction Act 2009 (particularly Section 23). This requires us, where we consider it appropriate, to take such steps as we consider appropriate to secure the involvement of representatives of interested persons in the exercise of our functions, by providing them with information, consulting them or involving them in any other way. In this case, we consider that our consultation already satisfies the requirements of the 2009 Act.

2.5 Engagement

We made the Application available online via our Citizen Space page where the public were able to provide comments. This contained all the information required by the IED, including telling people where and when they could see a copy of the Application. We also placed an advertisement in the Lancaster Guardian that contained the same information.

The Application and all other documents relevant to our determination available to view on our Public Register. Anyone wishing to see these documents could do so and arrange for copies to be made.

We sent copies of the Application to the following bodies, which includes those with whom we have “Working Together Agreements”:

- United Kingdom Health Security Agency (UKHSA)
- Local Authority, Director of Public Health (LADPH).
- North Yorkshire Council Environmental Health & North Yorkshire Council Planning Department.
- Food Standards Agency (FSA).
- Health & Safety Executive (HSE).

These are bodies whose expertise, democratic accountability and/or local knowledge make it appropriate for us to seek their views directly. Note, under our Working Together Agreement with Natural England, we only inform Natural England of the results of our assessment of the impact of the regulated facility on designated Habitats sites.

Further details along with a summary of consultation comments and our response to the representations we received can be found in Section 10. We

have taken all relevant representations into consideration in reaching our determination.

2.6 Requests for Further Information

Although we were able to consider the Application duly made, we needed more information in order to determine it and issued an information notice on 07/08/2025. A copy of the information notice was placed on our public register.

In addition to our information notices, we received additional information during the determination from Ramboll UK Limited on 05/09/2025 and 25/09/2025.

We made a copy of this information available to the public in the same way as the response to our information notice.

Additional requests for further information were sent to the applicant during the determination process to clarify and expand on information previously submitted. These information requestions are referenced in the Status Log of the permit variation notice.

Finally, we have consulted on our draft decision from 05/03/2026 to 08/04/2026. A summary of the consultation responses and how we have considered all relevant representations is shown in Section 11.

3 · The legal framework

The variation will be issued under Regulation 20 of the EPR. The Environmental Permitting regime is a legal vehicle which delivers most of the relevant legal requirements for activities falling within its scope. In particular, the regulated facility is:

- an installation as described by the Industrial Emissions Directive (IED)
- an operation covered by the Waste Framework Directive (WFD)
- subject to aspects of other relevant legislation which also must be addressed.

We address some of the major legal requirements directly where relevant in the body of this document. Other requirements are covered in Section 9 towards the end of this document.

We consider that, in granting the varied Permit, it will ensure that the operation of the regulated facility complies with all relevant legal requirements and that a high level of protection will be delivered for the environment and human health.

We explain how we have addressed specific statutory requirements more fully in the rest of this document.

4 · Key Issues in the Determination

The key issues arising during determination of the Application were:

- the acceptability of the proposed treatment train to remove PFAS from stormwater on the Applicant's site.
- the impact of emission of treated stormwater on the receiving environment, River Wenning, including potential impact on recreational use of the river.
- the level of current knowledge and understanding on PFAS and their potential impact on human health and ecological receptors.

We will describe how we determined these issues in greater detail in the body of this document.

4.1 Assessment of Residual PFAS Contamination Issues.

The Applicant and the Environment Agency have been working on the issues of PFAS contamination on their site for a number of years. The Environment Agency issued an EPR Compliance Assessment Report (CAR) on 12/12//2024 referencing a visit to site by the Environment Agency on 27/06/2024.

That CAR referenced a number of reports from 2018, 2021 and 2023 initiated by the Applicant to address PFAS matters.

The Applicant has now procured a PFAS treatment train using surface activation foam fractionation (SAFF) and powdered activated carbon (PAC) to treat stormwater on site contaminated by PFAS prior to emission of the treated stormwater to the River Wenning.

Having made the decision to treat the stormwater, the Applicant carried out evaluation of the efficacy of known PFAS treatment processes before instigating their corporate procurement strategies to source the treatment train selected. At the time of procurement, the Applicant had to consider what was 'best' and what was 'available' of the technologies and equipment reviewed. They recognised that waiting for technological advances might lead to more effective PFAS treatment options becoming publicly available, but they also needed to address the immediate requirement to treat current and future contaminated stormwater before the Operator had exhausted all space on site for its storage.

The treatment train proposed by the Applicant was presented as having the capacity to treat an inflow concentration of PFOS in untreated stormwater within the concentration range identified by analyses as being present.

The Applicant has carried out analyses of stormwater both pre- and post-treatment and the following 13 PFAS have been found to be present:

- PFOS, 6:2FTAB, 6:2FTS, PFHxA, 8:2FTS, PFPeA, PFHpA, PFBA, PFOA, PFHxS, FHxSA, PFNA and PFDA.

Using the OECD (Organisation for Economic Co-operation and Development) 2021 definition of short- and long-chained PFAS compounds, those 13 PFAS compounds detected in stormwater are most probably defined as:

- Long-chained PFAS compounds:
    - PFOS, PFOA, PFHxS, PFNA, PFDA, PFxSA, PFHpA, 8:2 FTS.
- Short-chained PFAS compounds:
    - PFBA, PFHxA, PFPeA, 6:2 FTAB, 6:2 FTS.

These PFAS acronyms are explained in the Glossary.

In response to a request for further information, the Applicant submitted further information on the expected PFAS composition of their stormwater following 'TOP Assay' (Total Oxidisable Precursor Assay) and 'TOF Analysis' (Total Organic Fluorine Analysis) based on testing of three samples each of pre- and post-treated stormwater.

Total Oxidisable Precursor Assay ("TOP" Assay or "TOPA") essentially provides a simulation of the potential for "precursor" PFAA's (perfluoroalkyl acids) in a sample to transform by oxidative processes; of the many thousands of known compounds classified as PFAS only a small number can be analysed for directly. Poly-fluorinated PFAS are known to transform in the environment to terminal perfluorinated PFAS 'arrowheads' (e.g. 6:2 FTS transforms to PFHxA), and only some of these can be analysed for by current laboratory methods.

In response to a request for further information, the Applicant provided information on the expected PFAS composition of stormwater following TOP Assay (Total Oxidisable Precursor) and TOF Analysis (Total Organic Fluorine). This was based on testing three samples each of pre- and post-treated stormwater. The TOP Assay simulates how PFAS precursors might transform through oxidation. Of the thousands of PFAS compounds, only a small number can be directly measured. By applying a strong oxidant under laboratory conditions, the TOP Assay mimics environmental processes and converts known and unknown precursors into measurable PFAAs (perfluoroalkyl acids). Comparing PFAS levels before and after oxidation (the "oxidation variation") indicates the presence of precursors. However, results should be interpreted cautiously, as complete oxidation cannot be fully verified. Analysing pre- and post-treatment samples from the Angus Fire site using this method helps assess how effective the treatment train is at removing both known PFAS and undetected precursors.

Interpretation of the pre-treatment and post-treatment samples of liquid from the Applicant's site can therefore provide insight into the effectiveness of the treatment train process on the known (i.e. those within target analysis) and "unknown" PFAA-precursors (not detectable by the standard targeted PFAS

analytical suite) by comparing the pre-oxidation PFAS analysis to the post-oxidation PFAS analysis.

The conclusions proposed by the Applicant from these analyses were that:

- No significant residual source of “unknown” PFAS precursors is present in the post-treatment liquid and therefore the treatment train is effective in removing PFAS.
- The treatment train is successfully removing, at a minimum, the majority of organo-fluorine compounds, and that no significant loading of organo-fluorine remains in the post-treatment effluent.

We have reviewed these analyses and accept that both the TOF and TOPA results for the three post-treatment effluent samples show generally much lower concentrations of PFAS when compared to the results from the three pre-treatment inflow samples). These results indicate that the treatment system is capable of having a measurable effect on reducing the PFAS emission to water.

We agree that the data presented indicates that the consultants carrying out the work have correctly understood the purpose of the TOP Assay.

We agree that the results indicate PFAS treatment of stormwater is effective and there are no significant concentrations of unknown PFAS present in the treated effluent.

5 · The Regulated Facility

We considered the extent and nature of the facilities at the site in accordance with RGN2 ‘Understanding the meaning of regulated facility’, Appendix 2 of RGN2 ‘Defining the scope of the installation’, and Appendix 1 of RGN 2 ‘Interpretation of Schedule 1’.

The extent of the facilities is defined in the site plan and in the Permit. The activities are defined in table S1.1 of the Permit.

5.1 Management

The Applicant is the sole Operator of the regulated facility.

We are satisfied that the Applicant is the person who will have control over the operation of the regulated facility after the issuing of the variation; and that the Applicant will be able to operate the Installation so as to comply with the conditions included in the Permit.

5.2 The permitted activities

The Installation is subject to the EPR because it carries out an activity listed in Part 1 of Schedule 1 to the EPR:

- S4.7 Part A(1)(b) – manufacture of potassium allophanate.

An installation may also comprise “directly associated activities” (DAA), which at this Installation includes storage of raw materials, finished products, collection and storage of wastes and use of a boiler. These activities comprise one installation, because these activities are successive steps in an integrated activity.

We have decided that:

- The new treatment train will not be permitted as an S5.4 Part A(1)(a)(ii) activity (Disposal of non-hazardous waste with a capacity exceeding 50 tonnes per day (or 100 tonnes per day if the only waste treatment activity is anaerobic digestion) involving one or more of the following activities, and excluding activities covered by Council Directive 91/271/EEC concerning urban waste-water treatment(4)—(ii) physico-chemical treatment) as the capacity of the treatment train is restricted to 48m^3/day.

- The new treatment train will not be permitted as a DAA as it does not meet all of the three limb tests for a DAA as defined in our guidance document, “Regulatory Guidance Series, No RGN 2, Understanding the meaning of regulated facility”.
  These limb tests are:
  - 2A – the activity must be directly associated with the stationary technical unit (in essence, the activity serves the stationary technical unit).
  - 2B - The activity must have a technical connection with the listed activities carried out in or by the stationary technical unit.
  - 2C – the activity must be capable of having an effect on emissions.

  Although the activity, operation of the treatment train, will be capable of having an effect on emissions (2C), it does not meet the other limb tests, 2A and 2B, and cannot be permitted as a DAA.

- The new treatment train will be permitted as a waste operation

  - Treatment of stormwater/surface water at a capacity less than 50m^3/day in a treatment train comprising of surface activation foam fractionation (SAFF) and powdered activated carbon (PAC).

To enable this to be carried out, the variation to the environmental permit includes a new waste operation, AR4.

This waste operation permits the new treatment train to treat the site stormwater that contains PFAS compounds.

The treatment train would operate continuously, 24 hours per day, until all the stormwater retained on site has been treated and the treated material emitted

from site. Once the existing inventory of stormwater has been treated and disposed of, the treatment train would operate only during site operational hours, 6am to 10pm, to treat on-going arisings of stormwater.

We have not referenced a water discharge activity from the waste treatment operation as is permissible by Regulation 14(2) of the Environmental Permitting (England & Wales) Regulations 2016 (as amended), “An environmental permit that authorises the operation of a regulated facility (“regulated facility A”) need not specify any regulated facility of another class that is carried on as part of the operation of regulated facility A”.

5.3 The site’s location

The Applicant has provided a plan which we consider to be satisfactory.

These show the extent of the site of the facility.

The plan is included in the Permit.

The site is located at Station Road, High Bentham, North Yorkshire, LA2 7NA. the site is located in close proximity to the railway station at High Bentham. The national grid reference for the centre of the installation is SD 66567 69088. The aqueous emission from the PFAS treatment train to be authorised in this permit variation is emitted to the River Wenning at national grid reference SD 6632168792.

5.3.1 Proposed site design: potentially polluting substances and prevention measures

The stormwater treatment train will permit the collection, storage and transfer (both internally and externally) of stormwater contaminated by PFAS both before and after its treatment to reduce these PFAS compounds.

Collection of stormwaters from high-risk areas:

The Applicant has designated areas of site as high-risk or low-risk depending on the potential that they have historically been contaminated by PFAS. Only stormwater arising from the high-risk areas of site has the potential to be contaminated with PFAS and hence, it is only this stormwater that requires treatment in the SAFF/PAC treatment train.

The areas of site from which the stormwater is designated high-risk and hence requires treatment are shown in the drawing below:

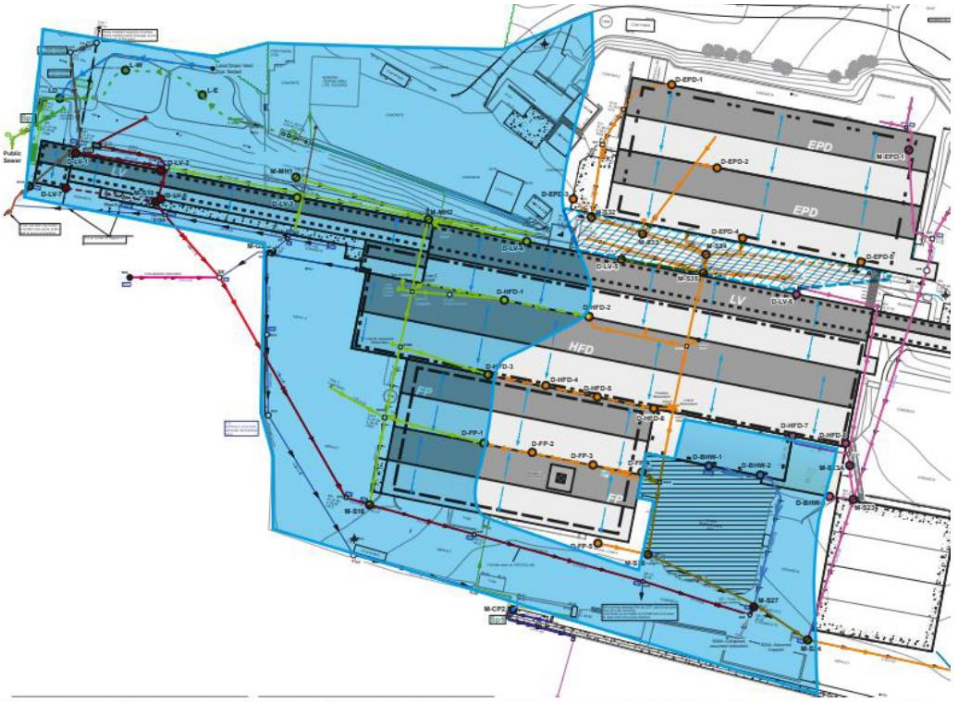


Figure 4-1. Drainage infrastructure and extent of stormwater collection for treatment

The Applicant noted that PFAS impacts within the drainage system itself as a result of potential interaction with shallow groundwater or surface water runoff. Areas of the Site where the drainage system interacted with, or connected to, drainage infrastructure from areas that were determined by the Applicant to potentially be impacted by historic activities were also considered to be 'High-Risk'. They have carried out drainage management work at various locations across the site to divert stormwater which may contain PFAS to the general site catchment that drains to sump, M-S27. Additional drainage works were undertaken around the lagoons area and the SP1 area to divert drainage from those areas, also defined as high-risk, to the containment sump, M-S27.

Those areas of site that have not been associated with historic PFAS activities and have their own isolated drainage systems are designated low risk. The low-risk drainage infrastructure does not share any common drainage channels or pits/sumps that could cause their contamination with drainage from high-risk areas. If an area that was not initially defined as high-risk but could possibly share a common drain or drainage point with a high-risk area, it was also designated as high-risk.

These robust systems would allow the Operator to ensure that any stormwater originated from high-risk areas or that may have come into contact with stormwater from high-risk areas is segregated and directed to the PFAS treatment train before discharging off-site.

All drainage systems are subject to weekly visual inspection for leaks, defects and damage by operational staff and the inspections are documented using existing site procedures.

The Applicant has demonstrated the drainage inspections records and confirmed that systems are in place for their cleaning and CCTV inspections by a qualified contractor.

Sump, M-S27, to which the stormwater from high-risk areas is directed is a formed and sealed concrete chamber composing a larger pumping chamber, S27, and a smaller feed chamber, S26. The sump is subject to routine weekly visual inspections for defects and damage by site staff and the inspections are documented using existing site procedures. CCTV inspections are carried out every six months by a qualified contractor.

The transfer route is located within the site tertiary containment area ensuring any spills or leaks will be collected within this system.

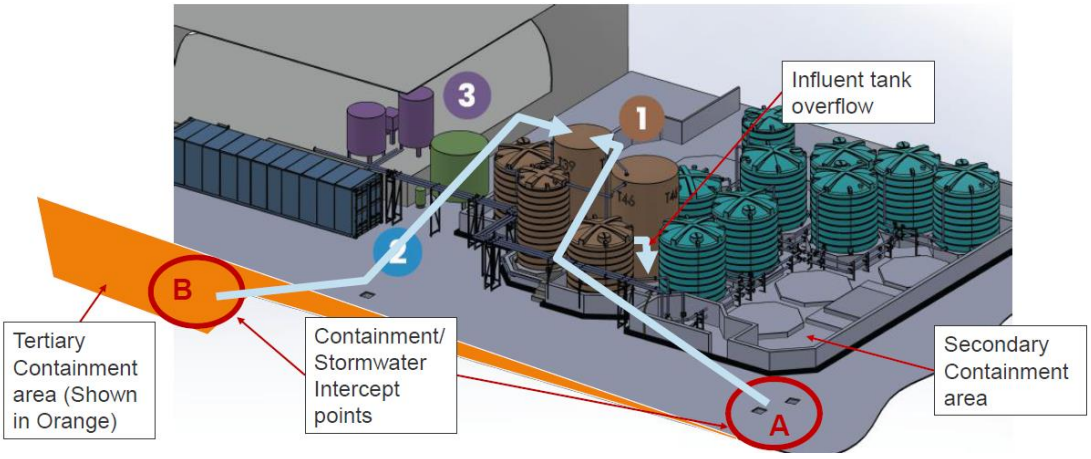
Pre-treatment storage of stormwaters.

The contaminated stormwater will be pumped to dedicated pre-treatment storage tanks located within a bunded area:

- A1 (Glass fibre laminate) 39m^3 capacity.
- A2 (stainless steel) 40m^3 capacity.
- A3 (Medium Density Polyethylene) 25m^3 capacity.
- A4 & A5 (Medium Density Polyethylene) 30m^3 capacity.

Storage tanks A1 and A2 are existing vessels that have been thoroughly cleaned and repurposed for new use. Tanks A3 – A5 are new to the site.

Tank level alarms are not installed on the pre-treatment tanks. The tank filling schematic is below:



Stormwater is intercepted directly from the drain network (A) and from the surface water catchment pit in the tertiary containment area (B). The stormwater from these progressively fills the five influent tanks. In the unlikely event of these tanks failing or overfilling, they would overflow into the secondary containment bund area. The 82m^3 tertiary containment provides cover should there be a breach of the secondary containment. No high fill level alarm or control restriction operates on the influent tanks as this would create a situation where the secondary containment would not be utilised in the containment philosophy, reducing capacity and causing increased risk of a containment failure through incoming stormwater pressure at intercept point B.

Operation of treatment train (SAFF unit):

The stormwater is pumped from these storage tanks to the containerised SAFF unit which contains a number of storage tanks and primary/secondary SAFF vessels. The total volume of these vessels is 19.375m^3 with an operational/working volume of 14.05m^3. The containment capacity within the containerised SAFF unit itself is sufficient to retain 110% of the volume of the largest vessel within the unit (3.5m^3). The SAFF unit also has spill detection sensors that will stop any incoming flow to the unit. In the event of failures of multiple vessels within the containerised SAFF unit, then any overflow outside of the unit would be retained in the tertiary containment bund.

Post SAFF-treatment storage of stormwaters.

The treated stormwater is pumped to up to nine MDPE post-treatment storage tanks newly acquired on site for this project. Eight of these have 30m^3 capacity and one has 25m^3 capacity.

Each of the nine post-treatment storage tank has three sensors:

- One real time water level sensor within the tank. This sensor monitors the water level through monitoring the hydrostatic pressure difference of the water above the sensor to ambient pressure.
- The other two sensors are float switches set inside the tank to alert the users to any eventuality where the post treatment storage tank level drops or exceeds recommended storage levels (i.e., one high level alarm and one low level alarm). The low-level sensor is set to a fill level just below the discharge manifold and the high-level sensor is in a position to prevent overflow.

These sensors are wired in a failsafe configuration. The system will fill each of the tanks to a predefined level based on the hydrostatic level sensor and the high-level will only activate in the event of failure (i.e. second layer of protection). In the event of a high-level alarm activating the tank will stop filling.

The high-level alarm is triggered when the tank is 90% full; i.e. for the 30 m³ tanks, the high-level alarm is triggered at 27 m³ at which point the transfer pumps would cease.

All tanks, both pre-treated and post-treated stormwater are routinely inspected and maintained as part of the Applicant's Planned Preventative Maintenance system and site management undertakes weekly site walkover inspections that includes the checking of secondary containment and emergency equipment.

Bund capacity = 106m^3.

Pre-treatment tank capacity = 164m^3 (maximum tank capacity = 40m^3).

Post-treatment tank capacity = 238.5m^3 (maximum tank capacity = 27m^3) – considering the automatic filling restriction at 90% of total tank volume).

Monnex process tank capacity = 49m^3 (maximum tank capacity = 30m^3).

Tertiary containment capacity = 82m^3.

The Monnex process is the permitted production of potassium allophanate on the Applicant's site.

In accordance with the principles in guidance document CIRIA C736 (Containment systems for the prevention of pollution. Secondary, tertiary and other measures for industrial and commercial premises), the secondary containment (bund) should have the capacity to retain the larger of 110% of the volume of the largest tank and 25% of the volume of all tanks combined.

The volume of the largest tank in the bund is actually 60m^3 as tanks A4 and A5 (both 30m^3) are linked by a low-level manifold and must be considered as a single tank. The 106m^3 bund delivers more than 110% capacity of the largest tank.

The volume of all tanks in the bund is 451.5m^3 and the 106m^3 bund delivers only 23.5% capacity of the volume of all tanks combined. However, there is also the availability of the 82m^3 tertiary containment capacity which is deemed adequate to demonstrate acceptable containment of the tanks in the bund.

The interim scenario until the Operator treats the collected volume of rainwater is expected to be a non-routine operational scenario. The routine scenario will be the collection and treatment of an average of 17m^3 per day of rainwater which is the expected daily rainfall on site. This can be stored before and after treatment readily in the post-treatment and pre-treatment storage tanks within the bunded secondary containment area which has a capacity of 106m^3.

An Improvement Programme condition, IC12, has been included in the permit variation notice requiring the Operator to optimise the bunding and containment processes on site to align with the expected storage requirements once the volume of accumulated stormwater is treated and removed from site.

Operation of treatment train (PAC unit):

The stormwater exiting the SAFF unit is directed to the secondary treatment with powdered activated carbon. This takes place within an existing building. After the PAC mixing process, the water is left to stand for a period of time that has been set during commissioning and optimisation of the treatment system. During the testing of the system, it was found that 27 minutes per batch is sufficient to drop any visible suspended flocculants. There is a further settlement that takes place during the sludge removal process that is carried out after the settlement timer. Whilst the optimisation and testing of the treatment system confirmed that the proposed settlement method was sufficient to remove PAC from the effluent, as a further control, an in-line 1 micron bag filter is installed in the pipework below the PAC discharge in order to ensure that no quantity of PAC will enter the treated stormwater storage tanks and hence be released to the River Wenning.

Site condition (ground contamination):

No new land is being added to the installation boundary as a result of this proposed permit variation.

The Applicant has submitted a Stage 1-3 assessment following the approach set out in the European Commission Guidance concerning baseline reports under Article 22(2) of Directive 2010/75/EU on industrial emissions (2014/C 136/03). The Stage 1-3 assessment is designed to identify relevant hazardous substances for the installation which should be considered in developing a baseline for the site. The Applicant expanded this remit to address an Environment Agency request (CAR Reference XP3832NV/0466572) which states “Whilst this [request] only applies to hazardous substances, we recommend including any other [potentially] polluting substances to gain a full understanding of the potential risks from operations”.

Whilst undertaking this Stage 1-3 baseline assessment, the Applicant considered substances used at the site from the point of permit issue (April 2007). They noted that many of the substances identified are no longer present at the site as of March 2024 but listed those deemed either to have the potential to be hazardous to the environment or used in the highest quantity.

Where raw materials, intermediates or products containing PFAS had been present on site, they have been included as potentially polluting substances as a precautionary approach.

They noted that historical PFAS-containing foam manufacturing included two products; synthetic based foams (ceased in 2022) and protein-based foams (ceased in March 2024). Protein base liquor (PFAS free) continued to be manufactured on site until March 2024. As such, tanks relating to these processes are in the process of being decontaminated, decommissioned and removed from site (or have been removed already). Operation of the proposed stormwater treatment train (the subject of application for this variation to the environmental permit, EPR/XP3832NV/V004) will prevent any surface water which could be contaminated from residual PFAS, synthetic or other hazardous chemicals from leaving the site.

Compounds proposed for use in the treatment system to aid in the PFAS removal have been included as potentially polluting substances as a precautionary approach to the assessment.

The Stage 1-3 assessment identified the following relevant hazardous substances as being currently or historically present on the site and therefore which should be assessed at the site to provide a comprehensive ground contamination baseline:

- PFAS
- Zinc
- TPH (total petroleum hydrocarbons)
- pH
- Cetrimonium chloride (CTAC) used in the SAFF process.

We have included an improvement condition, IC13, in the permit variation notice, requiring the Operator to update their Site Condition Report with the findings and conclusions of the Stage 1-3 assessment.

5.3.2 Off-site conditions

We do not consider that any off-site conditions are necessary.

5.4 Operation of the regulated facility

5.4.1 Processes carried out

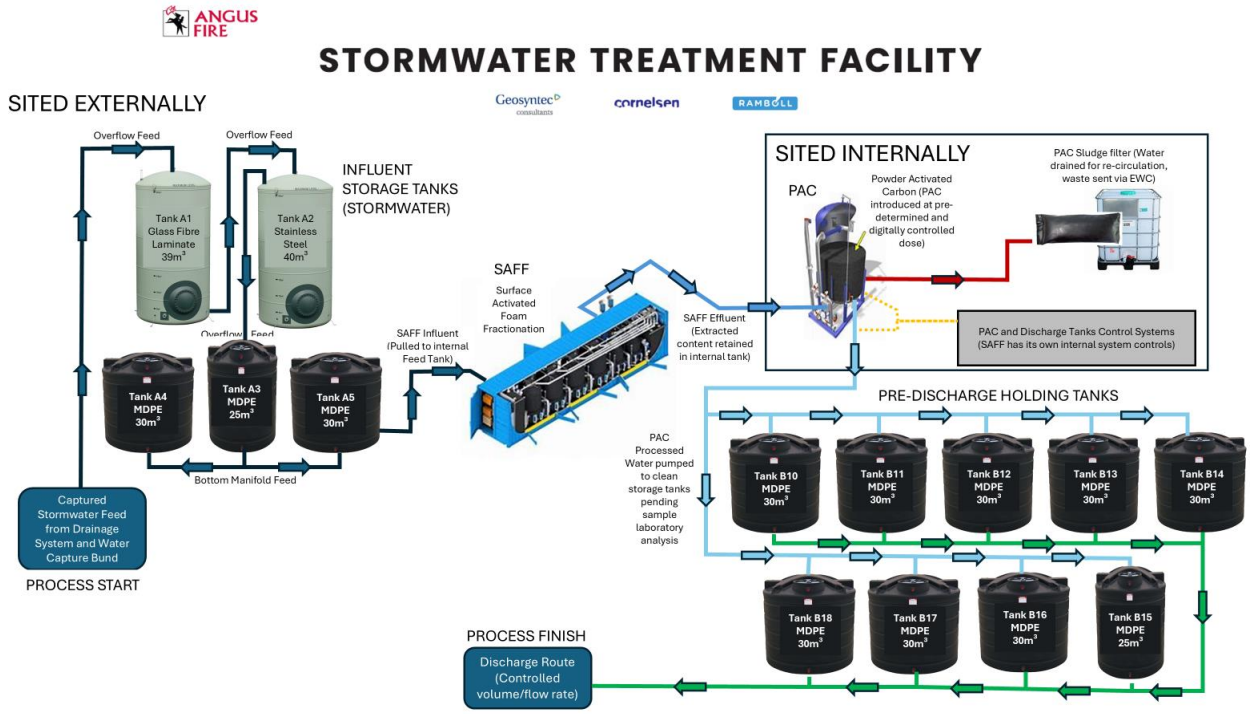
The manufacturing activity remaining on-site following the cessation of production of fluorinated fire-fighting foams is the manufacture of potassium allophanate which is permitted under activity S4.7 Part A(1)(a). The variation to the

environmental permit does not change how this activity is carried out and has not been considered further in the determination of permit variation application, EPR/XP3832NV/V004.

The installation boundary is not changing as a result of this permit variation although stormwater originating from a defined area outside of the installation boundary is also to be treated along with stormwater arising within the installation boundary.

The addition of the SAFF/PAC treatment train for the treatment of stormwater contaminated by PFAS compounds is the only additional process to be added to the site operation and permitted in this permit variation notice.

It will operate in the manner detailed below.



The existing stormwater to be treated in the treatment train is stored in a number of bunded storage tanks on site and in many 1m^3 intermediate bulk containers (IBCs). These IBCs are stored across the site and marked with their date and location of collection. Once the backlog of stormwater is treated, routine stormwater arisings awaiting treatment should be stored only within the bunded pre-treatment storage tanks.

The Operator will treat stormwater from areas at the installation where there is potential for PFAS compounds to be present. Stormwater will be collected from the western part of the Site and drain towards a sump from which it will then be pumped to the pre-treatment storage tanks located in the external tank farm.

Stormwater to be treated will be pumped from the storage tanks to the SAFF/PAC treatment train.

Following treatment, the stormwater will be pumped to nine dedicated post-treatment storage tanks filling each one sequentially. The total capacity of the nine post-treatment tanks is 265m^3 although the routine maximum operational capacity will be approximately 230m^3.

Whilst the first storage tank is being filled with treated stormwater, a sample of stormwater will be taken and sent to a third-party analytical testing laboratory for measurement of PFOS and other PFAS compounds.

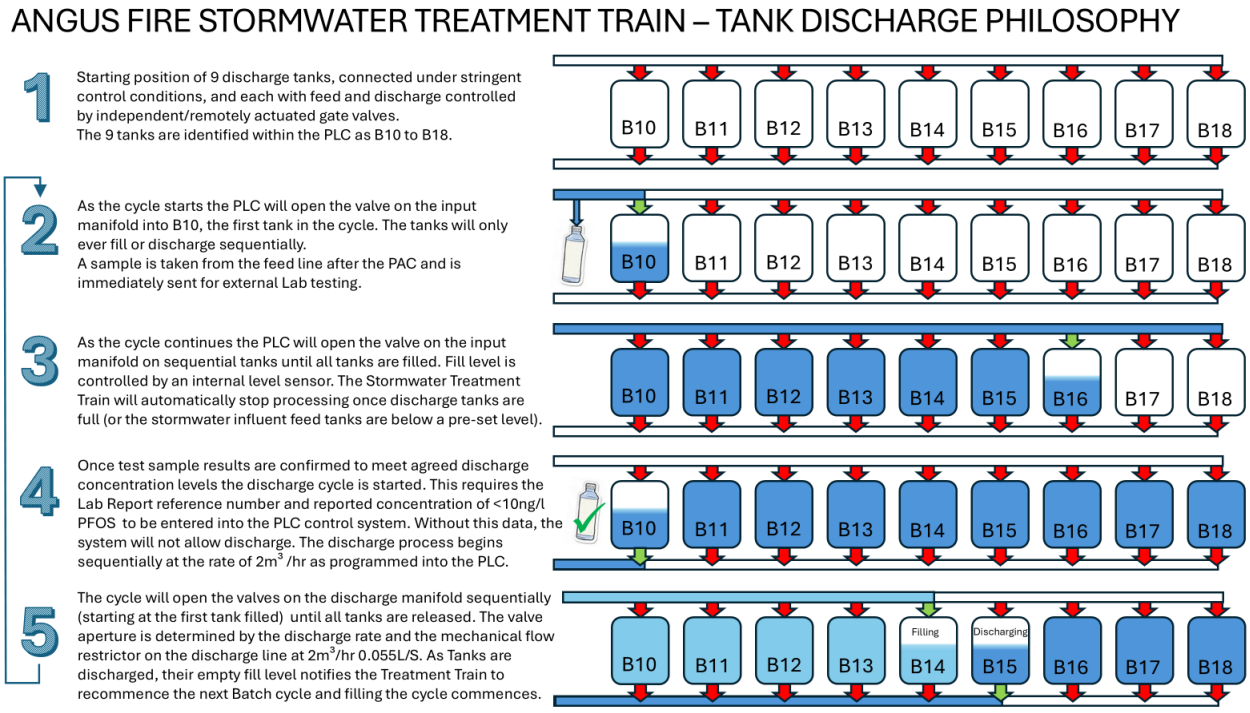
No treated stormwater will be emitted to the River Wenning until the result of the analytical testing for that batch of stormwater has been received. The PLC (programmable logic controller) will only permit emission if a PFOS analytical result of 10 ng/l or less has been input. If a figure greater than 10 ng/l PFOS is input, the PLC will not initiate emission of treated effluent.

Once a storage tank of treated stormwater has been emitted, the PLC will shut off its emission and instigate its filling with newly treated stormwater.

Should the analytical testing indicate that the PFOS level of the batch of treated stormwater awaiting emission is greater than 10ng/l, the Operator will carry out further treatment of the stormwater remaining in the post-treatment tanks using additional input of the dosing additive PerfluorAd™ (flocculant) to each of the discharge tanks. Further samples will be taken and sent to external laboratories for testing. If the results of these samples show PFOS less than 10ng/l, release can commence. Otherwise, the additional dosing and treatment will be repeated until results of PFOS are acceptable for emission to the River Wenning.

It is anticipated that due to the natural properties of high-density polyethylene (HDPE) to not adsorb PFAS compounds, that a satisfactory analytical laboratory result would also consider that the tank has been effectively decontaminated. However, the Operator will adopt a conservative approach such that, once a discharge tank has retained a volume of processed stormwater that reported levels in excess of 10 ng/l PFOS, then the subsequent treatment batch will have each individual tank tested to prove the effectiveness of the remediation approach. A return to a single in-line sample would take place once this validation has been met.

This approach has been incorporated into Table S1.2 (Operating Techniques) of the permit variation notice.



During the initial commissioning phase of the treatment train after permitting, the Operator will obtain samples of treated stormwater from more than one of the storage tanks and submit these for PFOS testing. This will demonstrate that the levels of PFOS in treated stormwater are consistent and sampling one tank alone will be sufficient to authorise discharge of all nine storage tanks based on that one analytical result.

5.4.2 Environmental management system

We are satisfied that appropriate management systems and management structures will be in place for this regulated facility, and that sufficient resources are available to the Operator to ensure compliance with all the Permit conditions.

Our decision was taken in accordance with the guidance on Operator competence and how to develop a management system for environmental permits.

5.4.3 Site security

Having considered the information submitted in the Application, we are satisfied that appropriate infrastructure and procedures will be in place to ensure that the site remains secure.

5.5 Management plans

5.5.1 Accident management plan

The Applicant has submitted an Accident Management Plan (AMP). After considering the plan and other information submitted in the Application, we are satisfied that appropriate measures will be in place to ensure that accidents that may cause pollution are prevented but that, if they should occur, their consequences are minimised.

The Accident Management Plan is detailed as the Qualitative Environmental Risk Assessment in Table 18-2 of the application submission document, “Bentham Fire Fighting Chemicals. APPLICATION TO VARY AN ENVIRONMENTAL PERMIT” dated June 2025.

5.5.2 Environmental risk

We have reviewed the Applicant’s assessment of the environmental risk from the facility.

The Applicant’s risk assessment is satisfactory.

5.6 Operating techniques

5.6.1 General operating techniques

We have specified that the Operator must operate the regulated facility in accordance with the following documents contained in table S1.2 of the Permit.

These operating techniques relate to the new processes permitted through environmental permit variation, EPR/XP3832NV/V004, for operation of the treatment train to treat stormwater containing PFAS.

Description	Parts Included	Reasons we have included
The Application	Operating techniques in document "Bentham Fire Fighting Chemicals – Application to Vary an Environmental Permit" Version 2.0, June 2025, submitted in response to Question 3a, Technical Standards, in Application Form, C3.	The Application document includes the operating techniques for the collection and treatment using SAFF/PAC of stormwater that might contain PFAS at the Angus Fire site. The document includes the control of discharge to the River Wenning of treated stormwater to ensure it meets the PFOS limit prior to discharge. The document demonstrates how these operations will be carried out to minimise impact on the environment.
Response to Schedule 5 Notice dated 07/08/2025	Operating techniques described in the response to the Notice (including accompanying information): - Q2 drainage management to separate stormwater from high and low PFAS risk areas of site. - Q3 on frequencies of cleaning and inspecting drains, sumps and pipework. - Q4b on use of PAC in conjunction with SAFF. - Q6 on inspection of temporary storage areas. - Q8 on stormwater transfer from IBCs to treatment train. - Q10 on level controls in pre- and post-treatment tanks.	The information on drainage management demonstrates how stormwater from high and low risk areas of site are managed to ensure no stormwater from high-risk areas can be discharged without being treated for PFAS reduction. The cleaning and inspection frequencies for drains, sumps, pipework and temporary storage areas demonstrate how infrastructure that may contain stormwater contaminated with PFAS will be maintained to ensure its integrity and prevent fugitive losses to the environment. The information on the operation of SAFF and PAC demonstrates how these technologies are used in tandem to reduce PFAS levels in stormwater to levels which will not cause environmental

	- Q12 on sampling and testing of stormwater prior to emission and increased testing in initial operating period. - Q13 on filling and discharge of pre- and post-treatment tanks. - Q16 on PLC operation to manage emission of treated stormwater. - Q17 on prevention of PAC carryover into treated stormwater. - Q18 on management of treated stormwater that exceeds PFOS limit for emission. - Q20 on inspections carried out onsite.	or health impacts when discharged from site. The information on transfer of stormwater from IBCs and the filling, storage, transfer and discharge of stormwater in pre- and post-treatment tanks demonstrates how these operations will be carried out to prevent leaks or spillages to the environment. The information on sampling and testing of stormwater for PFAS (including proposed enhanced testing at the commencement of treatment operations) demonstrates how the operator will ensure PFAS levels in stormwater are controlled to agreed limits. The information on PLC operation demonstrates how the discharge to the River Wenning can only occur once a concentration value of PFOS <10ng/l is input. The information on preventing PAC carry over into the treated stormwater demonstrates how the operator will ensure PAC cannot be discharged into the receiving environment as a result of its presence in the treated stormwater. The information on management of treated stormwater that exceeds 10ng/l PFOS concentration demonstrates how this non-conforming material will be

		processed to ensure only stormwater with PFOS levels <10ng/l can be discharged to the River Wenning. The information on inspections carried out on site demonstrates how the operator will inspect the operation of storage, treatment and disposal of stormwater, including out of hours periods, to ensure there are no incidents of environmental concern occurring.
Response to Request for Further Information (RFI) dated 15/08/2025	Operating techniques described in the response to the RFI (including accompanying information): Q2 on emission management through SP2 and SP5.	The information on discharge through SP2 and SP5 demonstrates how the operator will control releases of treated stormwater through permitted release points.
Response to Request for Further Information (RFI) dated 02/09/2025	Operating techniques described in the response to the RFI (including accompanying information): Q6 on sampling and testing of post-treatment stormwater.	The information on sampling and testing of post-treatment stormwater (including interim measures) outlines how this process will demonstrate that the SAFF/PAC treatment train is operating effectively to reduce PFAS levels to agreed limits prior to discharge to the River Wenning.
Additional information	Operating techniques including accompanying information on vessel and venting to atmosphere management.	The information demonstrates how the venting of gases from the SAFF treatment train is managed and controlled.
Additional information	Operating techniques associated with the testing of stormwater for PFAS substances	The information demonstrates the operating techniques that will be used in the analytical testing of stormwater for

		PFAS substances both before and after treatment.
Additional information	Operating techniques including accompanying information on: - stormwater containment and bunding. - scope of environmental management system including staff training, staff responsibilities and systems to ensure compliance with all environmental permit requirements.	This information demonstrates how site containment is operated to minimise the risk of losses of containment during the storage and treatment of stormwater and how any such losses, if they were to occur, can be retained on site. Further information is provided on how site staff are trained to operate the treatment train, and all aspects of the permitted process, to ensure they minimise environmental impact and comply with all environmental permit requirements.

We have considered the relevant guidance, and we are satisfied that the operating techniques represent the most appropriate techniques for the facility.

There are no technical treatment methods defined in BAT-conclusions or Appropriate Measures for the treatment of stormwater containing PFAS. In light of that, the way we have determined the suitability and appropriateness of the operating techniques proposed is discussed further in Sections 5.6.2 and 5.6.3.

5.6.2 Assessment of BAT

The Applicant has assessed the composition of the pre-treated stormwater containing PFAS compounds using the Environment Agency's "Guidance on the Classification and Assessment of Waste (WM3)". The results of this assessment are that the stormwater is classified as non-hazardous waste.

The threshold for regulating a non-hazardous treatment operation as an S5.4 activity under the Environmental Protection (England & Wales) Regulations 2016 (as amended) is that its capacity must exceed 50 tonnes per day (effectively 50m^3 per day for aqueous wastes).

The treatment train being proposed by the Applicant to treat stormwater containing PFAS compounds has a capacity of less than 50m^3/day, managed through operational and procedural controls and technical constraints including ensuring the equipment used cannot physically operate at volumes greater than 50m^3/day.

The waste treatment operation proposed does not therefore meet the criteria for regulation as an S5.4 non-hazardous treatment activity for which the requirement to operate to BAT (Best Available Techniques) would apply. Nor does it meet the criteria for being a DAA (see Section 5.2) for which the requirement to operate to BAT (Best Available Techniques) would also apply.

The PFAS treatment train will be permitted as a waste treatment operation (with capacity less than 50 tonnes (50m^3) per day). The Applicant has assessed the treatment operation proposed against "Non-hazardous and inert waste: appropriate measures for permitted facilities" (see below). As there are no specific treatment techniques proposed for PFAS compounds in the Appropriate Measures guidance, the assessment of compliance with these techniques focused more on non-technical aspects of the proposed operation.

There is no defined BAT standard or BAT-conclusions for the treatment of PFAS in stormwater. However, we have subjected the PFAS treatment proposals to a level of detailed scrutiny as if they were an operation requiring compliance with BAT standards.

Annex III of the Industrial Emissions Directive outlines criteria for determining best available techniques which we have used in assessing the proposed treatment process in the absence of defined technical BAT-conclusions.

We have considered those criteria.

We consider the following are particularly relevant:

No.4 (comparable processes, facilities or methods of operation which have been tried with success on an industrial scale).

The use of SAFF (Surface Active Foam Fractionation) alongside an adsorption stage using powdered or granular activated carbon is already commercially available and used by operators treating effluents and/or surface waters that have been contaminated with PFAS compounds.

The use of foam fractionation (including SAFF) and carbon adsorption (including granular activated carbon) are referenced as an abatement technique for PFAS in report, 'Rapid evidence assessment of PFAS incineration and alternative remediation methods' published by the Environment Agency Chief Scientist's Group in September 2025.

The graph below from that report gives a representative picture of the commercial availability and effectiveness in PFAS removal of the SAFF and activated carbon techniques.

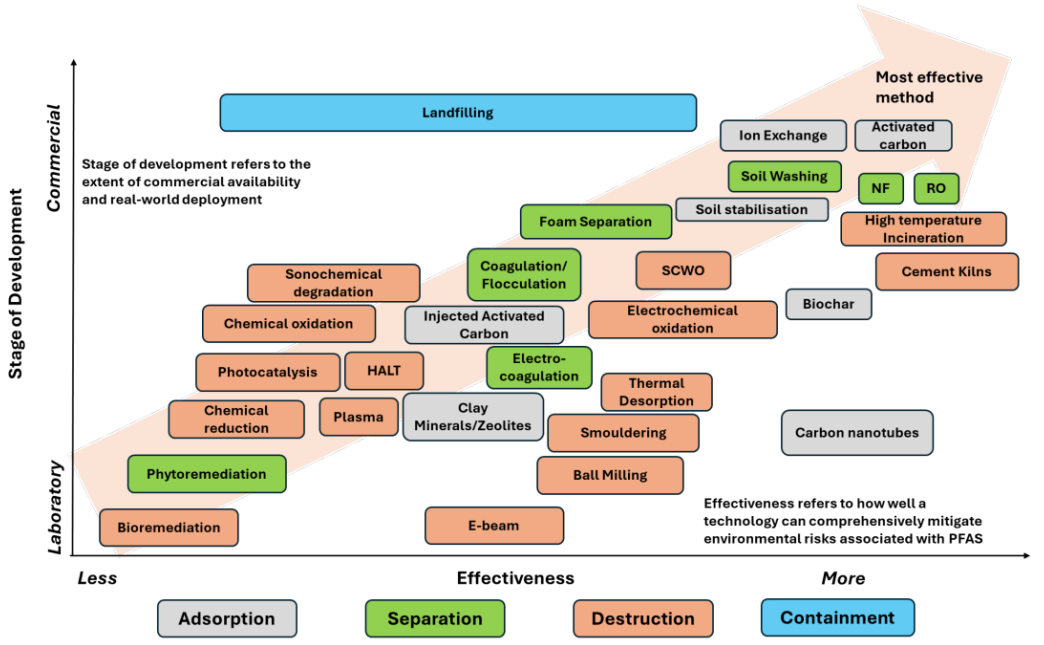


Figure 8. **Rough** comparison of key PFAS remediation technologies for soil and water by potential effectiveness, commercial maturity, and availability adapted from Concawe et al., 2024 (please note not to exact scale and some technologies not included). 57

This graph is adapted from Concawe 2024, PFAS Soil Treatment Processes – A Review of Operating Ranges and Constraints, Report 8/24.

The report issued by the Flemish Knowledge Centre in December 2023, 'Best Available Techniques for the Purification of PFAS-Burdened Commercial Wastewater and Pulmonary Water', considered foam fractionation amongst these

techniques. It defines this technique as the concentration and separation of surfactants from a solution into a foam phase by introducing gas bubbles into a narrow column of solution. The gas bubbles are created by injecting a gas at the bottom of the solution via a number of reactors connected in series. The surfactants attach to the gas-water surface of the gas bubbles and are thus carried along to the foam layer at the surface.

The report notes that up to 20 large scale applications were noted at the time of writing in Australia, Sweden, Norway, Spain, the United States and the United Kingdom for the treatment of groundwater, drainage water, surface water, percolate water and fire-extinguishing wastewater. It commented that flow rates of 0.5 – 40m3/hour could be treated with this technology. The Applicant's proposed technology will treat between 0.7 – 2.0m3/hour which is within the treatment range specified.

The proposed use by the Applicant of the SAFF/PAC treatment train meets the criteria of "have been tried with success on an industrial scale".

No.6 (the nature, effects and volume of the emissions concerned).

The concentrations of PFAS within the Applicant's stormwater and the volumes of stormwater to be treated are within the known efficacy and treatment capacity of a SAFF/PAC treatment train. The Applicant has proposed in the application for permit variation that the process installed is capable of effectively treating up to 50,000 µg/l PFAS and has demonstrated effective removal during trials. The remaining level of PFAS after the SAFF/PAC treatment process will be of a level where the residual emissions to receiving waters (River Wenning) will screen out as not significant using defined Environment Agency risk assessment methodologies (specifically the H1 risk assessment using the defined EQS for PFOS).

No.8 (the length of time needed to introduce the best available technique).

Since the Environment Agency confirmed with the Applicant in approximately May 2024 that there was the risk of rainwater falling onto high-risk areas of their site could be contaminated by residual PFAS contaminated from the site, the Applicant has retained all that rainwater on site pending treatment to reduce its concentrations of PFAS compounds. The Applicant has had to design, procure, trial and seek permitting for a treatment train to reduce PFAS concentrations within a timescale that could allow them to treat and discharge both their existing backlog of contaminated stormwater and future arisings.

To do this, they had to source existing proven technology such as SAFF and PAC. To wait until further treatment technologies were proven and commercially available would not have been possible for the Applicant given their requirement to collect, store, treat and dispose of contaminated stormwater within the logistical constraints of storage capacity on site.

No.10 (the need to prevent or reduce to a minimum the overall impact of the emissions on the environment and the risks to it).

This is considered a particularly important aspect in considering whether the SAFF/PAC treatment train represents BAT and whether it should be permitted.

There is no realistic scenario where stormwater/rainwater falling onto contaminated areas of the Applicant's site will not be released offsite into the environment and eventually to the River Wenning – either by fugitive release from the site if not proactively collected, or by release after treatment to reduce PFAS levels. The Applicant's storage capacity for stormwater is finite and, after that storage capacity is exhausted, the Applicant will, if not permitted to treat the stormwater, not have the capacity to continue retaining the rainwater contaminated with PFAS. If not retained, further rainwater will flow naturally off-site into the wider external environment and into the River Wenning.

At the time of application for permit variation (April 2025), the Applicant had collected and retained approximately 4,000m^3 of rainwater. As of the beginning of December 2025, that volume of rainwater collected and stored on site had increased to approximately 8,200m^3.

Without retention and treatment, that rainfall landing on the PFAS contaminated areas of the Applicant's site would be emitted to the River Wenning at PFOS levels of approximately 3,000 – 4,000 ng/l rather than the level of <10 ng/l if the Applicant is permitted to operate their treatment train.

Using a PFOS concentration of 3,500ng/l for the untreated stormwater, and a concentration of 10ng/l for the treated stormwater, it would take 350 days of emissions of treated stormwater to release the same amount of PFOS that would be released in one day of emission of untreated stormwater.

At the maximum treatment capacity of 48m^3/day, emission of stormwater treated to 10ng/l would result in an emission of 0.48mg/l of PFOS per day. Discharging 48m^3/day of untreated stormwater would result in the emission of 168mg PFOS per day.

Emission of 17m^3/day of treated stormwater, which is the expected normal treatment and emission rate once the stockpile of rainwater has been treated, would result in an emission of 0.17mg of PFOS per day.

To meet this criterion of needing to prevent or reduce to a minimum the overall impact of the emissions on the environment and the risks to it, the emission of contaminated rainwater must be at a PFOS level of <10 ng/l rather than 3,000 – 4,000 ng/l.

The Applicant reviewed a number of technical options for treating stormwater contaminated with PFAS compounds before deciding on the use of a SAFF/PAC treatment train.

These options included:

- Off site high temperature incineration (HTI).
- SAFF.
- Activated carbon (both granular and powdered).
- Ion exchange.
- Reverse osmosis
- Nano filtration
- Direct discharge to sewer.

Of these options for methods to remove PFAS from aqueous matrices, ion exchange resin (IER), activated carbon (AC), reverse osmosis (RO), nanofiltration (NF) membranes and foam fractionation are listed in a report from We et al (2024).

The effectiveness of Surface-Active Foam Fractionation (SAFF) technology declines with shorter chain PFAS and typically requires follow-up treatment. Removal efficiencies for long-chain PFAS typically approach >90%, whereas short-chain PFAS may only achieve removal efficiencies on the order of 5–50% due to their lower affinity for the air–water interface (Environment Agency, 2025; Klevan et al., 2025).

A treatment train, where foam fractionation is combined with technologies may improve outcomes relative to using SAFF in isolation (We et al., 2024). Cationic surfactants, such as cetyltrimethylammonium bromide (CTAB), have been found to be effective in enhancing removal of short-chain PFAS. Short-chain PFAS, including PFBS and perfluorobutanoic Acid (PFBA), can be removed at ≥ 95% efficiency with the aid of CTAB (We et al., 2024; Klevan et al., 2025).

The Applicant is proposing to use cetyltrimethylammonium chloride (CTAC) in their proposed SAFF treatment process – a chemical similar in nature to CTAB.

Granular activated carbon (GAC) is less efficient at removing short chain PFAS (<6 carbons), such as PFBS and PFBA, which have lower carbon adsorption affinity (often <50% to 99%). Powdered activated carbon (PAC) has a smaller <0.1mm diameter than GAC and can also be used for the removal of PFAS (Environment Agency, 2025).

The Applicant determined that the SAFF/PAC treatment train was deemed appropriate to the nature and concentration of PFAS present in the stormwater and performed suitably well in trials to reduce PFAS to levels where they can be screened out at H1 assessment – for PFOS which was the only PFAS compound with a defined EQS value at time of the submitted application, EPR/XP3832NV/V004.

In the case of high temperature incineration, the Applicant confirmed that only one incinerator in England would have been willing to accept the stormwater

waste stream. Costs of incineration of the retained stormwater (8,200m3 as of December 2025) would have been in the order of £4.5million. In addition, the volume of stormwater that could have been accepted per year for incineration was only 2,400m3. The Applicant has estimated they will retain approximately 6,200m3 rainwater each year based on the footprint of the high-risk areas of site and the expected annual rainfall. Incineration would only have capacity for about one third of the expected annual rainfall collected and could not logistically address the retained stockpile of rainwater without allowing another equally significant stockpile volume to arise. Incineration of the rainwater is not feasible in terms of costs, capacity or timeframe.

Although the Applicant noted in their appraisal selection that ion exchange resins could result in better removal of short-chained PFAS compounds, which historical studies have shown to be less hazardous than long-chained PFAS compounds, they proposed that a treatment train including both SAFF and PAC would operate together in such a way to deliver the degree of PFAS removal required in the case of their contaminated stormwater. They noted restrictions on the global availability of resins which they believed could have introduced uncertainty into their ability to continually operate the abatement process for the time needed to treat the existing stockpile of stormwater and all fresh arisings of stormwater.

The Applicant confirmed discussions Geosyntec, the technical consultants they had used, had with remediation suppliers in 2024 regarding the availability of ion exchange resins.

The Applicant stated that Cornelsen, use resins from Lanxess and Brenntag. Both suppliers publicly market a ready supply, but Cornelsen’s practical experience is that Lanxess do not hold significant stock in Europe. They manufacture in India to order and lead times can be from 3 - 6 months. Brenntag do hold some stock in Europe, primarily Denmark, and responded to enquiry on behalf of the Applicant that stock levels were as low as 6m3 and potentially that was already allocated to a specific pre-order client. Procurement discussions were also held with SciDev who, at that time, had only a tentative supply of resin with minimum lead in times of 12 – 16 weeks.

Taking these supply chain issues into account, in association with wider external factors which the remediation market has had to contend with over the recent past such as Brexit, Covid and the US export tariff scenarios, all of which result in global supply chain variations being observed within the UK, the Applicant believed that the practical availability of ion exchange resin placed doubts on the short-term viability of the methodology as a reliable component of their PFAS removal treatment train.

The use of SAFF/PAC, they contended was considered to be the best overall solution in terms of performance and availability.

The use of a treatment train would also allow the Operator to optimise each individual element of that treatment in order to maximise the treatment of both

short- and long-chained PFAS compounds. It also would allow both future upgrades to the existing treatment processes or addition of new treatment processes to the train should technologies develop, legislation change or permitted levels of PFAS in emissions be reduced.

The Applicant proposed that the use of a SAFF/PAC treatment train is considered to be the most suitable approach to achieve the required level of PFAS removal to meet current regulatory and environmental standards.

They propose that the SAFF/PAC process is suitable based on:

- SAFF delivers >99% PFOS removal, proven at the site through trials of the process.
- SAFF provides a sustainable mode of operation with a low energy input and generation of small volumes of waste.
- PAC can remove short-chain PFAS which may not be fully captured through the SAFF stage.
- PAC dosing can be configured to deliver optimum removal whilst minimising waste generated.
- The combined system can remove over 90% of all PFAS compounds present in the influent.
- The combination of SAFF and PAC has been demonstrated to achieve the proposed emission limit of <10ng/l PFOS.

We are satisfied with the treatment train operation proposed by the Applicant but there may be scope for further improvements which can only be established during commissioning/operation of the process.

We have therefore included an Improvement Condition, IC14, in the permit variation notice that requires the Operator to submit a written report after one year of operation of the treatment train to demonstrate its effectiveness in PFAS removal and define any improvements in the treatment or limits of detection of PFAS analytical methodology as a result of their further trials and commissioning of the unit.

The Environment Agency acknowledges that there are published academic studies that do propose that ion exchange resins may deliver better removal of short-chained PFAS than either SAFF or PAC in isolation. We consider that the combination of SAFF/PAC within the Applicant’s treatment train is BAT and will deliver a broadly equivalent level of removal of both short- and long-chained PFAS as would ion exchange resins and will deliver an acceptable of PFAS BAT removal to satisfy current environmental permitting requirements.

We note that individual dosing with powdered activated carbon of batches of stormwater requiring treatment will allow the Operator to optimise the amounts of carbon required for maximum PFAS removal. Individual dosing of these batches with the carbon removes the risk of breakthrough of PFAS from spent activated

carbon as is the case if stormwater would be passed over or through a bed of activated carbon as is often the case in its use in this application.

5.6.3 Assessment of waste characterisation.

The Applicant has submitted a detailed assessment of their operation against the “Non-hazardous and inert waste: appropriate measures for permitted facilities” which we have accepted as demonstrating they will have operational and procedural controls in place for the capture, storage, treatment and disposal of contaminated stormwater.

The Applicant has confirmed in their application documentation that the SAFF/PAC treatment train has the capacity to treat stormwater up to 50,000ug/l PFOS. Their trials on the unit prior to submitting the application for permit variation showed that the PFOS composition in the post-treatment stormwater varied from 2µg/l to 7µg/l (2,000 to 7,000ng/l) with an average of 3.8µg/l (3,800ng/l) PFOS. Results of further PFOS analyses of untreated stormwater submitted during the determination of the application showed PFOS concentrations from 2.4µg/l to 4.5µg/l (2,400ng/l to 4,500ng/l) with an average of 3.3µg/l (3,300ng/l).

The expected concentration of PFOS in the pre-treated stormwater is significantly within the capacity of the treatment train to treat PFOS at those levels. In addition, there is no expected mechanism for this baseline of PFAS contamination to increase as the manufacture and testing of fire-fighting foams containing PFAS have ceased on site.

Furthermore, the programmable logic controller (PLC) that manages the emission of treated water to the River Wenning will not permit emission unless the PFOS concentration in the stormwater to be emitted is 10ng/l (0.01µg/l) or less.

We accept that the PFOS concentration of incoming untreated stormwater, the treatment capacity of the treatment train and the controls over emission of treated stormwater are sufficient such that no pre-acceptance or acceptance confirmation analyses are required on the incoming pre-treated stormwater.

However, we have required the Operator to carry out annual PFAS analyses on the incoming pre-treated stormwater to demonstrate that the concentrations of PFAS remain within the levels proposed and assessed in the application for permit variation.

5.6.4 National Air Pollution Control Programme

We have considered the National Air Pollution Control Programme as required by the National Emissions Ceilings Regulations 2018.Our decision complies with the programme’s strategy and aids the delivery of national air quality targets. We do not consider that we need to include any additional conditions in this Permit.

There are permitted emissions of ammonia to air from the operation of the potassium allophanate production plant. These are abated through an ammonia scrubber and released to air through emission point, A9. These emissions are not changing as a result of this variation and have not been considered further in this determination.

5.6.5 Raw materials

We have specified limits and controls on the use of raw materials and fuels.

Raw Material or Fuel	Specifications	Justification
Medium Fuel Oil	<1%	As required by Sulphur Content of Liquid Fuels Regulations.

This has not changed from the current permit notice.

Having considered the information submitted in the Application, we are satisfied that appropriate measures will be in place to ensure that the Operator will make efficient use of raw materials and water.

The Operator is required to report with respect to raw material usage under condition 4.2.2 and Table S4.2.

5.6.6 Waste types

The Operator will treat contaminated stormwater from within its permitted installation boundary and from a designated area of PFAS contaminated land outside of that boundary – the contamination having been caused by the historical manufacture and testing of fire-fighting foams by the company.

The composition of this stormwater requiring treatment is known from previous sampling and analyses and no pre-acceptance or acceptance criteria are necessary for the stormwater.

The incoming stormwater from outside the installation boundary is not classified as waste accepted from a third-party onto site and no EWC (European Waste Catalogue) coding for accepting storm water from outside the boundary is considered necessary.

We are satisfied that the Operator can accept the stormwater from inside and outside the installation boundary for the following reasons:

- It is suitable for the proposed activities
- The proposed infrastructure is appropriate; and
- The environmental risk assessment is acceptable.

We have limited the capacity of the regulated facility to 48m^3 of stormwater per day. This is based on the regulated facility operating continuously throughout the year – although operation of the treatment train will be limited to standard site operational hours once the accumulated backlog of stormwater has been treated and removed from site.

The operation of the treatment train will itself generate two new waste streams of a SAFF foam concentrate and a used powdered activated carbon sludge. Both of these waste streams will be removed from site for disposal by high temperature incineration.

Expected quantities of waste generation are:

- SAFF waste (24kg/day) and PAC waste (48kg/day) at maximum treatment operation (48m^3/day).
- SAFF waste (8kg/day) and PAC waste (17kg/day) at normal standard treatment operation (17m^3/day).

6 Nature conservation, protected species and habitat designations

The Conservation of Habitats and Species Regulations 2017, widely known as the Habitats Regulations, covers sites of European importance such as Special Areas of Conservation (SACs) and Special Protection Areas (SPAs). Ramsar sites, classified under the Ramsar convention of 1971, are classed as having the same protection as European sites We screen for potential effects on the ecological integrity of a European site when considering any proposal. These regulations enshrine the precautionary principle in law.

We screen for Sites of Special Scientific Interest (SSSI) as covered by The Wildlife and Countryside Act 1981 (WCA81), The Countryside and Rights of Way Act 2000 (CRoW Act) subsequently amended and strengthened this act, and the Natural Environment and Rural Communities Act 2006 (NERC06). We also screen for Marine Conservation Zones (MCZ).

Screening is also carried out for protected species, National nature reserves (NNR), Local nature reserves (LNR), Local wildlife sites (LWS), and non-statutory sites such as National Landscapes and heritage sites.

Our screening criteria are based on the risks posed by the proposed activities and the sensitivity of the receptor. We have checked the location of the permission to ascertain if it is within the screening distances we consider relevant for impacts on nature conservation, landscape, heritage, protected species and habitat designations. The application is within our screening distances for these designations.

6.1 Sites considered

The following Special Areas of Conservation (SAC), Special Protection Areas (SPA) and Ramsar sites are located within 10 km of the regulated facility:

- Ingleborough Complex (SAC) located between 5.9 and 7.0 km from the regulated facility.
- Bowland Fells (SPA) located approximately 6.0 km from the regulated facility.

There are no Sites of Special Scientific Interest (SSSI) within 2 km of the proposed regulated facility.

The following local nature sites (ancient woodlands (AW), local wildlife sites (LWS) and national (NNR) and local nature reserves (LNR)) are located within 2 km of the regulated facility:

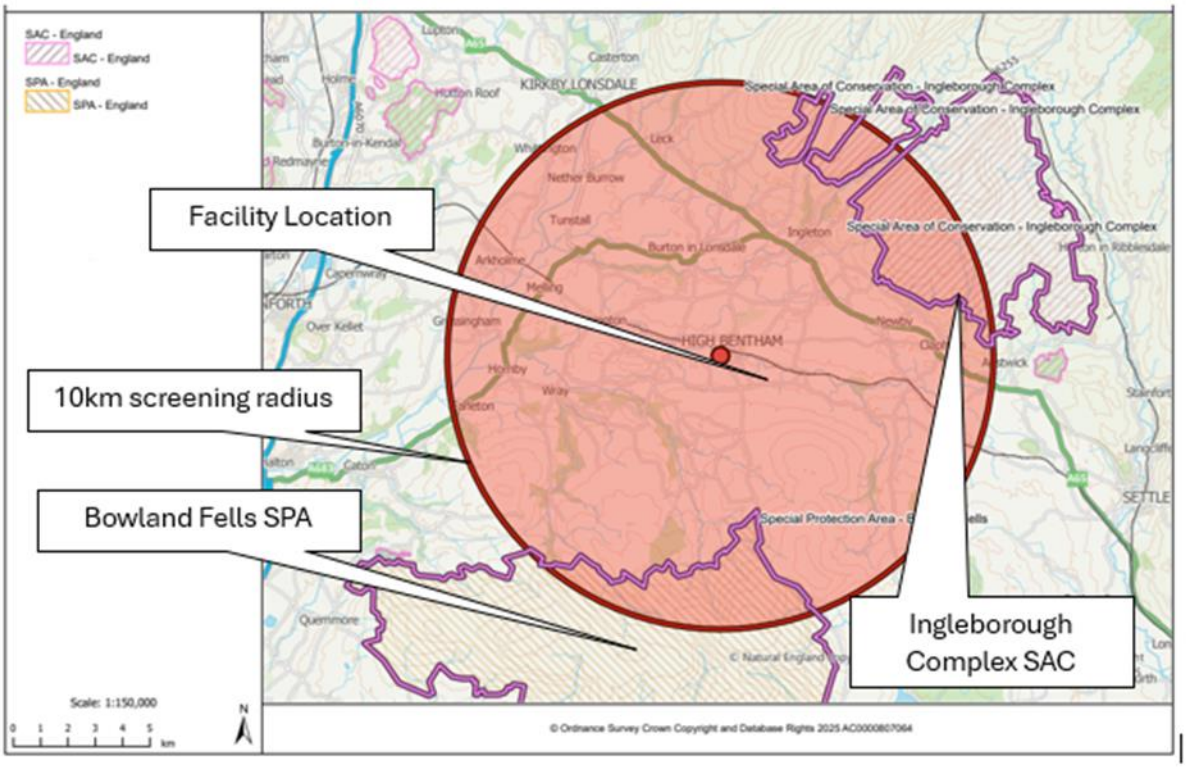
- Cowslip Hill (LWS) located approximately 0.6 km from the regulated facility.
- Branstone Beck Wood (LWS and AW) located approximately 1.3 km from the regulated facility.
- Bowtham Wood and extension (LWS and AW) located approximately 1.4 km from the regulated facility.
- Eskew Lane Wood, Low Betham (LWS) located approximately 2.0 km from the regulated facility.
- Gill Brow Wood (LWS and AW) located approximately 2.0 km from the regulated facility.

6.2 Assessments

6.2.1 Habitats Assessment

The Applicant’s proposals were reviewed by our technical specialists for habitats and conservation who agreed with the assessment’s conclusions, that there would be no likely significant effect on the interest features of the protected sites.

We have assessed the application and its potential to affect sites of nature conservation, landscape, heritage, protected species, and habitat designations identified in the nature conservation screening report as part of the permitting process.



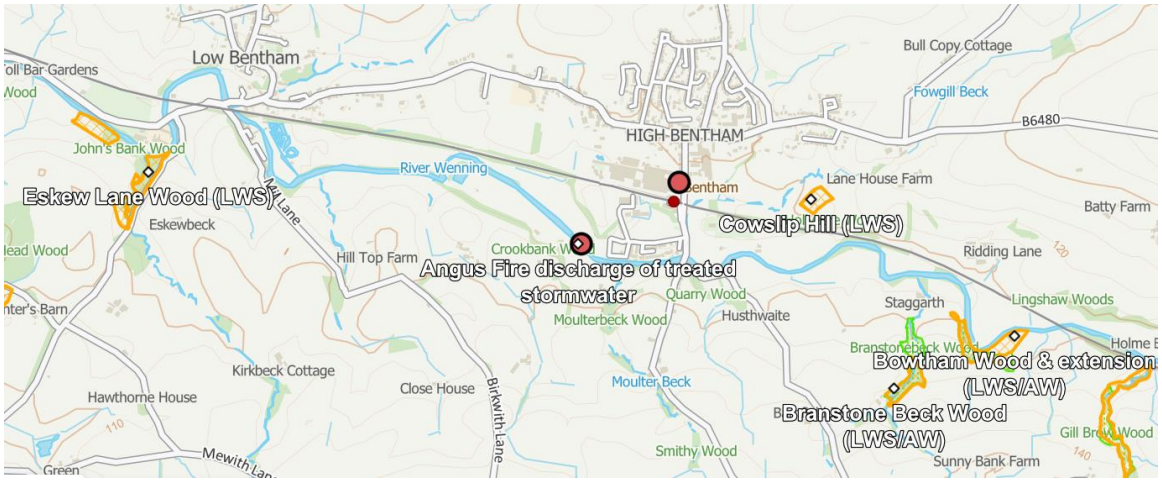
European habitats sites have been screened in due to emissions to air and not emissions to water. Water is emitted to the River Wenning and does not provide a pathway to impact any European habitats sites. Ingleborough Complex SAC is situated upstream of the emission point and as such there is no pathway for impact. Similarly, Bowland Fells SPA is located on a tributary which flows into the River Wenning and as such does not create a pathway for impact. Neither site is designated for fish or piscivorous bird species.

The facility has a passive air emission which could contain fugitive PFAS. However, the controls in place ensure there should not be significant quantities of PFAS in the release. The emission is likely to remain localised and, should any pollutants be present, they are not likely to significantly affect the designated sites over 5km away.

Where relevant, a search of the Environment Agency work queue and Bentham Parish planning portal for proposals that may give rise to an in-combination effect was conducted on 25th November 2025. No proposals were identified. Therefore, no in-combination assessment has been undertaken.

We have not consulted Natural England on our Habitats Regulations assessments. We have sent our Habitats Regulations assessment to Natural England for information only.

6.2.2 Assessment of local nature sites



Conservation sites are protected in law by legislation which provides the highest level of protection for SACs and SPAs, and also important protection for SSSIs. More generalised protection is provided for flora and fauna rather than for specifically named conservation designations. It is under this that we assess other sites (such as ancient woodlands, local wildlife sites and national and local nature reserves) which prevents us from permitting something that will result in significant pollution; and which offers levels of protection proportionate to the designation. However, it should not be assumed that because levels of protection are less stringent for these other sites, that they are not of considerable importance. Local sites link and support EU and national nature conservation sites together and hence help to maintain the UK's biodiversity resilience.

The locations of the four local wildlife sites/ancient woodlands referenced in section 6.1 are detailed in the map above.

For these sites, there is no defined pathway for aqueous releases from the Applicant's site to reach them and impact them. Any air emissions from venting of vessels are likely to be very localised around the SAFF treatment unit and again unlikely to reach or impact on these sites.

No adverse impact on these sites is expected and no mitigation required.

7 Minimising the regulated facility's environmental impact

Regulated activities can present different types of risk to the environment, these include odour, noise, and vibration; accidents, fugitive emissions to air and water; as well as point source releases to air, discharges to ground or groundwater, global warming potential (GWP) and generation of waste and other environmental impacts. Consideration may also have to be given to the effect of emissions being subsequently deposited onto land (where there are ecological

receptors). All these factors are discussed in this and other sections of this document.

The next sections of this document explain how we have approached the critical issue of assessing the likely impact of the emission from the regulated facility on human health and the environment and what measures we are requiring the Operator to take to ensure a high level of protection.

7.1 Emissions to Air

The application for variation to environmental permit removes emission points to air, A1, A2, A3, A4, A5, A6 and A8 which were associated with manufacture of fluorinated firefighting foams or other decommissioned activities.

It retains emission points A7 (boiler 2 stack) and A9 (potassium allophanate manufacture). As these processes and emissions from these stacks are not changing as a result of this variation application, no further assessment has been carried out on these emissions.

There are no new process emissions to air from the SAFF/PAC treatment train but there are some breathing vents associated with storage tanks and treatment vessels in the SAFF/PAC treatment train.

Air flows within the system are passive (no forced ventilation) and driven by the filling of tanks. Any over pressure situation would be released into Tank 3A which has a water sprinkler system installed to knock down any foam in the head space and a vapour carbon unit installed on the final release to capture any remaining contaminants, should any be present in the final release.

No specific significant new emissions to air are expected from operation of the SAFF/PAC treatment train, including storage of pre- and post-treated stormwater, and so no further assessment of the impact of air emissions is required.

The following vents are added to Table S3.1 (Point source emissions to air):

- A10 = vent from SAFF Tank 1 (receipt of influent).

- A11 = vent from SAFF Tank 2 (treated stormwater).

- A12 = vent from SAFF Tank 3A (venting into a 400litre vapour carbon vessel).

7.2 Emissions to Water

7.2.1 Emissions to surface waters and/or groundwaters

Assessment Methodology.

A methodology for risk assessment of point source emissions to surface waters, which we use to assess the risk of applications we receive for permits and

variations to permits, is set out in our guidance “Surface water pollution risk assessment for your environmental permit” and has the following steps:

- Identify the pollutants released from your facility.
- Gather data on the pollutants released before screening them.
- Carry out screening tests on the data.

There are separate screening tests for emissions into freshwaters and emissions into estuarine and coastal waters. In the case of this Operator, the emission of treated stormwater will be into fresh water, the River Wenning.

We call this approach a H1 risk assessment.

This assessment methodology is based on the prevention of harm to human and ecological receptors using a defined set of environmental benchmarks which represent the maximum acceptable level of that substance in the receiving medium.

In the case of emissions to water bodies, it identifies emissions that warrant further investigation of their impacts, by screening out (eliminating) those which are emitted in such small quantities that they are unlikely to cause a significant impact on the receiving water.

Substances are assessed in two stages: screening and modelling. In each stage, substances are assessed to determine if they are “liable to cause pollution”. Those which are liable to cause pollution after modelling must be controlled on the permit. The screening has a number of tests which increase progressively in complexity. If a substance fails these tests, it passes through to more detailed modelling assessment. If the screening tests are passed, the substance is classed as insignificant and is screened out.

Test 1:

Check whether the concentration of the chemical species in the emission is more than 10% of the environmental quality standard (EQS).

If it is less than 10% of the EQS, no further assessment is required as the release is deemed ‘insignificant’ and is not a risk to the environment.

This test is linked to our long standing no deterioration policy. If the concentration of a substance in an emission is less than 10% of its EQS, the substance cannot cause more than 10% deterioration in the watercourse, even if it receives no dilution. If a substance causes less than 10% deterioration in the watercourse, then it is not liable to cause pollution.

This threshold of 10% of the EQS provides a substantial safety margin to protect human health and the environment.

If it is greater than 10% of the EQS, Test 2 must be carried out.

Test 2:

This test introduces the dilution available in the receiving water and, to carry out this test, the daily emission volume and river flow data must be known. The methodology uses the concept of “process contribution (PC)”, which is the estimated concentration of emitted substances after dispersion into the receiving environmental media at the point where the magnitude of the concentration is greatest.

If the PC is 4% or less of the EQS, then no further tests are required, and the impact of the release is not significant on the receiving environment.

The threshold of 4% of the EQS for PC is derived from the European mixing zone guidance, “Technical Background Document on Identification of Mixing Zones”. There are different thresholds in this mixing zone paper covering different sizes of river. We have decided to use the 4% threshold in that report for rivers within England and we are satisfied this is appropriate for the River Wenning.

If a substance passes Test 2, then its contribution is so small that, if tested, it would not cause deterioration of background river quality to any discernible effect, even if the background concentration of that pollutant in the receiving river already exceeds its EQS value.

If the PC is greater than 4% of the EQS, then Tests 3 and 4 must be carried out.

Test 3:

For this test, the background concentration (BC) of the species being emitted is required in the receiving environment into which it is emitted.

The risk assessment checks whether the emission increases the concentration of the pollutant in the river downstream of the emission by more than 10% of its EQS value.

The predicted environmental concentration (PEC) in the water downstream of the emission is a combination of the PC and background concentration. To work out the PEC, add the PC to the average BC.

If the difference between BC and PEC is more than 10% of the EQS, detailed modelling of the impact of the emission is required. If it is not, Test 4 must be carried out.

Test 4:

This checks if the PEC is greater than the EQS. If it is, then detailed modelling is required.

Assessment of the Emission of Treated Stormwater:

There will be a new emission of treated stormwater to the River Wenning at location, SD 66321 68792. This will be defined as emission point W2 in Table S3.2 (Point source emissions to water) in the proposed environmental permit variation notice.

The Applicant submitted a risk assessment of aqueous emissions of treated stormwater to the River Wenning at this point using the Environment Agency's H1 risk assessment methodology.

They used a Q95 value (a hydrological statistic representing the river flow rate that is equalled or exceeded 95% of the time, indicating a typical low summer flow) of 0.281m3/s. This figure was obtained from the National River Flow Archive Station No. 72009 (River Wenning at Wennington).

We carried out our own checks on the suitability of that location in assessing the emission from the Operator at High Bentham, approximately 5km upstream of the gauging station at Wennington. We used our own low flow modelling software to estimate the Q95 at High Bentham emission location as 0.255m^3/s. This difference may be accounted for by tributaries joining the River Wenning downstream of High Bentham contributing additional flow as well as discharges into the River Wenning from two sewage treatment works.

We have reassessed the H1 risk assessment tool submitted using a Q95 of 0.255m3/s rather than 0.281m3/s as we believe the former figure to be more representative of the flow of the River Wenning at the High Bentham emission location. This is also representative of a lower river flow at the emission location and a worst-case scenario for assessment.

There is only one PFAS with a defined and publicly available environmental quality standard (EQS) on the Environment Agency gov.uk website – PFOS.

The EQS for PFOS is:

- 0.00065 µg/l (0.65 ng/l) for annual average (AA).
- 36 µg/l (36,000 ng/l) for maximum allowable concentration (MAC).

The release of PFOS screened out as not significant in Test 2 of the Environment Agency's H1 risk assessment methodology (as previously defined).

The Applicant also assessed the release of other non-PFAS substances that might also be present in their treated stormwater. These are not generated from any current production process on site – rather they may be present in the stormwater after rainfall onto the Applicant's site due to historical contamination of the site from previous permitted chemical manufacturing activities.

The SAFF/PAC treatment train is not designed to remove these pollutants – it is solely designed to remove PFAS from the stormwater.

All substances assessed are designated as either insignificant at Test 1 of the Environment Agency's H1 risk assessment methodology or as not significant in Test 2 of the H1 risk assessment.

The table below shows the results of the H1 Test 1 assessment.

At Test 1, the following pollutants are defined as requiring no further assessment:

- Boron, arsenic, vanadium, benzene and toluene.

H1 TEST 1	Average concentration	Annual Average	Is release concentration	Maximum concentration	Maximum Allowable	Is release concentration
Parameter	in release (µg/l)	EQS (µg/l)	<10% of EQS	in release (µg/l)	EQS (µg/l)	<10% of EQS
PFOS	0.01	0.00065	NO	0.01	36	YES
Boron	26.3	2000	YES	37	N/A	N/A
Cadmium	0.03	0.07	NO	0.04	0.44	YES
Copper	1.4	1.0	NO	5.0	N/A	N/A
Lead	0.55	1.2	NO	1.9	14	NO
Nickel	0.7	4.0	NO	2.2	34	YES
Zinc	19.3	10.9	NO	129	N/A	N/A
Dichloromethane	52	20	NO	52	N/A	N/A
Chromium (VI)	0.5	3.4	NO	2.0	N/A	N/A
CTAC	0.102	0.42	NO	0.102	N/A	N/A
Arsenic	0.9	50	YES	0.9	N/A	N/A
Mercury	0.5	N/A	N/A	0.5	0.07	NO
Vanadium	0.7	20	YES	1.0	N/A	N/A
Benzene	0.5	10	YES	0.5	50	YES
Toluene	5.0	74.0	YES	5.0	380	YES
Naphthalene	2.0	2.0	NO	2.0	180	YES

The table below shows the results of the H1 Test 2 assessment.

At Test 2, the following pollutants are defined as requiring no further assessment:

- PFOS, cadmium, copper, lead, nickel, mercury, zinc, dichloromethane, chromium (VI), naphthalene and CTAC (cetrimonium chloride).

H1 TEST 2	Annual Average	Process Contribution (PC)	%PC/EQS	Is PC < 4%	Maximum Allowable	Process Contribution (PC)	%PC/EQS	Is PC < 4% of EQS
Parameter	EQS (µg/l)	(µg/l)	(%)	of EQS	EQS (µg/l)	(µg/l)	(%)	
PFOS	0.00065	<0.0001	1.19	YES	36	<0.0001	0.00006	YES
Cadmium	0.07	<0.0001	0.03	YES	0.44	0.0001	0.0198	YES
Copper	1.0	0.0011	0.11	YES	N/A	0.0109	N/A	N/A
Lead	1.2	0.0004	0.04	YES	14	0.0041	0.0296	YES
Nickel	4.0	0.0005	0.01	YES	34	0.0048	0.0141	YES
Zinc	10.9	0.0149	0.14	YES	N/A	0.2807	N/A	N/A
Dichloromethane	20	0.0401	0.2	YES	N/A	0.1131	N/A	N/A
Chromium (VI)	3.4	0.0004	0.01	YES	N/A	0.0044	N/A	N/A
CTAC	0.42	0.0001	0.02	YES	N/A	0.0002	N/A	N/A
Mercury	N/A	0.0004	N/A	N/A	0.07	0.0011	1.56	YES
Naphthalene	2.0	0.0015	0.08	YES	130	0.0044	0.0034	YES

All pollutants have screened out at Tests 1 or 2, so no detailed modelling of their impact on the receiving waters is required.

We are aware that the PFOS EQS is currently exceeded both upstream and downstream of the Applicant's proposed emission location for treated stormwater. However, we consider, for the reasons explained earlier in our H1 methodology approach, that to permit the Applicant's emission will not have any discernible impact on river quality.

Translating PFAS Threshold Evidence into Regulatory Practice.

In January 2026, the Environment Agency's Chief Scientist Group published a report entitled, "Developing thresholds for managing PFAS in the water environment".

This report confirms the importance the Environment Agency is placing on the regulation of PFAS.

This report proposes new threshold values for four specific PFAS, PFOS, PFOA, PFNA and PFHxS, and demonstrated the potential of a new risk assessment methodology based on calculating hazard quotients for each of these substances which are used to calculate an overall hazard index for their release in combination.

There are technical issues yet to be resolved around the new thresholds such as the ability of PFAS treatment strategies to remove PFAS to sufficiently low levels and the ability of analytical methods and testing laboratories to detect levels of PFAS at those low levels.

The new threshold derived for PFOS does not replace the existing statutory EQS values for PFOS in place at the time of writing that report and at the time of determining this application for permit variation.

We are currently actively exploring options on how best these thresholds can be used to inform and improve our decision making around the regulation of PFAS.

We cannot yet say when we will have completed this and understand fully how best to use these thresholds. Until this process is complete, we believe it would be premature to use these thresholds in permitting determinations.

Due to the finite storage capacity at the Applicant's site for stormwater awaiting treatment and the significant improvements this proposed variation would deliver compared to what has happened historically and may happen again in relation to the fugitive release of stormwater from the Applicant's site, we consider it is appropriate to continue with this determination.

We have a duty to keep permits under review against changing circumstances such as, in this case, how these thresholds can best be used, better understanding of the toxicity and fate of PFAS in the environment, increased technological capacity to remove PFAS from contaminated media and reduced limits of detection allowing analytical testing to detect PFAS at much lower levels. So further variations could be made to the permit as and when this was considered appropriate.

Accordingly, our decision to permit the operation of the PFAS treatment train and emission of treated stormwater to the River Wenning is consistent with the legal and technical requirements of the permitting regime.

7.2.2 Water Abstractions

7.2.2.1 Public Abstractions

There are potable water abstractions in the River Wenning and the River Lune, downstream from the Applicant's site at High Bentham. The most relevant of these to the emission of treated water into the River Wenning from the Operator's site are:

7. River Lune at Caton (Reference, 26/72/526/008) at location SD 529 654. This licence supplies local water needs within the Lancaster area and does not impose a hands-off flow condition (setting a flow rate of the waterbody below which abstraction is not permitted).

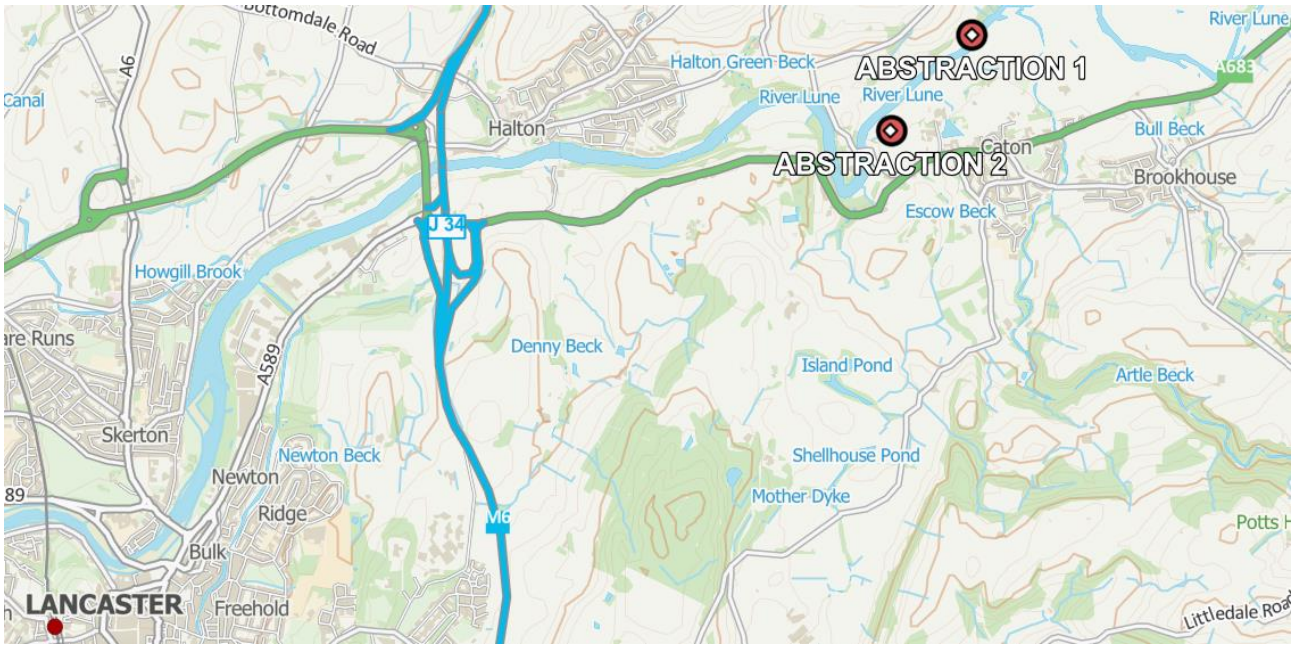
   The Licence Holder (United Utilities) is entitled to abstract up to 39.8 Ml/d at any time with increased abstractions up to 45.5Ml/day permitted with defined increases in river flow rates. There are other conditions on abstractions linked to combined stocks levels at Langthwaite, Blea Tarn, and Damas Ghyll.

8. River Lune Upstream of the Upper Weir Quernmore, Lancashire (Reference, 26/72/526/020) at location, SD 524 648.

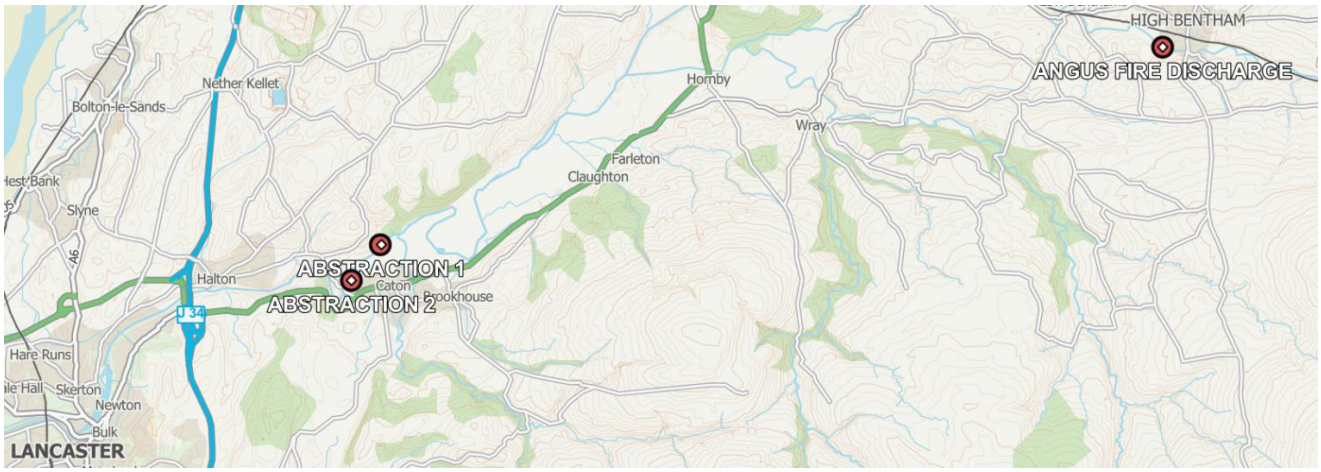
   This is the main Lune-Wyre transfer licence, and it is the licence with the largest abstraction for Public Water Supply within the Lune catchment. Providing flow is above 369.1 Ml/d (4.27m3/s, Q92), the Licence Holder

(United Utilities) is entitled to abstract up to 280 Ml/d. It includes a hands-off flow condition.

WATER ABSTRACTIONS – 1 (SD 529 654) AND 2 (SD 524 648)



WATER ABSTRACTIONS – 1 (SD 529 654), 2 (SD 524 648) & LOCATION OF APPLICANT'S PROPOSED EMISSION OF TREATED STORMWATER



In relation to the location of the proposed emission of treated stormwater to the River Wenning, these potable water abstractions are located:

- No. 1 (River Lune at Caton) approximately 19km from the Operator's proposed emission.

- No. 2 (River Lune Upstream of Upper Weir Quernmore Lancashire) approximately 20km from the Operator's proposed emission.

There will be very significant dilution of the Operator's emission by the River Wenning flow and later the River Lune flow before these potable water abstraction points.

The Applicant has used the Environment Agency H1 risk assessment methodology as a method of assessing impact of their emission of treated effluent on these drinking water abstractions from the River Lune catchment.

As the only PFAS with a specified and defined environmental quality standard (EQS) is PFOS, the Applicant assumed that the EQS was equivalent to the Drinking Water Inspectorate guideline of 0.1 µg/l for the sum of a defined number of named PFAS.

Of the 13 PFAS known to be present in the Applicant's stormwater and analysed as greater than the limit of detection of the analytical methodology, a conservative approach was taken by assuming their concentrations were at the limit of detection of the method used. The Applicant then used the sum of these identified PFAS in the assessment (0.825 µg/l) alongside the maximum daily treatment/emission rate of 48m^3/day.

The most appropriate gauging station in the National River Flow Archive to use to determine river flow closest to the potable water abstraction location was defined as monitoring station, 72004, River Lune at Caton, with a Q95 of 3.3m^3/s. We have reviewed this decision and, although we agree with the station used, we proposed a more relevant Q95 of 3.34m^3/s using the full period of available records from 01/01/1959 to the present.

The emission of these PFAS screened out as not significant in Test 2 of the H1 risk assessment.

We do not consider the emission will give rise to any significant pollution of the environment or harm to human health or adversely impact on potable water abstractions.

H1 TEST 1	Average release concentration	Annual Average	Is release concentration	Maximum release concentration	Maximum Allowable	Is release concentration
Parameter	(µg/l)	EQS (µg/l)	<10% of EQS	(µg/l)	EQS (µg/l)	<10% of EQS
DWI PFAS	0.825	0.1	NO	0.825	0.1	NO

H1 TEST 2	Annual Average	Process Contribution (PC)	%PC/EQS	Is PC < 4%	Maximum Allowable	Process Contribution (PC)	%PC/EQS	Is PC < 4%
Parameter	EQS (µg/l)	(µg/l)	(%)	of EQS	EQS (µg/l)	(µg/l)	(%)	of EQS
DWI PFAS	0.1	0.0001	0.14	YES	0.1	0.0001	0.14	YES

Other abstraction licences which historically may have been listed as public water supplies but are in fact not potable water supplies include:

- River Lune at Halton-on-Lune (Reference, 26/72/526/025) at location SD 515 648 which has a defined use as Industrial: Pollution Monitoring, believed to be used to ensure the water quality for the Lune-Wyre Transfer under the Lancashire Conjunctive Use Scheme (LCUS) is acceptable.

- River Lune at Lower Halton Weir Quernmore Lancashire (Reference, 26/72/526/021) at location SD 505 646 which is related to the Lancaster Water Order, 1960, and instructs that the Licence Holder (United Utilities) must abstract water to various industrialist operations when the water in Skerton Pool upstream of Skerton Weir becomes contaminated with saline water.

7.2.2.2 Private Abstractions.

There is a private water undertaking licence, reference 26/72/520/027/RF01, relating to the Millstone Grit aquifer serving a residential caravan park at High Bentham (located at SD 6638 6863).

We have reviewed the relevant data for the abstraction borehole in question, BGS ID: 18229:BGS Reference: SD66NE6. It is cased to 19mbgl with a slotted steel response zone down to 52mbgl within the Millstone Grit aquifer.

The upper 19 meters of the hole (below ground level) are lined with a solid, impermeable casing (usually steel or PVC) to prevent collapse of the shallow, loose materials (such as soil or weathered bedrock) and to prevent shallow surface contaminants from entering the well. From 19 meters down to 52 meters, the casing is "slotted," perforated, or screened, allowing groundwater to flow from the surrounding rock into the borehole for sampling or pumping.

This borehole is targeting the Millstone Grit Group, a carboniferous rock formation consisting of alternating sandstones, siltstones and mudstones which acts as an aquifer (water containing rock unit) in parts of northern England.

In addition, the borehole is known to be artesian, i.e. there is significant upward pressure of groundwater from the Millstone Grit. This indicates that any influence from surface/shallow groundwater should be low and we consider there is a low likelihood that an emission to the River Wenning would impact on this groundwater source.

We cannot say whether or not, at high abstraction rates, the drawdown could be sufficient to pull in river water. If this were the case though, there would also be significant amounts of additional dilution over and above that which had already occurred in the watercourse.

The permitted emission to the River Wenning from the Operator will be at a maximum of 10 ng/l PFOS. There are currently no statutory standards for PFOS in drinking water. Drinking Water Inspectorate (DWI) guideline values recommend action where levels of PFAS are above 100ng/l for the sum of the named PFAS compounds for potable water received at the tap.

Although we know that there are measurable levels of some PFAS compounds already in the River Wenning, we conclude that an emission of PFOS at <10ng/l to the surface water should not be capable of impacting the water quality at the abstraction point to a level above the DWI guideline value of 100ng/l.

To support this conclusion, we are aware that the local authority now regularly tests the water supply at the caravan park for PFAS due to its proximity to the Applicant's site. Test results we have been provided with to date do not show elevated levels of PFOS or other PFAS even though unregulated PFAS discharges to the River Wenning have occurred over many years (such as the stormwater that the Applicant is now collecting on site at levels such as 4,000ng/l).

7.2.2 Emissions to sewer

There are no new or varied emissions to sewer.

8 Permit conditions, competence, monitoring and reporting

8.1 Improvement programme

Based on the information in the Application, we consider that we need to include an improvement programme. These improvements will be required by conditions,

and they are set out below, justifications for these are provided at the relevant section of the decision document. These conditions require the Operator to provide us with necessary details that are to be established or confirmed after the Permit is issued.

Table S1.3 Improvement programme requirements		
Reference	**Requirement**	**Date**
IC12	The Operator shall submit a written report to the Environment Agency for technical assessment and written approval that: - Proposes an optimised containment and bunding strategy for the site, with timescales for its implementation, once the accumulated volume of stormwater has been treated and removed from site. - Assesses the feasibility of installing level alarms and automated flow restrictions on the five pre-treatment stormwater storage tanks. The Operator shall implement any agreed proposals within the timescales approved by the Environment Agency.	31/12/2026
IC13	The Operator shall submit a written report to the Environment Agency for technical assessment and written approval that includes an updated Site Condition Report that includes the findings of the Stage 1-3 assessment following the approach set out in the European Commission Guidance concerning baseline reports under Article 22(2) of Directive 2010/75/EU on industrial emissions (2014/C 136/03) and submitted in application, EPR/XP3832NV/V004. This report shall include, but not be limited to: - Consideration of the potential for pollution by the substances identified in the submitted Stage 1-3 assessment. - Measures to mitigate pollution from these substances. - Results of any soil or groundwater intrusive sampling and testing to identify the presence of these substances within the installation boundary. - Any proposals for future work to minimise and/or identify ground contamination, with timescales, identified in the updated Site Condition Report including any further intrusive soil or groundwater sampling. The Operator shall implement any agreed proposals within the timescales approved by the Environment Agency.	30/09/2026
IC14	The Operator shall submit a written report to the Environment Agency for technical assessment and written approval that: - Details the performance and reliability of the SAFF/PAC treatment train in removing PFAS to ensure the treated stormwater complies with the permit emission limits required for its discharge to the River Wenning. - Outlines the results of commissioning and further improvement trials to increase its efficacy in removal of both short- and long-chained PFAS. - Outlines if any improvements in the efficacy of the treatment train in removing short-chained PFAS, has allowed for better limits of detection in analytical PFAS testing. - Outlines proposals, for any further improvements to the efficacy of the treatment train in removing PFAS. Following approval, the operator shall implement any proposals within the timescales approved by the Environment Agency.	31/05/2027

8.2 Updating permit conditions during consolidation

We have updated permit conditions to those in the current generic permit template as part of the permit consolidation. The conditions will provide the same level of protection as those in the previous permit.

8.3 Changes to the permit conditions due to an Environment Agency initiated variation

We have varied the Permit as stated in the variation notice.

We have done this where the current permit notice template differs from that used in the previous permit variation notice, EPR/XP3832NV/V003, issued to the Applicant on 03/12/2015.

Where we have done so, we have detailed the changes in the new permit variation notice.

8.4 Emission limits

Emission Limit Values (ELVs) have been added for the following substances:

- PFOS (Table S3.2, Emission Point W2) = 10 ng/l.
- PFOA (Table S3.2, Emission Point W2) = 10 ng/l
- Flowrate (Table S3.2, Emission Point W2) = 48m^3/day.

PFOS and PFOA are two of the most widely used, produced and studied PFAS chemicals. They are also two PFAS of which we have the most understanding of their toxicological properties. The need to limit their concentrations in the emission by setting emission limit values for them will help ensure protection of human health and the environment. We have included these limits to ensure that the operation remains within the risk envelope assessed at determination.

A maximum value of PFOS of 10 ng/l was used in the H1 risk assessment to screen out the emissions of PFOS to the River Wenning as not significant. A value of 10 ng/l PFOS will also be the trigger level upon which the Operator can emit treated stormwater to the receiving waters.

As there will also be an emission limit value of 10ng/l for PFOA emitted through W2, we have also included the concentration of PFOA at 10ng/l as another trigger level upon which the Operator can emit treated stormwater to the receiving waters. This adds a second control to ensure the emission will not cause damage to human health or the environment.

It also gives the Operator greater certainty that their permitted emission will also comply with the emission limit values for both PFOS and PFOA at W2 as both

these substances must already have been tested and confirmed as not exceeding 10ng/l before that emission can commence.

We have included trigger levels of 10ng/l for PFNA and PFHxS in process monitoring. Any exceedance of these levels should trigger an investigation and report to the Environment Agency, but they are not emission limit values and exceedance of them would not be a breach of the environmental permit.

- PFNA (Table S3.4,) = 10 ng/l
- PFHxS (Table S3.4) = 10 ng/l

We are imposing these trigger levels for PFNA and PFHxS based on the anticipated performance of the treatment plant. At these levels, we are satisfied that there will be no significant pollution of the environment or harm to human health.

The monitoring data submitted by the Applicant indicates that the concentration of PFNA and PFHxS are below the level of detection of the testing methods used for their analyses. Should concentrations of these PFAS be greater than these concentrations in future testing, that may be evidence that potentially something has changed in the operation of the stormwater management and treatment system.

If these levels are exceeded, then this will trigger investigations into the reasons for this and any potential impacts. Based on the outcomes of these investigations, we will decide if any further action is required.

A maximum value of 48m^3/day was used in the H1 risk assessment to screen out emissions of PFOS to the River Wenning as not significant. In addition, the treatment train is permitted as a waste operation rather than an installation operation and cannot have the capacity to treat greater than 50m^3/day of stormwater. Treating greater than 50m^3/day stormwater would have required permitting the treatment train as an S5.4 Part A activity. The operator has installed operational and technical constraints to prevent the stormwater treatment capacity exceeding 50m^3/day.

8.5 Monitoring

We have decided that monitoring should be added for the following parameters, using the methods detailed and to the frequencies specified:

- PFOS, PFOA, PFNA, PFHxS.
- Drinking Water Inspectorate (DWI) suite of PFAS compounds required to be monitored by water companies in England & Wales.

- Cadmium, chromium (total), chromium (VI), copper, lead, nickel, zinc. Sulphate, dichloromethane, CTAC, arsenic, mercury, vanadium, benzene, toluene, naphthalene.

- Flowrate of emission through W2.

These monitoring requirements have been included in order to ensure that evidence is available to demonstrate that releases from the permitted facility to the River Wenning remain within the risk envelope assessed in the permit variation determination as not causing significant adverse impact on the receiving waters.

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.

8.6 Reporting

We have added reporting in the Permit for the following parameters:

- PFOS, PFOA, PFNA, PFHxS in emission through W2.

- Drinking Water Inspectorate (DWI) suite of PFAS compounds required to be monitored by water companies in England & Wales in emission through W2.

- Cadmium, chromium (total), chromium (VI), copper, lead, nickel, zinc. Sulphate, dichloromethane, CTAC, arsenic, mercury, vanadium, benzene, toluene, naphthalene in emission through W2.

- Flowrate of emission through W2.

- PFOS in treated stormwater stored in post-treatment storage tanks prior to emission through W2.

We have made these decisions to ensure monitoring data are available to the Environment Agency and the wider public to demonstrate:

- the levels of PFAS being emitted to the River Wenning from the Operator

- that the Operator is in compliance with any emission limit values and monitoring requirements relating to the operation of their PFAS treatment train and disposal of treated stormwater to the River Wenning.

8.7 Considerations of foul sewer

We agree with the Operator's justification for not emitting treated stormwater to foul sewer through the existing discharge to foul sewer and permitted trade effluent discharge.

The wastewater treatment company to which treated stormwater would be sent has informed the Applicant that they will not accept treated stormwater because of its PFAS component even after treatment at the Applicant's site. The operator therefore will emit their treated stormwater direct to the receiving environment (River Wenning).

8.8 Technical competence

Technical competence is required for the new waste activity that is being permitted.

The operator is not accepting waste from another third-party waste generator.

The stormwater to be treated in the Operator's treatment train will originate from areas within the existing installation boundary defined in environmental permit, EPR/XP3832NV/V004, or from within a very defined area outside of that installation boundary where testing of firefighting foams was previously carried out by the Applicant and ground contaminated by PFAS as a result.

That area outside of the existing installation boundary is defined in Table S1.1, Activity AR4, in the varied environmental permit, EPR/XP3832NV/V004.

8.9 Previous performance

We have assessed Operator competence. We are satisfied that the Operator will comply with the permit conditions.

The Applicant's performance against the Environment Agency's Compliance Classification Scheme (CCS) over recent years has been recorded as:

- 2019 = B; 2020 = A; 2021 = A; 2022 = B; 2023 = C; 2024 = E; 2025 = A.

The CCS rates environmental permit holders in Bands from A to F with A being the best performers.

These historical compliance bandings indicate that the Environment Agency raised concerns with the Applicant over their performance in 2023 and, particularly, 2024.

When scoring an operator against the CCS guidelines, the Environment Agency now scores both the issue itself, such as loss of containment or failure to report on time, and the root cause for that issue.

These issues in 2024 focused primarily on compliance with certain conditions of their environmental permit, particularly:

- Condition 1.1.1 (*The operator shall manage and operate the activities in accordance with a written management system that identifies and minimises risks of pollution, including those arising from operations,*

maintenance, accidents, incidents, non-conformances, closure and those drawn to the attention of the operator as a result of complaints) for failure to demonstrate and provide management systems that identify and minimise pollution specifically with respect to the management of chemical contamination (PFAS on site).
- Condition 3.1.1 (*There shall be no point source emissions to water, air or land except from the sources and emission points listed in schedule 3 tables S3.1, S3.2 and S3.3*) in relation to PFAS contamination identified in soils and shallow groundwater due to losses from drainage network to ground, losses from overtopping lagoons and losses from overtopping open drainage channels.
- Condition 4.3.1 (*In the event that the operation of the activities gives rise to an incident or accident which significantly affects or may significantly affect the environment, the operator must immediately — (i) inform the Environment Agency, (ii) take the measures necessary to limit the environmental consequences of such an incident or accident, and (iii) take the measures necessary to prevent further possible incidents or accidents*) in relation to incidents/losses of containment about which the Applicant should have notified the Environment Agency more promptly.

The Applicant's management and staff now understand in much more detail the risk from PFAS contamination of soils, surface waters and groundwaters. The treatment train they have installed to treat PFAS contamination in stormwater has been in response to the incidents raised on PFAS contamination and will act to mitigate their environmental impacts.

They have more resource available, both internally and externally, to address the PFAS contamination issues arising from historic production and testing of firefighting foam on site. They have liaised proactively with the Environment Agency during the process of applying for this current variation to their environmental permit including applying for enhanced pre-application advice prior to submitting their variation application and responding to all requests for further information during the determination phase of their application.

They have updated their environmental management system, accredited to ISO14001, and site operating procedures to include:

- management and control of PFAS contamination on site
- operation of the proposed new treatment train
- updated training of staff in the spill response and water management teams on the requirements of the environmental permit.
- updating the Site Emergency Response Plan to more clearly define the process and responsibilities of reporting permit breaches to the Environment Agency.

9 Other legal requirements

In this section we explain how we have addressed other relevant legal requirements, to the extent that we have not addressed them elsewhere in this document.

9.1 The EPR 2016 and related Directives

The EPR delivers the requirements of a number of assimilated and national laws.

9.1.1 Schedules 1 and 7 to the EPR 2016 – IED Directive

We address the requirements of the IED in the body of this document above.

There is one requirement not addressed above, which is that contained in Article 5(3) IED. Article 5(3) requires that “In the case of a new installation or a substantial change where Article 4 of Directive 85/337/EC (now Directive 2011/92/EU) (the EIA Directive) applies, any relevant information obtained or conclusion arrived at pursuant to articles 5, 6 and 7 of that Directive shall be examined and used for the purposes of granting the permit.”

Article 5 of EIA Directive relates to the obligation on developers to supply the information set out in Annex IV of the Directive when making an application for development consent.

Article 6(1) requires Member States to ensure that the authorities likely to be concerned by a development by reason of their specific environmental responsibilities are consulted on the Environmental Statement and the request for development consent.

Article 6(2)-6(6) makes provision for public consultation on applications for development consent.

Article 7 relates to projects with transboundary effects and consequential obligations to consult with affected Member States.

The grant or refusal of development consent is a matter for the relevant local planning authority. The Environment Agency’s obligation is therefore to examine and use any relevant information obtained or conclusion arrived at by the local planning authorities pursuant to those EIA Directive articles.

No planning permission was required for the Operator to install the SAFF/PAC treatment train at their High Bentham site. Under the Town and Country Planning (General Permitted Development) (England) Order 2015 (SI no.596), Schedule 2, Part 7 (Non-domestic extensions, alterations etc), Class I – developments relating to an industrial process, it states that permitted development (not requiring planning permission) includes: Development carried out on industrial

land for the purposes of an industrial process consisting of— (a) the installation of additional or replacement plant or machinery.

There are therefore no planning documents for us to consider, and we are satisfied that we have sufficient information to make our determination.

9.1.2 Schedule 9 to the EPR 2016 – Waste Framework Directive

As the regulated facility involves the treatment of waste, it is carrying out a waste operation for the purposes of the EPR 2016, and the requirements of Schedule 9 therefore apply. This means that we must exercise our functions so as to ensure implementation of certain articles of the WFD.

We must exercise our relevant functions for the purposes of ensuring that the waste hierarchy referred to in Article 4 of the Waste Framework Directive is applied to the generation of waste and that any waste generated is treated in accordance with Article 4 of the Waste Framework Directive. (See also section 4.3.9).

The conditions of the permit ensure that waste generation from the facility is minimised. Where the production of waste cannot be prevented it will be recovered wherever possible or otherwise disposed of in a manner that minimises its impact on the environment. This is in accordance with Article 4.

We must also exercise our relevant functions for the purposes of implementing Article 13 of the Waste Framework Directive; ensuring that the requirements in the second paragraph of Article 23(1) of the Waste Framework Directive are met; and ensuring compliance with Articles 18(2)(b), 18(2)(c), 23(3), 23(4) and 35(1) of the Waste Framework Directive.

Article 13 relates to the protection of human health and the environment. These objectives are addressed elsewhere in this document.

Article 23(1) requires the permit to specify:

- the types and quantities of waste that may be treated
- for each type of operation permitted, the technical and any other requirements relevant to the site concerned
- the safety and precautionary measures to be taken
- the method to be used for each type of operation
- such monitoring and control operations as may be necessary
- such closure and after-care provisions as may be necessary.

These are all covered by permit conditions.

The permit does not allow the mixing of hazardous waste, so Article 18(2) is not relevant.

We consider that the intended method of waste treatment is acceptable from the point of view of environmental protection, so Article 23(3) does not apply.

Energy efficiency is dealt with elsewhere in this document, but we consider the conditions of the permit ensure that the recovery of energy take place with a high level of energy efficiency in accordance with Article 23(4).

Article 35(1) relates to record keeping and its requirements are delivered through permit conditions.

The only waste permitted to be treated by permit is stormwater that is generated by rainwater falling on areas of land contaminated by PFAS compounds

9.1.3 Schedule 22 to the EPR 2016 – Water Framework and Groundwater Directives

To the extent that it might lead to a discharge of pollutants to groundwater (a "groundwater activity" under the EPR 2016), the Permit is subject to the requirements of Schedule 22, which delivers the requirements of EU Directives relating to pollution of groundwater. The Permit will require the taking of all necessary measures to prevent the input of any hazardous substances to groundwater, and to limit the input of non-hazardous pollutants into groundwater so as to ensure such pollutants do not cause pollution and satisfies the requirements of Schedule 22.

No releases to groundwater from the regulated facility are permitted. The Permit also requires material storage areas to be designed and maintained to a high standard to prevent accidental releases.

9.1.4 Directive 2003/35/EC – The Public Participation Directive

Regulation 60 of the EPR 2016 requires the Environment Agency to prepare and publish a statement of its policies for complying with its public participation duties. We have published our public participation statement.

This Application has been consulted upon in line with this statement, as well as with our guidance RGS6 on Sites of High Public Interest, which addresses specifically extended consultation arrangements for determinations where public interest is particularly high. This satisfies the requirements of the Public Participation Directive.

Our decision in this case has been reached following a programme of extended public consultation, both on the original application and later, separately, on the draft permit and a draft decision document. The way in which this has been done

is set out in section 2.5. A summary of the responses received to our consultations and our consideration of them is set out in section 10.

9.2 National primary legislation

9.2.1 Environment Act 1995

(i) Section 4 (Pursuit of Sustainable Development)

We are required to contribute towards achieving sustainable development, as considered appropriate by Ministers and set out in guidance issued to us. The Secretary of State for Environment, Food and Rural Affairs has issued The Environment Agency's Objectives and Contribution to Sustainable Development: Statutory Guidance (December 2002). This document "provides guidance to the Agency on such matters as the formulation of approaches that the Agency should take to its work, decisions about priorities for the Agency and the allocation of resources. It is not directly applicable to individual regulatory decisions of the Agency."

In respect of regulation of industrial pollution through the EPR, the Guidance refers in particular to the objective of setting permit conditions "in a consistent and proportionate fashion based on Best Available Techniques and taking into account all relevant matters…". The Environment Agency considers that it has pursued the objectives set out in the Government's guidance, where relevant, and that there are no additional conditions that should be included in this Permit to take account of the Section 4 duty.

For waste the guidance refers to ensuring waste is recovered or disposed of in ways which protect the environment and human health. The Environment Agency considers that it has pursued the objectives set out in the Government's guidance, where relevant, and that there are no additional conditions that should be included in this Permit to take account of the Section 4 duty.

(ii) Section 5 (Preventing or Minimising Effects of Pollution of the Environment)

We are satisfied that our pollution control powers have been exercised for the purpose of preventing or minimising, remedying or mitigating the effects of pollution.

(iii) Section 6(1) (Conservation Duties with Regard to Water)

We have a duty to the extent we consider it desirable generally to promote the conservation and enhancement of the natural beauty and amenity of inland and coastal waters and the land associated with such waters, and the conservation of flora and fauna which are dependent on an aquatic environment.

We consider that no additional or different conditions are appropriate for this Permit.

(iv) Section 6(6) (Fisheries)

We have a duty to maintain, improve and develop fisheries of salmon, trout, eels, lampreys, smelt and freshwater fish.

We consider that no additional or different conditions are appropriate for this Permit.

(v) Section 7 (General Environmental Duties)

This places a duty on us, when considering any proposal relating to our functions, to have regard amongst other things to any effect which the proposals would have on sites of archaeological, architectural, or historic interest; the economic and social well-being of local communities in rural areas; and to take into account any effect which the proposals would have on the beauty or amenity of any rural or urban area or on any such flora, fauna, features, buildings, sites or objects.

We considered whether we should impose any additional or different requirements in terms of our duty to have regard to the various conservation objectives set out in Section 7 but concluded that we should not.

(vi) Section 39 (Costs and Benefits)

We have a duty to take into account the likely costs and benefits of our decisions on the applications ('costs' being defined as including costs to the environment as well as any person). This duty, however, does not affect our obligation to discharge any duties imposed upon us in other legislative provisions.

In so far as relevant we consider that the costs that the permit may impose on the applicant are reasonable and proportionate in terms of the benefits it provides.

(viii) Section 81 (National Air Quality Strategy)

We have had regard to the National Air Quality Strategy and consider that our decision complies with the Strategy, and that no additional or different conditions are appropriate for this Permit.

We have also had regard to the clean air strategy 2019 and consider that our decision complies with the Strategy, and that no additional or different conditions are appropriate for this Permit.

9.2.2 Section 108 Deregulation Act 2015 – Growth duty

We 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.

Paragraph 1.3 of the statutory guidance issued by the Department of Business, Energy and Industrial Strategy in March 2017 says:

“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 factor that all specified regulators should have regard to, alongside the delivery of the protections set out in the relevant legislation.”

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.

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 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. It also ensures that any pollution that may arise from the regulated facility does not adversely affect local businesses.

9.2.3 Legislative and Regulatory Reform Act 2006

In accordance with section 21 of this Act, when making this decision we have had regard to the need to be transparent, accountable, proportionate and consistent, and the need to target action where it is needed.

In accordance with section 22 of the Act we have had regard to the Regulators’ Code; in particular the need to base our decision on environmental risk, and to support the applicant to comply and grow, so that burdens have only been imposed where they are necessary and proportionate.

9.2.4 Human Rights Act 1998

We have considered potential interference with rights addressed by the European Convention on Human Rights in reaching our decision and consider that our decision is compatible with our duties under the Human Rights Act 1998. In particular, we have considered the right to life (Article 2), the right to a fair trial (Article 6), the right to respect for private and family life (Article 8) and the right to protection of property (Article 1, First Protocol). We do not believe that Convention rights are engaged in relation to this determination.

9.2.5 Countryside and Rights of Way Act 2000 (CROW 2000)

Section 85 of this Act imposes a duty on Environment Agency to seek to further the purpose of conserving and enhancing the natural beauty of the area of outstanding natural beauty (AONB). There is no AONB which could be affected by the regulated facility.

9.2.6 Wildlife and Countryside Act 1981

Under section 28G of the Wildlife and Countryside Act 1981 the Environment Agency has a duty to take reasonable steps to further the conservation and enhancement of the flora, fauna or geological or physiographical features by reason of which a site is of special scientific interest. Under section 28I the Environment Agency has a duty to consult Natural England in relation to any permit that is likely to damage SSSIs.

There are no SSSIs within the 2km screening distance from the Applicant's site against which assessment of the impact of the emissions from there would be required.

9.2.7 Natural Environment and Rural Communities Act 2006

Section 40 of the Natural Environment and Rural Communities Act 2006 has been amended with effect from 1 January 2023 to require consideration as to what action we can properly take, consistently with the proper exercise of our functions, to further the general biodiversity objective, which is to further the conservation and enhancement of biodiversity and having considered, determined such policies and specific objectives as we consider appropriate for taking action to further the general biodiversity objective, and take such action as we consider appropriate, in the light of those policies and objectives, to further that objective.

Section 40(2A) states that in complying with the duty in section 40(1) and (1A) we must have particular regard to any relevant local nature recovery strategy and species protection strategy or protected sites strategy.

We have, also, considered the general biodiversity objective when carrying out our permit application determination and, consider that no different or additional conditions are required in the permit.

9.2.8 Countryside Act 1968

Section 11 imposes a duty on the Environment Agency to exercise its functions relating to any land, having regard to the desirability of conserving the natural beauty and amenity of the countryside including wildlife. We have done so and consider that no different or additional conditions in the Permit are required.

9.2.9 National Parks and Access to the Countryside Act 1949

Section 11A and section 5(1) imposes a duty on the Environment Agency when exercising its functions in relation to land in a National Park, to further the purposes of conserving and enhancing the natural beauty, wildlife and cultural heritage of the areas, and of promoting opportunities for the understanding and enjoyment of National Parks by the public.

There is no National Park which could be affected by the regulated facility.

9.2.10 Environment Act 2021

Section 110(10) requires that we must have regard to a protected site's strategy, which Natural England has prepared and published in relation to improving the conservation and management of a protected site, and managing the impact of plans, projects or other activities (wherever undertaken) on the conservation and management of the protected site, where relevant to exercise of our duties under Conservation of Habitats and Species Regulations 2017, sections 28G to 28I Wildlife and Countryside Act 1981 or Marine and Coastal Access Act 2009.

We have had regard to this in our assessments.

9.3 National secondary legislation

9.3.1 Conservation of Habitats and Species Regulations 2017

We have assessed the Application in accordance with our guidance and concluded that there will be no likely significant effects on any European Site.

The Habitats Regulations Assessment is summarised in greater detail in section 6.2 of this document. A copy of the Habitats Regulations Assessment can be found on the public register.

We have also considered our general duties under Regulation 9(3) to have regard to the requirements of the Habitats Directive in the exercise of our powers and under Regulation 10 in relation to wild bird habitat to take such steps in the exercise of their functions as they consider appropriate so far as lies within our powers to secure preservation, maintenance and re-establishment of a sufficient diversity and area of habitat for wild birds.

We considered whether we should impose any additional or different requirements in the permit in terms of these duties but concluded that we should not.

9.3.2 Water Environment (Water Framework Directive) Regulations 2017

Consideration has been given to whether any additional requirements should be imposed in terms of the Environment Agency's duty under regulation 3 to secure

compliance with the requirements of the Water Framework Directive, Groundwater Directive and the EQS Directive through, amongst other things, environmental permits, and its obligation in regulation 33 to have regard to the river basin management plan (RBMP) approved under regulation 31 and any supplementary plans prepared under regulation 32. However, it is felt that existing conditions are sufficient in this regard and no other appropriate requirements have been identified.

We are satisfied that granting this application with the conditions proposed would not cause the current status of the water body to deteriorate.

9.4 Other relevant legal requirements

9.4.1 Duty to Involve

Section 23 of the Local Democracy, Economic Development and Construction Act 2009 require us where we consider it appropriate to take such steps as we consider appropriate to secure the involvement of interested persons in the exercise of our functions by providing them with information, consulting them or involving them in any other way. Section 24 requires us to have regard to any Secretary of State guidance as to how we should do that.

The way in which the Environment Agency has consulted with the public and other interested parties is set out in section 2.5 of this document. The way in which we have taken account of the representations we have received is set out in section 10. Our public consultation duties are also set out in the EP Regulations, and our statutory Public Participation Statement, which implement the requirements of the Public Participation Directive. In addition to meeting our consultation responsibilities, we have also taken account of our guidance in Environment Agency Guidance Note RGS6.

10 Consultation Reponses

10.1 Advertising and Consultation on the Application

The Application has been advertised and consulted upon in accordance with the Environment Agency's Public Participation Statement. The way in which this has been carried out along with the results of our consultation and how we have taken consultation responses into account in reaching our decision is summarised in this Annex. Copies of consultation responses have been placed on the Environment Agency public register.

The Application was advertised on the Environment Agency website from 24/07/2025 to 21/08/2025 and in the Lancaster Guardian on 24/07/2025.

The following statutory and non-statutory bodies were consulted:

- United Kingdom Health Security Agency (UKHSA)

- Director of Public Health.
- North Yorkshire Council Environmental Health & North Yorkshire Council Planning Department.
- Food Standards Agency.
- Health & Safety Executive.

The consultation responses received were wide ranging and a number of the issues raised were outside the Environment Agency's remit in reaching its permitting decisions.

We are only able to consider those issues which fall within the scope of the EPR.

10.2 Consultation Responses from Statutory and Non-Statutory Bodies

Response Received from United Kingdom Health Security Agency (UKHSA)	
Brief summary of issues raised:	**Summary of action taken / how this has been covered**
Potential Impact of PFAS compounds on recreational users of water courses to which the Operator may be discharging treated stormwater.	EU Water Framework Directive (2000/60/EC) and EQS Directive (2008/105/EC) establish EQS values for pollutants in surface waters and emphasis that standards must protect both the aquatic ecosystems and human health, including risks from recreational exposure. EQS values for emissions or discharges into rivers, lakes and coastal waters explicitly consider recreational users of those water bodies such as swimmers, boaters and anglers in order for not only ecological protection but also for safeguarding human health during those recreational activities. There is currently only one PFAS for which there is a defined available Environmental Quality Standard (EQS) published on gov.uk – PFOS with an annual average EQS of 0.00065 µg/l and a maximum allowable concentration of 36 µg/l. The emission of PFOS against these EQS values was assessed and the EQS will not be exceeded. Nor is it considered that significant pollution of the environment or harm to human health will be caused through emission of the treated effluent. There is limited technical information available on assessing aqueous PFAS emissions or discharges for their impact on recreational water use but there is a study published by the National Health & Medical Research Council (Australia) which include recommended guideline values for certain PFAS compounds in recreational waters. These are 10 µg/l for PFOA and 2 µg/l for the total sum of PFOS and PFHxS. Both these guideline values are significantly greater than the concentration of PFOS, PFOA and PFHxS in treated stormwater that the Operator would emit to the River Wenning.

	We are satisfied that the permitted release of treated stormwater into the River Wenning will neither adversely impact recreational users of the river nor those persons using the river as a tourist amenity.
Concern about the use of 50% of the PFOS EQS as the background level in the H1 risk assessment methodology where PFAS have been widely detected in UK surface waters in excess of the current EQS for PFOS.	The operator carried out a H1 risk assessment tests to determine potential impact of their emission of treated stormwater into the River Wenning. The nature of the H1 assessment for discharges to freshwaters and the individual tests within it are described in detail in Section 7.2.1 (Emissions to surface waters and/or groundwaters). As noted in Section 7.2.1, the background concentration of pollutants is relevant only from Test 3 in the H1 assessment of emissions or discharges into freshwaters. As operation of the H1 methodology screened out all emissions to the River Wenning as insignificant or not significant in Tests 1 and 2, there was no requirement to apply Test 3 and therefore no requirement to use background concentrations of the pollutants in the Tests carried out. As explained above in section 7.2.1, we are satisfied that the emissions will not cause significant pollution of the environment or harm to human health. The background levels do not affect this assessment as they are not required in H1 Test 1 or Test 2.
Concern about the potential to consider the conditions of this permit with respect to PFAS once the UK Committee on Toxicity of Chemicals in Food, Consumer Products and the Environment (COT) review is complete and consider them over time as other relevant health-based guidance values are published.	The Environment Agency must determine any application for permit variation on the information and standards available at that time. However, we also have a legal duty to keep permits under review. As standards and techniques change, we can review the permits of any site, to check whether any additional controls are necessary. We can use our statutory power to vary any permit if required.

10.3 Representation from Local MPs, Assembly Members, Councillors and Parish/Town Community Councils

Response Received from North Yorkshire Council	
Brief summary of issues raised:	**Summary of action taken / how this has been covered**
Concern that the proposed SAFF/PAC system to treat surface/storm water from the site would appear to be an efficient means that uses current best available technology and techniques, but the Environment Agency should satisfy itself of this.	The Environment Agency has assessed the technology proposed by the Applicant (SAFF/PAC) for the treatment of stormwater contaminated with PFAS and agrees that the treatment train proposed would be an appropriate measure to remove PFAS from the stormwater. We are satisfied that there will be no significant pollution of the environment or harm to human health from the PFAS concentrations in treated stormwater effluent.
Concern about potential noise impact.	The Environment Agency is satisfied noise caused by operation of the SAFF/PAC process will not cause pollution outside the site. The SAFF/PAC treatment unit will operate 24/7 at a maximum capacity of 48m^3/day until all the existing stockpile of collected rainwater is treated and emitted from site. After that, the treatment unit will operate only during the normal operating hours of the rest of the site – 6am to 10pm.
The consultee noted that they would support this allocation and had no objection to the proposed variation to the environmental permit.	No further action required by the Environment Agency.

10.4 Representations from Community and Other Organisations

Responses were received from **Cleaner Bentham Limited**.

Brief summary of issues raised:	**Summary of action taken / how this has been covered**
Inappropriateness of mandating a treatment train without evidence.	
Concern that the systems are not commercially proven on legacy PFAS-contaminated sites.	The Environment Agency Chief Scientists Group has recently published a report, “Rapid evidence assessment of PFAS incineration and alternative remediation methods” (September 2025). This report states that “Treatment trains, integrated systems combining multiple remediation processes, have gained increasing attention in both academic and professional communities as a promising approach”. It states that treatment trains may offer several key befits such as: - Optimising resource use and reducing system footprint. - Lowering energy demands and operational costs. - Reducing waste disposal. The report concludes that “Overall, treatment trains may improve PFAS removal efficiency while minimising long term environmental and financial liabilities, making them a viable solution for complex contamination scenarios” whilst accepting that more research is needed to “consider factors such as technology compatibility, engineering constraints, climate impacts, and the operational and maintenance requirements”. The report notes in section 5.2.6 (Foam fractionation) that foam fractionation, such as proposed by the Applicant in their SAFF unit, may be more appropriate as part of a

	treatment train rather than a standalone solution due to the need to reduce PFAS levels below that offered by foam fractionation alone. The report also notes in Section 5.2.1 (Granular activated carbon) that “Additionally, powdered activated carbon (<0.1mm diameter) can be used for the removal of PFAS (Pan et al., 2016). The report published by the Flemish Knowledge Centre, and referenced in section 5.6.2 of this decision document, references in Section 3.4.1.6 (Foam fractionation and ozofractionation) up to 20 large scale applications of foam fractionation PFAS removal techniques as of December 2023. The Flemish Knowledge Centre report also states in section 3.4.1 (Separation concentration technology) that “Activated carbon can be used in powder form (Powder Activated Carbon; PAC)” and further states “Based on this information it can be concluded that activated carbon can generally be used on industrial wastewater and drainage water. This technique can be applied on its own or as part of a treatment train with other techniques for the removal of PFAS”.
Concern that the systems are energy- and cost-intensive, often requiring extreme operating conditions.	The Applicant has estimated that the energy requirements of its SAFF/PAC treatment train would be about 63,390kW per year – approximately 2.4% of the total energy used on site. This would not be considered an energy-intensive operation. The energy usage of the treatment train proposed is low (see above) and much more carbon would be released if all the stormwater requiring treatment was to be directed to high temperature incineration rather than the smaller portion of residual foam and activated carbon waste.

	Although the installation of a SAFF/PAC treatment train has been cost-intensive the Applicant, they have done so to address previous historic contamination. The operating conditions for the SAFF/PAC treatment train are not extreme as they do not involve the use of high temperatures or high pressures or the use of particularly toxic or hazardous chemicals.
Concern that the success of these systems depends on detailed knowledge of site-specific PFAS profiles.	The Applicant has obtained more detailed knowledge of their site-specific PFAS profile by obtaining analyses of stormwater both pre- and post-treatment by the SAFF/PAC treatment train. This has indicated the presence of 13 PFAS as regularly present above limits of detection – PFOS, PFOA, PFBA, PFHxS, FHxSA, PFNA, PFDA, PFHpA, PFPeA, PFHxA, 6:2 FTS, 6:2 FTAB and 8:2 FTS. This has allowed them to optimise their treatment train (both the SAFF and PAC aspects) for the specific PFAS requiring removal from their stormwater. TOP (Total oxidisable precursor) Assay and TOF (Total organic fluorine) Analyses have also been carried out and results submitted to the Environment Agency. Both analytical methods increase our understanding of PFAS presence (including PFAA-precursors) of the stormwater before and after treatment. The "TOP Assay" (Total Oxidisable Precursor Assay) is an analytical method for detecting and measuring for the presence of PFAA-precursors in the environment, by chemically converting unknown PFAA-precursors into PFAAs for analysis. We are satisfied that we have enough information to determine the application and that the Operator has the necessary knowledge to operate the process successfully.
Concern that the system is only effective on PFAS that current legislation focuses on and offers no	The Environment Agency considers that treatment trains involving integrating a number of different treatment technologies can deliver better efficacy of PFAS removal than individual treatment techniques on their own. The use of a treatment train allows its

potential for changes of legislation in the near future.	continual optimisation and includes the potential for addition of further treatment techniques should knowledge of PFAS change or legislation change in the future.
Concern that the system does not capture shorter carbon chains.	The treatment train proposed uses both SAFF and PAC to optimise removal of both short- and long-chained PFAS compounds as it is known that SAFF in isolation would not be as effective in removing short-chained PFAS compounds. For further discussion on the ability of the SAFF/PAC treatment train to remove both short- and long-chained PFAS compounds from the Applicant's stormwater, please see Section 5.6.2 (Assessment of BAT).
Concern that the proposal does not monitor the 61 species required to be tested for by the DWI standards. As the Lune is protected drinking water River, and the Wenning feeds into the Lune, this should be a requirement.	Guidance document, 'Guidance on the Water Supply (Water Quality) Regulations 2016 (as amended) for England and Water Supply (Water Quality) Regulations 2018 for Wales specific to PFAS (per- and polyfluoroalkyl substances) in drinking water' (March 2025) noted 48 PFAS that should be monitored rather than 61. Although the treated stormwater emitted to the River Wenning will not be used for potable water supply, we have included periodic testing of that emission for the PFAS in the DWI guidance. This ensures that the Operator will test for the number of PFAS defined in the DWI guidance. This testing required for the operator in the permit variation notice is for a much wider suite of PFAS chemicals in accordance with the DWI standards, not solely those 13 found regularly in the Applicant's stormwater.
Concern that the only way to destroy waste (PFAS chains) captured by the treatment train is high temperature incineration (HTI). Concern that the burning temperature is too low which we know will spread the issue around the HTI site.	Environment Agency, Chief Scientist Group, report 'Rapid evidence assessment of PFAS incineration and alternative remediation methods' (September 2025) noted in the Executive Summary that "High temperature incineration (HTI) is currently the only commercially viable method for large scale PFAS destruction, particularly for PFAS-containing firefighting foams, which are a notable source of environmental emissions.

	However, due to high energy demands, sustainability concerns, and the need for precise operating conditions, there is growing interest in alternative remediation technologies". That report noted in Section 3.2 (Hazardous waste incineration process) that 'In Europe, the Industrial Emissions Directive (2010/75/EU) (IED) mandates a minimum incineration temperature of 850°C with a two second residence time to prevent environmental harm. For hazardous waste containing more than 1% halogenated organic substances (expressed as chlorine), this threshold increases to 1,100°C to ensure effective incineration'. And in Section 4.3 (Laboratory studies of PFOS and PFOA), it states 'While decomposition starts above ~300°C for PFOA, for complete PFAS mineralisation, incineration temperatures appear to need to reach or exceed 1,000°C, with excess air and a minimum residence time of two seconds'. This demonstrates that incineration temperature and residence time are key to ensure complete PFAS destruction through HTI. There will be a waste stream generated from operation of the SAFF/PAC unit – essentially a concentrated foam fraction and spent powdered activated carbon. These waste streams are expected to range from 25kg (from average stormwater treatment of 17m^3/day) to 72kg (from maximum stormwater treatment capacity of 48m^3/day). Only these wastes will be sent from site for high temperature incineration. This will minimise the impact on the available UK incineration capacity as there is currently over 8,200m^3 (8,200,000kg) of stormwater collected on site to be treated. The nature of the waste being sent for incineration from the Operator will be notified to the incinerator operator.

	The Chief Scientists Report of September 2025 also states in Section 5.2.6 (Foam fractionation) that “A treatment train, where foam fractionation is combined with technologies that destroy PFAS, may improve outcomes”. Condition 2.3.4 of the operator’s permit variation notice states that the operator shall ensure that where waste produced by the activities is sent to a relevant waste operation, that operation is provided with the following specific information, prior to the receipt of the waste - the nature of the process producing the waste; the composition of the waste; the handling requirements of the waste; the hazardous property associated with the waste, if applicable; and the waste code of the waste. That will allow the incineration operator to understand fully the nature of the waste and any specific requirements in how they handle and treat it. In addition, the incineration facility will be operated under its own environmental permit issued by and regulated by the Environment Agency. The incineration operator must always comply with the conditions of that environmental permit and, in this case, in relation to how they will handle and treat the waste produced by the Operator. The environmental permit for the incinerator operator will ensure that all wastes incinerated are subject to the appropriate temperatures and resonance time.
Concern that deploying such a system in the absence of PFAS data was not only inefficient, it might also create a false sense of remediation progress, while deeper contamination remains unaddressed.	Use of a treatment train does allow for an operator to optimise existing operation and, if required, add a new treatment technology to the train should future legislation obligate the need for focus on differing PFAS compounds or require treatment of existing PFAS compounds to reduced limits.

	During the determination of the application for permit variation, the operator has submitted details of the PFAS analyses of the stormwater both pre- and post-treatment allowing them to optimise the treatment processes necessary to treat the specific PFAS identified. The data from TOP Assay and TOF testing have confirmed that no significant concentrations of PFAA-precursors are present in the pre- and post-treated stormwater. We are satisfied that the treatment train will address all the PFAS contamination identified and no deeper PFAS contamination will be addressed.
Issues with compliance and transparency.	
Concern was raised about the Applicant's past compliance and a perceived failure to share sampling data with local authorities or the public and avoiding full participation in public engagement forums.	See section 8.9 (previous performance) of this Decision Document. This section also discusses the Applicant's performance and compliance to permit conditions. The environmental permit variation notice will require the Operator to carry out a programme of sampling and testing emissions to the River Wenning for PFAS compounds and require reporting of those data to the Environment Agency at defined periods. Those data will also be available to the public should they wish to request them. Whether the Applicant fully participates in public engagement forums is not relevant to this variation determination. The Environment Agency cannot require monitoring to be provided to third parties, but this is available via the Public Register on request.
Concern that there was no publication of complete environmental monitoring data (including PFAS), and no establishment of an independent local oversight mechanism.	The Environment Agency is independent from those we regulate, and we will regulate the site in an appropriate manner in accordance with our legal duties and our Enforcement and Sanctions policy. We will be as robust as the situation required.

	We will regulate the site carrying out a continual assessment of plant operations and its environmental performance. This will include: - The Operator must monitor emissions and report the results to us. - We will regularly inspect the regulated facility reviewing techniques and assessing monitoring results to measure the performance of the plant. - We will review operating techniques and management systems and plans. - We will carry out on-site audits of Operator monitoring. - The Operator must inform us within 24 hours of any breach of the emissions limits, followed by a fuller report of the size of the release, its impact and how they propose to avoid this happening in the future The Operator's monitoring results will be placed on the public registers. If there is any breach of the permit, then we will take appropriate enforcement action and/or prosecute.
Lack of PFAS-specific data.	
Concern that the application did not contain comprehensive, site-specific PFAS sampling data—including concentrations in soil, groundwater, lagoon water, rainwater runoff, Aquifer or boreholes.	The Operator has submitted detailed analyses of stormwater, both pre- and post-treatment, for a range of PFAS chemicals – a suite of 51 PFAS chemicals has been tested. The Applicant has submitted TOP Assay and TOF Analyses of pre-treated and post-treated stormwater. No further testing of other sources (lagoons, aquifer, borehole etc.) is required as that is not pertinent to this permit variation application to treat solely stormwater. Should the operator be required to treat soil, groundwater or any non-stormwater waste stream, then a further permit variation will be required to demonstrate the efficacy of whatever method is proposed to treat PFAS contamination from those sources.

Concern that sampling results had not been in the application and that the laboratory reports attached to the consultation did not contain any PFAS results from either groundwater or from the treatment train. There could be no comparison made of before and after treatment.	The Applicant has submitted PFAS monitoring data of pre- and post-treatment stormwater during determination of their application for permit variation. They allow comparison made of before and after treatment. They allow conclusions to be made on the efficacy of the treatment proposed and its suitability in minimising risks to the environment and to human health.
Other Matters	
Concern there was no information included in the application on whether solvents were utilised in the treatment procedure.	No solvents are used in the treatment train.
Concern that alternative methods of destruction other than HTI should be found.	The operator is carrying out the treatment train in such a way to maximise PFAS removal in stormwater and minimise waste requiring HTI. The need for HTI is limited to only the foam concentrate and spent activated carbon to minimise reliance on this technique and the limited suppliers in the UK (see section 5.6.8 (waste types).
Concern that decision-making should be based on transparent, complete, and credible data.	This Decision Document outlines the transparent, data-driven determination of the application for permit variation submitted by the Applicant.
Concern raised that the Environment Agency should uphold its duty of care by demanding full site characterisation and accountability before allowing any further operational changes at the Applicant's Bentham facility.	There is an urgent and pressing need to treat accumulated stormwater and new arisings to prevent increased pollution of the environment. This has required the permitting of the treatment train to treat the stormwater. Further site characterisation and remediation or mitigation projects would be discussed with the Operator as necessary.

10.5 Representations from Individual Members of the Public

A total of nine responses were received from individual members of the public. Many of the issues raised were the same as those considered above. Only those issues additional to those already considered are listed below:

Response Received from Members of the Public	
Brief summary of issues raised:	**Summary of action taken / how this has been covered**
Concern that the treatment train suited C8 PFAS but would not be suitable for C4 and longer PFAS as they all represent their own health impacts.	All PFAS do not have the same toxicity, with bioaccumulation and toxicity generally increasing with chain length. This has been evaluated by some Government Agencies, such as the Dutch National Institute for Public Health and the Environment. Their report recommends a relative potency factor approach ("Mixture exposure to PFAS: A Relative Potency Factor approach"). Their report supports the assessment that shorter chain PFAS are less harmful to both people and the environment than longer chain PFAS. This approach is also reflected in USA drinking water standards which differentiate between the relative toxicity of PFAS. Other studies, such as that published by the Flemish Knowledge Centre, do accept that further assessment is needed on the toxicological impact of shorter chained PFAS although they say "The negative effects of long-chain PFAS (PFCAs and PFSAs) are well known and have been investigated in several studies. This results in a general assumption that the longer the carbon chain, the more properties it exhibits of persistence, bioaccumulation and toxicity. The longer the carbon chain, the less water-soluble and therefore higher bioaccumulation. For short chains, the opposite is true; the shorter the carbon chain, the higher the polarity, more water-soluble and therefore higher mobility in water and in the human body (Ateia et al., 2019; Liu et al., 2022a). However, short-chain

	PFAS exhibit similar properties to long-chain congeners, including being persistent, bioaccumulating and to some extent toxic (Liu et al., 2022a)". Allowing for the potential lower toxicity of shorter chain PFAS and the technical difficulty of their removal, it is therefore reasonable to accept a lower level of removal efficiency for the short chain PFAS compared to long chain PFAS such as PFOS and PFOA. However, the treatment train to be permitted will reduce PFOS (a C8 PFAS) by up to 99% and will reduce the PFAS detected in the Applicant's stormwater (both long and short chained PFAS) by at least 90% with potentially greater reductions achieved in commissioning and trial work. The permit variation notice includes an improvement programme condition requiring the Operator to submit to the Environment Agency a report reviewing the first year of operation of the treatment train with evidence of any opportunities for further improvement and development. The Environment Agency will review this alongside any new knowledge or understanding of C8/C4 long or short chained PFAS toxicity.
Concern that a DWI (Drinking Water Inspectorate) study, instigated by the Department for Environment and Rural Affairs, showed that GAC has poor results on water treatment.	GAC (granulated activated carbon) is not being used in the Operator's treatment train. They will use powdered activated carbon (PAC). The evidence submitted by the Applicant demonstrates that the combination of SAFF and PAC can reduce PFOS levels by up to 99% and reduce the combined PFAS by at least 90% with trials indicating the potential for exceeding this further. The evidence provided by the Applicant does not support a claim that their proposed treatment technology has 'poor results on water treatment'.
Concern that surface activation foam fractionation (SAFF) and granular activated carbon (GAC) capture of concentrated species followed by high	The data presented by the Applicant demonstrated that the use of SAFF/PAC reduced PFAS in stormwater to a level at which the release of the treated stormwater to the River Wenning could be screened out as not significant using the Environment Agency H1 risk assessment methodology and the existing defined and publicly available EQS value for

temperature incineration (HTI), is considered insufficient.	PFOS. As such it would not cause significant pollution of the environment or harm to human health. HTI of only the concentrated foamate and spent activated carbon would limit any capacity pressure on the UK incineration availability and is considered an appropriate method of disposal for that waste stream.
Concern that ion exchange resin (IX) could be considered better than GAC at capture of PFAS especially shorter chains and PFCA/PFAAs and it could be regenerated for multiple uses, reducing the final volume sent to incineration or, as it is aqueous waste, it could be diverted to other destruction methodologies.	The Applicant has considered the use of ion exchange in its PFAS removal treatment train and, although there may be some evidence that ion exchange has somewhat greater ability to remove short-chained PFAS, the availability of ion exchange resin and the efficacy of the SAFF/PAC treatment train in removing PFAS to a level commensurate with current legislative requirements, has led to their choice of SAFF/PAC over ion exchange. Please refer to section 5.6.2, for further discussion.
Concern that the use of HTI to dispose of the spent activated carbon would produce many tonnes of CO_2 and concern that it is not accepted as a method to fully mineralize PFAS, driving the issue to one of the only two facilities currently able to carry out the work in the UK.	The use of HTI to treat the stormwater arisings has been ruled out by the Applicant on the basis of financial cost and capacity (see section 5.6.2, Assessment of BAT). The volumes of foamate concentration and spent activated carbon are within the capacities of UK incineration availability (see section 5.6.9, Waste types).
Concern that the application submission did not detail characterisation of surface water as it would vary over the course of the year, which was critical in predicting bed lifetimes and efficacy,	The stormwater requiring treatment is considered to be stable and the influent tanks provide significant storage capacity (165 m^3 in total with the largest tank being 40m^3) that provide buffering prior to treatment. Any peaks in concentration would be smoothed in the holding tanks. The anticipated concentrations for the pre-treated stormwater are within the capability range for the treatment plant.

	The SAFF unit has been demonstrated to treat from 0.005 to 50,000 µg/l of all PFAS in a variety of industrial applications which is considered appropriate for any seasonal variation in stormwater PFAS concentrations. As each batch of stormwater exiting the SAFF unit is dosed with its own amount of powdered activated carbon, there is no requirement to consider the lifetime of the bed as the stormwater does not pass through a bed of activated carbon whose efficacy in PFAS removal might reduce the more stormwater is passed through it.
Concern that SAFF is insufficient as a pre-treatment for a range of PFAS.	See Section 5.6.2 which discusses the effectiveness of Surface-Active Foam Fractionation (SAFF) technology when operated both as a sole PFAS removal technique and also as part of a treatment train of techniques. Whilst efficacy of removal of short-chained PFAS is reduced when using SAFF alone, it is increased when using SAFF in conjunction with other removal techniques and when cationic surfactants such as cetyltrimethylammonium bromide (CTAB) are used. The proposed treatment train would use a similar chemical, cetyltrimethylammonium chloride (CTAC).
Concern that there was no further clarification in the submission meaning that questions on whether the remainder will be sent for release - not capture by GAC. Concern whether the release parameters were to be made for the Operator or public and environmental health?	The Applicant's submission does clarify that there will be releases from the treatment train process: - Treated stormwater containing no greater than 10ng/l PFOS will be released to the River Wenning at a maximum flow rate of 48m^3/day whilst the accumulated stockpile of stormwater is treated. The release rate to the River Wenning of treated stormwater will be reduced to approximately 17m^3/day once the accumulated stockpile has been treated. Essentially this will include the residual level of PFAS not captured by the SAFF/PAC treatment train. - Foamate concentrate and spent activated carbon which will incorporate the PFAS captured in the foam and activated carbon and which will be sent off-site for incineration.

	All the release parameters are defined in the application and testing/monitoring requirements will be defined in the permit variation notice. The release/emission limits (emission limit values and trigger levels) defined in the permit variation notice are set to ensure the protection of human health and the environment.
Concern that the application neglected to nominate emission limits.	The application did not propose emission limits other than a process operational limit of 10ng/l for PFOS in treated stormwater that would trigger permission to emit that treated stormwater to the River Wenning. We have included that limit of 10ng/l PFOS for treated stormwater in the varied permit notice. Emission limits for PFOS, PFOA, PFNA and PFHxS at 10ng/l are also included in the permit variation notice with monitoring of an increased range of PFAS also included within the notice. We are satisfied we have imposed suitable limits and monitoring.
Concern that emission limits should be at the very least the DWI 2024 guidance of a sum of 48 PFAS below 100ng/l.	Monitoring of the DWI suite of PFAS is included in the permit variation notice. No emission limit value is set for the sum of these substances identified by the DWI as these levels are currently only for guidance purposes. The Applicant has provided an assessment to demonstrate the emission of treated stormwater should not impact on the potable water abstractions downstream of the emission location into the River Wenning. We are satisfied that the emission limits and trigger levels we have set in the permit variation notice, along with the monitoring and reporting requirements, will ensure the protection of the environment and the protection of human health.

	The Operator must submit the results of their monitoring of treated stormwater against the DWI PFAS suite to the Environment Agency at reporting periods defined in the notice. The Environment Agency will assess these monitoring results when they receive them.
Concern that discharging treated stormwater to the River Wenning would potentially risk further contamination of the receiving waters or be the start of subsequent serious problems.	The applicant has assessed the impact of PFAS chemicals on the receiving waters (River Wenning) by use of the Environment Agency's H1 risk assessment tool which has been used to assess impact of PFOS, the only PFAS chemical with short-term and long-term Environmental Quality Standards (EQSs) published on the Environment Agency's Gov.uk guidance. The applicant has also tested the treated effluent for a range of non-PFAS chemicals (for example, heavy metals and organic chemicals such as benzene and toluene) and used the results of that testing to screen out these parameters as insignificant or not significant in the H1 risk assessment tool. The permit variation notice requires the applicant to carry out and report to the Environment Agency analyses of treated stormwater for non-PFAS at a defined frequency. Monitoring of treated stormwater emissions for a range of non-PFAS substances is included in the permit to ensure no increase is observed in the release of these substances.
Concern that, if the Operator contaminates nearby playing fields and the river, which is a recreational area for local residents and tourists, and home to dwindling species of wildlife, it would be an environmental disaster with implications for public health and the tourist economy.	The stormwater treatment train operations to be permitted in this permit variation notice will not contaminate local playing fields as there is no source/pathway/receptor route from the treatment train to the playing fields. The only waste streams will be treated stormwater which will be directly emitted to the River Wenning and concentrated foam/spent activated carbon which will be removed from site for HTI. There will be no adverse impact on the recreational users of the River Wenning, and this has been discussed further in Section 10.2 (Consultation Responses from Statutory and

	Non-Statutory Bodies - Response Received from United Kingdom Health Security Agency (UKHSA)).
Concern if further requirements and limitations are to be imposed to ensure that the River Wenning was not polluted by any other means as a result of emissions of treated stormwater.	Further monitoring for PFAS and non-PFAS is included within the permit with an emission limit value of 10 ng/l imposed for PFOS, PFOA, PFNA and PFHxS in emissions of treated stormwater.
Concern over the Applicant's environmental record particularly in the United States of America as a concern.	The Applicant's environmental record at their High Bentham site is discussed in more detail in section 8.9 of this Decision Document. The Applicant does not have a legal entity in the USA. It does have a sister company called National Foam Inc, based in Angier North Carolina but this is a company with a different legal entity from the Applicant, based at High Bentham. The Applicant has confirmed that National Foam Inc has currently no significant issues resulting in prosecutions, fines, regulatory intervention or non-compliance with environmental permits. National Foam Inc has adopted a fluorine free foam manufacturing process at the Angier site. They are however subject to the same concerns as the Applicant in relation to the historic manufacture and use of fire-fighting foams that previously contained PFAS.
Concern if there are further regulations, requirements, and limitations being imposed to ensure that the river is not polluted via any other means, not limited to waterborne pathogens?	All relevant environmental regulations relating to the emission of treated stormwater into the River Wenning have been considered during the determination of this application for permit variation. Additional testing requirements are being included in the permit variation notice for non-PFAS that might be emitted into the River Wenning from the Applicant's site after treatment of stormwater. No emission limit values have been set for these non-PFAS, but the Applicant is required to submit the results of the testing for these non-PFAS to the Environment Agency who will review the results and take appropriate action if necessary. There are no waterborne pathogens in the emissions to the River Wenning

	from the Applicant's site as the emission is for rainwater falling onto the site and being treated for PFAS before emission to the River Wenning.
Support for the Operator as a company/employer and support for the application to vary their environmental permit.	No further action required.

10.6 Representations that do not fall within the Scope of this Permit Determination.

Various representations were received that were outside the scope of our determination. Some of these are summarised below.

Brief summary of issues raised:	**Summary of action taken / how this has been covered**
Concern about risks from ongoing fire-fighting foam production.	The production of fire-fighting foam at any site other than the Applicant's is not pertinent to determination of the current application for variation to the Angus Fire Limited environmental permit.
Suggestion that there was opportunity to progress understanding of remediation capability which can help inform policy at national level. A 'Florenox' product could be added to provide in-situ destruction of the concentrate as an alternative to GAC (granular activated carbon) which, depending on chosen material, would go	The provision of additional technology, to be used as either an alternative to or an addition to, the technology proposed by the Applicant is not pertinent to determination of the current application for variation to the Applicant's environmental permit. The permitting process is not designed to present opportunities to inform policy at an Environment Agency national level.

to landfill or require heat regeneration and potential emission to air.	
Concern that France has a full ban on short and long chains with levels to be set in 2026 and Canada has a 30ng/l sum limit of 30 PFAS, short and long chain species.	The Environment Agency has a legal duty to determine an application for permit variation against the UK legislation, evidence and information that is available at the time. We also have a legal duty to review permits which we may do if UK legislation or guidance changes potentially as a result of changes in other jurisdictions.
Concern that, in a document submitted by the consultee, it was suggested that the treatment train proposed by the Applicant would quickly become obsolete as it could not capture the smaller PFAS strings.	The document submitted by the consultee was entitled, 'Annex 15. Restriction Report. Proposal for a restriction per and polyfluoroalkyl substances (PFAS) in firefighting foams' issued by the Health and Safety Executive in August 2025. Whilst there is some discussion in this document on treatment of PFAS contamination, it is largely focused on the treatment/removal of PFAS in municipal wastewater treatment plants and is not directly related to the determination of the current application for variation to environmental permit.

11 · Advertising and Consultation on the Draft Decision

This section reports on the outcome of the public consultation on our draft decision carried out between 05.03.2026 to 08.04.2026.

In some cases, the issues raised in the consultation were the same as those raised previously and already reported in section A of this Annex and so have not been repeated in this section.

Also, some of the consultation responses received were on matters which are outside the scope of the Environment Agency's powers under the EPR. Our position on these matters is as described previously.

11.1 Consultation Responses from Statutory and Non-Statutory Bodies

Response Received from United Kingdom Health Security Agency (UKHSA)	
Brief summary of issues raised:	**Summary of action taken / how this has been covered**
Confirmation of the nature of the permit variation application, that UKHSA had previously replied to the earlier consultation and that, after reviewing the additional information submitted, they had no further recommendations.	No further action required.

11.2 Representations from Local MP, Assembly Member (AM), Councillors and Parish / Town / Community Councils

Response Received from North Yorkshire Council	
Brief summary of issues raised:	**Summary of action taken / how this has been covered**
Confirmation of the nature of the treatment process proposed to remove PFAS from water and that there were no objections to the proposed environmental permit variation.	No further action required.

11.3 Representations from Community and Other Organisations

Responses were received from **The River Wenning Group**.

Brief summary of issues raised:	**Summary of action taken / how this has been covered**
Concern that treated effluent should not be discharged directly into the River Wenning or any watercourse.	The Environment Agency has carried out an assessment of the discharge of treated rainwater into the River Wenning using an established and documented risk assessment methodology and has determined that there are no unacceptable risks to the amenity use of the River Wenning including its use in any downstream water abstractions.

Concern that consideration should be given to alternative methods of disposing of treated rainwater, including its removal offsite.	The applicant has considered alternative disposal methods for treated rainwater including discharge to a wastewater treatment plant and removal for off-site incineration but has concluded that there are no feasible alternatives to the disposal of treated rainwater to the River Wenning following assessment that this will not cause any significant deterioration on river water quality.
Concern that, as there is no consistent standard for detecting and measuring PFAS, how can it be determined that any amount of PFAS in effluent is safe.	Defined standards have been set in the varied environmental permit for the detection and measurement of PFAS in pre- and post-treated rainwater. These methods are in use by analytical laboratories carrying out PFAS testing. Using the results of these tests, the PFAS concentration in the treated rainwater has been determined to be suitable for disposal to the River Wenning at the volumes and concentrations proposed using defined and available risk assessments. Then Environment Agency has a legal duty to keep permits under review and, should new information become available of the safety of PFAS at these levels, then the Environment Agency can act to review permits.
Concern that the people of Bentham are living with the consequences of PFAS pollution and based on recent evidence of the extent and impact of that pollution, there is concern that the Environment Agency should mitigate the environmental damage rather than add to it. Concern that the Environment Agency decision of this permit variation application, approves further pollution of the river.	On Sunday 22nd March 2026, during the consultation period on the draft permit variation notice, ITV aired a program nationally called “In Our Blood: The Forever Chemicals Scandal”. This investigated high levels of PFAS found in the blood of residents of Bentham and discussed if there were potential links to the historic production and testing of firefighting foams carried out at the applicant’s site. This program addressed historic operations at the applicant’s site and historic pollution. The Environment Agency has considered the issues raised in this program. We do not consider that they change the conclusions of our assessment into this permit variation application.

	Our decision to permit the PFAS treatment train will mitigate the potential environmental damage on the River Wenning by ensuring that contaminated rainwater at PFOS levels of approximately 4,000 ng/l is not emitted to the river. Our assessment of the impact of the emission of treated rainwater at PFOS levels of no greater than 10 ng/l indicates that there should be no significant adverse impact on, and effectively no increased pollution of, the River Wenning even if the river is already experiencing PFAS pollution.

11.4 Representations from Individual Members of the Public

Response Received from Members of the Public	
Brief summary of issues raised:	**Summary of action taken / how this has been covered**
Concern about what will happen to the residue generated from the water treatment process. Concern that there may be an intention to include an incinerator within the project and, if not, concern about what environmental issues may be caused if the residue is transported to another designated place. Concern on noise and energy required to filter and heat/move residue and their detrimental effects on the environment.	No incinerator will be included as part of the environmental permit variation to install the treatment train. Residue (SAFF concentrate and activated carbon) will be removed from site and transported to a permitted disposal facility for incineration. That site will operate in compliance with its environmental permit to ensure to environmental issues are caused by the incineration of this waste at that third-party site. The applicant has stated that the energy usage of the permitted PFAS treatment train will be about 63,390kW per year – approximately 2.4% of the total energy used on site. This indicates that the energy required to treat the stormwater will not cause a significant increase in overall site energy demand.

	The Environment Agency is satisfied noise caused by operation of the SAFF/PAC process will not cause noise pollution outside the permitted site. The foam concentrate and spent activated carbon will be removed from site to a permitted disposal site. The Environment Agency is satisfied that the loading of these wastes onto vehicles for removal from site will not cause noise pollution outside of the permitted site.
Concern that the decision to vary the environmental permit to install the treatment train cannot be considered in isolation as Bentham already has documented impacts of PFAS contamination on the environment and local residents. Concern that the confirmed scale of human exposure fundamentally changes the risk profile and must be fully reflected in the decision. Concern that the cumulative impact of PFAS should be assessed instead of an isolated discharge.	As discussed previously, on Sunday 22nd March 2026, during the consultation period on the draft permit variation notice, ITV aired a program nationally called “In Our Blood: The Forever Chemicals Scandal”. This investigated high levels of PFAS found in the blood of residents of Bentham and discussed if there were potential links to the production and testing of firefighting foams carried out at the applicant’s site. This program addressed historic operations at the applicant’s site and historic pollution. The Environment Agency has considered the issues raised in this program. We do not consider that they change the conclusions of our assessment into this permit variation application. We do not think that the scale of exposure to PFAS shown in this program, does fundamentally change the risk profile. We have made our decision to permit the PFAS treatment train to reduce the risk of further exposure of the population of Bentham to historic PFAS pollution. Without the operation of this treatment train, there is the risk that the population would be exposed to much greater levels of PFAS in rainwater discharged as fugitive releases from the applicant’s site. We believe there is a much greater risk to human health should we not permit the operation of the treatment train and potentially expose the population to levels of PFOS in the order of 4,000 ng/l rather than less than 10 ng/l following treatment.

Concern that allowing discharge of persistent chemicals into an already impacted river is a continuation of the problem rather than a precautionary approach.	The Environment Agency is permitting the operation of the PFAS treatment train to minimise as much as possible the discharge of PFAS to the river. Based on our assessment, we concluded that the quality of the river will not be significantly adversely impacted by discharge of treated rainwater at concentrations of no greater than 10 ng/l PFOS. The impact assessment of the discharge of untreated rainwater at PFOS concentrations of 4,000 ng/l would not reach the same conclusion. The permit variation addresses the existing issue and, rather than allowing its continuation, delivers a significant environmental improvement.
Concern that a zero discharge or near zero solution should be adopted instead of a technically achievable solution.	The proposed PFAS treatment train is a near zero PFAS solution as well as a technically achievable solution. The applicant has demonstrated that the operation is technically achievable by a series of trial/commissioning tests that have demonstrated reduction in PFOS composition of the rainwater to less than 10 ng/l. A value of 10 ng/l PFOS is effectively a near zero solution. A concentration of 10 ng/l PFOS can be visualised as being largely equivalent to: - One or two drops of food colouring into 20 Olympic sized swimming pools. - 30 seconds out of every million years. - 1 cent amongst 10 billion dollars.
Concern that any permit variation issued must include independent monitoring, full public transparency and clear enforcement triggers.	The variation to the environmental permit requires analyses of the treated rainwater for a range of PFAS. The applicant does not carry out those analyses themselves and must submit them to third-party analytical laboratories working to defined testing methods and defined certification schemes. The results of all monitoring required by the environmental permit will be included on the public register and available to the public on request. Defined emission limit values and trigger levels, with monitoring frequencies and reporting

	requirements, as discussed in Section 8 of this document, are included in the environment permit variation notice.
Concern that public health should be prioritised not the management of pollution.	The permit variation notice seeks to protect human health by authorising a treatment process to reduce an existing source of PFAS pollution at levels of approximately 4,000 ng/l PFOS to no greater than 10 ng/l. Without the permitting of this treatment process, the public would be exposed to much greater levels of PFAS contamination.