

Environment Agency Permitting and Support Centre
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99 Parkway Avenue,
Parkway Business Park,
Sheffield S9 4WF

Dear [REDACTED]

Date 05/09/2025

Schedule 5 Notice for Permit Variation Application – EPR/XP3832NV/V004

A permit variation application was submitted by Ramboll, on behalf of Angus Fire Limited (referred to hereafter as "Angus Fire" or "the Client") to the Environment Agency (EA) on 29 April 2025. The permit variation application was to vary the Environmental Permit EPR/XP3832NV/V004 for the Angus Fire site located at Station Road, Bentham, Nr Lancaster, LA2 7NA (the "Site").

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The application proposed to update the existing permit to include a waste operation to allow for treatment of contained stormwater collected on the Site and post-treatment discharge through a new discharge point (W2). The new discharge point is located at the sampling point for the discharge.

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Ref 1620017369

Following the submission of the permit variation application, the Environment Agency (EA) provided a Schedule 5 Notice of 7 August 2025 regarding some aspects of the application that were considered to be outstanding or required further confirmation. In addition, the EA provided additional comments, based on their consultation with UKHSA, in email of 15 August 2025 regarding the permit variation application.

This letter report has been prepared to provide/confirm the outstanding information requested in the EA's Schedule 5 Notice of 7 August 2025 and email of 15 August 2025.

The response to the EA's Schedule 5 Notice and email is set out below:

Request for Information	EA Comment	Response
Comments Provided in Schedule 5 Notice		
<p>1. <u>Demonstration of Capacity to Treat Surface Waters to less than 10ng/l PFOS.</u></p>	<p>a. Outline the nature of the PFAS species within the matrix of compounds present in Angus Fire Limited (AFL) surface water that determine the limit of detection that can be achieved when analysing treated surface water.</p>	<p>Angus Fire undertook sampling of stormwater from different areas of the Site to characterise the nature and magnitude of the PFAS contamination. All sampling undertaken is of the full PFAS suite with Element laboratories along with the addition of 6:2FTAB; a specific precursor substance which we have identified at this site. We have never requested that any PFAS substances from the suite are not reported or removed from any report for any reason.</p> <p>Due to the longevity of this project the Element "standard PFAS suite" has evolved from an initial 50 PFAS suite through 2024 to an expanded 53 PFAS which became Element's offering from the beginning of 2025. Throughout this timeframe both the PFAS 50 and 53 suites have included all the PFAS substances as per the DWI standards.</p> <p>The stormwater collected during the sampling program onsite consistently and solely included the following 13 PFAS Compounds - PFOS, 6:2FTAB, 6:2FTS, PFHxA, 8:2FTS, PFPeA, PFHpA, PFBA, PFOA, PFHxS, FHxSA, PFNA and PFDA.</p> <p>Conversations were undertaken between the consultant contracted by Angus Fire to assist them on the remediation of contaminated stormwater (Geosyntec), the treatment / remediation company retained by Angus Fire (Cornelsen) and Element Laboratories. Cornelsen undertook bench-top scale studies of different treatment technologies to determine the most appropriate treatment technologies for the contaminated stormwater collected on-site. During bench-scale studies Cornelsen worked in partnership with Element Laboratories to ensure that the laboratory could undertake testing of the post treatment discharge to a Method Reporting Limit (MRL) that was at least equal to the proposed discharge limit for PFOS (10 ng/l).</p> <p>Based on the PFAS species within the post treatment discharge, following extensive on-site treatment optimisation, and based on samples of post-treatment water samples the laboratory has confirmed that a 10 x dilution is required prior to analysis to bring the sample within the calibration range of the "low-level" PFAS analysis. This results in a MRL for PFOS of 6.5 ng/l.</p>

		<p>Since full-scale commissioning and system optimisation have been completed, concentrations in the post-treatment discharge have been of sufficiently consistent composition to allow total PFOS to be analysed to a MRL of 6.5ng/l. Analytical results have shown that PFOS concentrations in the post-treatment discharge are <6.5ng/l. To achieve this MRL and non-detect level of post treatment PFOS, the other PFAS species must also be within a consistent range, and dramatically reduced in concentration in comparison to their influent concentrations. Overall, a >99% total reduction in the other encountered non-regulated PFAS species is achieved through the treatment process.</p>																																																				
	<p>b. Demonstrate the actions taken by AFL and external analytical testing houses contracted by AFL to achieve the lowest possible limit of detection for PFOS in treated stormwater.</p>	<p>Angus Fire worked with Element Laboratories to determine what is the lowest MRL for all encountered PFAS (including PFOS) that could be analysed based on the post treatment discharge samples that were provided during testing of the treatment system.</p> <p>Element Laboratories are able to achieve a MRL for PFOS of 6.5 ng/l based on the current treatment of contained stormwater. The MRL that is able to be achieved by the laboratory is substantially lower than the proposed post treatment discharge limit for PFOS that the treatment system is required to achieve. It is considered that the MRL is sufficient to confirm that the post treatment discharge meets the discharge limit. A summary of the achievable detection limits for the PFAS species encountered at the site is set out in the table below.</p> <table border="1" data-bbox="853 887 1850 1402"> <thead> <tr> <th>PFAS Species</th> <th>Unit</th> <th>Element Low Level Detection Limit</th> <th>Achievable Detection Limit Post Onsite Treatment</th> </tr> </thead> <tbody> <tr> <td>PFBA #</td> <td>ug/l</td> <td><0.001</td> <td><0.01</td> </tr> <tr> <td>PFPeA #</td> <td>ug/l</td> <td><0.001</td> <td><0.01</td> </tr> <tr> <td>PFHxA #</td> <td>ug/l</td> <td><0.001</td> <td><0.01</td> </tr> <tr> <td>PFHpA #</td> <td>ug/l</td> <td><0.001</td> <td><0.01</td> </tr> <tr> <td>PFOA #</td> <td>ug/l</td> <td><0.00065</td> <td><0.0065</td> </tr> <tr> <td>PFNA #</td> <td>ug/l</td> <td><0.001</td> <td><0.01</td> </tr> <tr> <td>PFDA #</td> <td>ug/l</td> <td><0.001</td> <td><0.01</td> </tr> <tr> <td>PFHxS #</td> <td>ug/l</td> <td><0.001</td> <td><0.01</td> </tr> <tr> <td>PFOS (Total) #</td> <td>ug/l</td> <td><0.00065</td> <td><0.0065</td> </tr> <tr> <td>6:2 FTS</td> <td>ug/l</td> <td><0.005</td> <td><0.05</td> </tr> <tr> <td>8:2 FTS</td> <td>ug/l</td> <td><0.005</td> <td><0.05</td> </tr> <tr> <td>FHxSA</td> <td>ug/l</td> <td><0.02</td> <td><0.2</td> </tr> </tbody> </table>	PFAS Species	Unit	Element Low Level Detection Limit	Achievable Detection Limit Post Onsite Treatment	PFBA #	ug/l	<0.001	<0.01	PFPeA #	ug/l	<0.001	<0.01	PFHxA #	ug/l	<0.001	<0.01	PFHpA #	ug/l	<0.001	<0.01	PFOA #	ug/l	<0.00065	<0.0065	PFNA #	ug/l	<0.001	<0.01	PFDA #	ug/l	<0.001	<0.01	PFHxS #	ug/l	<0.001	<0.01	PFOS (Total) #	ug/l	<0.00065	<0.0065	6:2 FTS	ug/l	<0.005	<0.05	8:2 FTS	ug/l	<0.005	<0.05	FHxSA	ug/l	<0.02	<0.2
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<p>2. <u>Post-Treatment Stormwater</u></p>	<p>i. Confirm how certain areas of site have been designated 'low risk' and 'high risk' for the generation of surface water potentially contaminated with PFAS.</p>	<p>To determine the areas of the Site that may have been affected by PFAS contamination, Angus Fire undertook a review of historic Site activities and characterisation of the Site.</p> <p>The "high risk" areas have been defined as areas associated with historic activities that may have contained PFAS, including:</p> <ul style="list-style-type: none"> • fire testing area(s); • containment infrastructure (including the lagoons); and • permitted areas of the Site <p>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 Angus Fire to potentially be impacted by historic activities was also considered to be 'High-Risk'.</p> <p>As presented to the Environment Agency in previous progress meetings, the site team has undertaken initial drainage management works at various locations across the Site to divert PFAS impacted stormwater into the containment catchment that drains towards sump M-S27, namely from the land drains between the EPD and long vulcanisation buildings and also around the lineside building.</p> <p>Additional drainage management works were also undertaken in the area around the lagoons and the SP1 area to divert drainage from these areas that were classified as 'high-risk' to the containment areas.</p> <p>'Low-risk' areas of the Site are areas that have not been associated with historic PFAS activities and have an isolated drainage collection infrastructure. This includes the eastern portion of the Site and some roof drainage infrastructure. 'Low-risk' drainage infrastructure does not share common drainage channels or pits that would allow for the contamination of stormwater with run-off from 'high-risk' areas.</p> <p>The diagram provided in Attachment 1 shows the areas of the Site that are classified as 'high-risk' and demonstrates how the areas covered by stormwater containment also effectively encompass the permitted areas of the site.</p>

	<p>ii. Confirm how the site drainage infrastructure ensures that potentially contaminated waters from 'high risk' areas do not come into contact with uncontaminated waters from 'low risk' areas potentially contaminating them.</p>	<p>As outlined in the response to EA Comment 2(i), an area that was not classified as 'high-risk' but shares a common drain or drainage point with a 'high-risk' area was also classified as 'high-risk'.</p> <p>'Low-risk' areas of the Site are areas that have not been associated with historic PFAS activities and have an isolated drainage collection infrastructure. This includes the eastern portion of the Site and roof drainage infrastructure. 'Low-risk' drainage infrastructure does not share common drainage channels or pits that would allow for the contamination of stormwater with run-off from high-risk areas.</p> <p>Visual inspections of pipework and drainage infrastructure surveys are undertaken to confirm that the 'low-risk' drainage infrastructure is in good condition</p>
<p>3. <u>Post-Treatment Stormwater</u></p>	<p>a. Confirm the materials of construction of the drainage channels taking stormwater to collection sump M-S27 and the maintenance/inspection procedures and frequencies for these channels.</p>	<p>Drainage inspection reports for drainage sections RWP2X and S27AX are provided in Attachment 2.</p> <p>The drainage inspection reports outlined that:</p> <ul style="list-style-type: none"> • Drainage section (section S27AX) that connects to sump M-S27 is 28.79 m in length and constructed of vitrified clay pipe (i.e., all clayware) with a fibre reinforced lining. • Drainage section (section RWP2X) that connects to drainage section S27AX is 12.34 m in length and constructed of vitrified clay pipe (i.e., all clayware). <p>The drainage sections are subject to CCTV inspections by a qualified contractor and cleaned every three to five years.</p>
	<p>b. Confirm the volume, materials of construction and maintenance/inspection procedures and frequencies for sump M-S27.</p>	<p>A cross-section of Sump S27 is shown in Drawing BG192 provided in Attachment 3. The Section in Drawing BG192 confirms that the construction of the sump is a formed and sealed concrete chamber.</p> <p>The larger pumping chamber is referenced as S27, and the feed chamber is referenced as S26.</p> <p>Dimension details are as below:</p>

Reference	Size of Manhole cover (mm)	Depth of Chamber (mm)	Shape of chamber	Dimension of chamber (mm)
S26	600 x 600	1300	Square	800 x 800
S27	600 x 600	1900	Circular	1200 diameter

The sump is subject to inspection by site personnel as part of the drainage network on-site, as described in response to the EA's Questions 20, in addition to CCTV inspections by a qualified contractor every 6 months.

c. Confirm the materials of construction and maintenance/inspection procedures and frequencies for the pipework taking stormwater from the sump to the pre-treatment storage tank.

Stormwater is currently transferred from the sump collection chamber to the pre-treatment storage tanks via a rubber coated extruded lay-flat hose. This hose is visually inspected daily.

Once the discharge location is confirmed and accepted under permit, a fixed high density polyethylene (HDPE) pipe is proposed to be installed. This pipework will be a composite material, located above ground or at ground level (located in access gulleys described in the response to Question 15).

Frequency of inspection will be weekly.

Similar to the proposed treated effluent discharge route, the transfer route is located within the tertiary containment area, therefore, any spills or leaks will be collected within the tertiary containment system.

d. Confirm the total volume of tertiary containment provided by the site drainage system and sumps.

The total volume of tertiary containment, (excluding drain pipework routes), referred to as the 'lineside bund' has been calculated following the methodology presented below.

The tertiary containment area is defined as the area that the contained stormwater is captured through run-off from the hardstanding directly south of the foam plant and tank farm that drains towards the lineside bund.

		<p>The tertiary containment assessment only considered the areas that drains directly towards the 'lineside bund', areas that drain towards other stormwater collection infrastructure has not been considered as part of the tertiary containment volume of the Site.</p> <p>Calculation Methodology</p> <ul style="list-style-type: none"> • The Foam Yard slope and associated gradients were calculated from Site surveys. • Containment area was measured and verified against the Site plan, a conservative estimate of the containment boundary was defined. • A 3D CAD model was created of the containment area. • The 3D CAD model was used to calculate the volume of contained stormwater that can be captured. • The tertiary containment volume provided by the Site drainage system based on the 3D CAD model is 82 m³ <p>The calculations used in the model are provided in Attachment 4. The additional containment volume that would be provided by the Site drainage system and sumps was not included in the calculation. Therefore, the tertiary containment volume of 82 m³ calculated for the Site is considered to be a conservative estimate of the actual available volume.</p>
<p>4. Operation of Effluent Treatment Plant.</p>	<p>a. Outline how the Powdered Activated Carbon (PAC) treatment process will be operated in conjunction with the Surface Active Foam Fractionation (SAFF) process to ensure maximum abatement of PFAS chemicals in treated water and ensure compliance with any PFAS emission limit values or trigger</p>	<p>The SAFF and PAC treatment processes will run in series. The system has been designed and commissioned such that all contained stormwater will be processed through the SAFF and then passed through the PAC treatment process for further PFAS removal.</p> <p>There is no process that will directly pass water from the SAFF plant to the storage tanks at the end of the Process and this is managed automatically by the PLC systems that are in place.</p>

	<p>levels in the environmental permit.</p>	
	<p>b. Demonstrate the decision-making process to be adopted when determining if the PAC treatment process is to be used.</p>	<p>Whilst it is possible that the SAFF process can be developed and optimised to achieve removal efficiencies equal to those achieved by the SAFF/PAC combination, there are no plans to remove the PAC treatment at this stage; and there is no mechanical means to facilitate a discharge without passing through the PAC equipment.</p> <p>There may be a time in the future that this option may be reviewed. The given conditions for this would need to be that the PAC provides no discernible level of reduction to any encountered PFAS compound levels following SAFF treatment.</p> <p>Angus Fire commit to presenting the associated lines of evidence to underpin any proposed decision to omit the PAC stage to our assigned Environment Agency Regulatory Installation Officer prior to this approach being employed.</p>
<p>5. Operation of Effluent Treatment Plant.</p>	<p>a. Confirm the previous uses of storage tanks A1 & A2, the cleaning and repurposing carried out on them and provide any cleaning or decontamination certificates.</p>	<p>Pre-treatment storage tanks A1 & A2 were previously identified on-site as Tank 39 and Tank 46, respectively. Tanks 39 and 46 were historically used to store Foam Concentrate products. The composition of these foams is shown in the Stage 1 to 3 Assessment provided in attachment to the Permit Variation Application Report. Review of the Stage 1 to 3 Assessment shows that the relevant hazardous substances associated with the foams stored in Tank 39 (A1) and Tank 46 (A2) were PFAS and zinc.</p> <p>Following the cessation of all PFAS related activities in June 2024, these two tanks were no longer required for the storage of products and were repurposed for the storage of contained stormwater. The decision was based on the sound operating condition as well as their linkage to the tanker loading point.</p> <p>Prior to being used to store contained stormwater, the tanks were flushed and refilled several times with the resulting effluent being disposed of via high temperature incineration.</p> <p>Subsequent sampling of the contained stormwater in these tanks has demonstrated that there was no discernible difference in the PFOS concentrations of the tanks compared to that of other pre-treatment storage tanks. Therefore, the contributory effect to elevated PFAS concentrations is not considered consequential and the adoption of these tanks for pre-treatment storage is not detrimental to influent PFAS concentration for the treatment system.</p>

		<p>Further, the contained stormwater within the tanks has been subject to treatment on-site as part of the development and optimisation of the treatment system. It has been demonstrated that the contained stormwater within the tanks is able to be treated to the post treatment discharge limits.</p>
	<p>b. Confirm the number of storage tanks to be used to store surface water pre-treatment once currently stockpiled waters have been treated and the treatment plant is treating only day to day stormwater arisings.</p>	<p>Five (5) pre-treatment storage tanks are proposed to store contained stormwater prior to treatment following the clearance of the back-log of contained stormwater. These are identified as A1, A2, A3, A4 and A5. The available capacity at the site may be subject to review in the future to ensure effective management is maintained.</p> <p>Information regarding the composition of the tanks, capacity and location is provided in Table 9-1 and Section 8.1 of the Permit Variation Application Report.</p>
<p>6. Operation of Effluent Treatment Plant.</p>	<p>Confirm the frequency of inspection of temporary storage areas, particularly those without defined secondary containment, and demonstrate that frequency is sufficient to manage environmental risks from loss of containment.</p>	<p>Inspections of the temporary storage areas are undertaken daily by the stormwater management team. The storage of IBCs has been designed to incorporate inspection breaks to allow inspectors to visually inspect the condition of IBCs and to identify potential leaks. Spill response equipment in these areas is inspected in conjunction with the IBCs.</p> <p>See additional information in Question 20.</p>
<p>7. Operation of Effluent Treatment Plant.</p>	<p>Confirm the volume of storage of untreated stormwater that will be available in fully contained areas that meet the requirements of CIRIA C736 once</p>	<p>A topographic survey of the site was undertaken in February 2024. The output was then modelled using AutoCAD Civil 3D with hydraulic modelling undertaken using Infodrainage 2023.3. The full findings of this report can be seen in reference "REH2023N04164, CIRIA 736 Capacity Assessment Report", Ramboll, June 2024.</p>

the current stockpile of stormwater has been treated and removed from site. This must include storage in bunded tanks and storage in IBCs that are located in fully contained areas.

This survey was carried out whilst all tank pads were occupied. Whilst the tank farm has since been reconfigured, the calculations still provide a reasonable estimation of the available containment capacity.

At the time of the survey, the capacity of the bunded area was calculated to be 106 m³.

Untreated stormwater is to be stored in five dedicated tanks with the following capacities:

Tank	Capacity (m³)
A1	39
A2	40
A3	30
A4	25
A5	30
Total	164

In addition to the untreated stormwater, containment capacity must be retained to accommodate the tanks associated with the Monnex process.

Tank	Capacity (m³)
E1	4
E2	15
E3	30
Total	49

Therefore, the total maximum volume stored within the tank farm is 213 m³. It should be noted however, that Angus Fire operates to a policy of 'working volume' in each of the tanks such that none of the tanks will ever be filled to full capacity.

		<p>CIRIA guidance recommends that the capacity of the bund is the greater of 110% capacity of the largest tank or 25% of the total capacity of all tanks within the bund. In this case, as tanks A4 & A5 are connected by a low-level manifold, they would be considered as a single tank with a capacity of 55m³, requiring a containment capacity of 60.5m³.</p> <p>CIRIA guidance also indicates that the containment volume should include an allowance for the total volume of accumulated rainfall. At the time of the assessment, the accumulated rainfall was calculated as being 34.5 m³ for one day during a 1 in 10 year storm event. The total volume required for containment including this rainfall would therefore be 94.5 m³. At 106 m³, the containment provided by the bunding is considered to be sufficient, even with a margin of error.</p> <p>The CIRIA guidance indicates that the rainfall during a 1 in 10 year storm encountered over eight days should be included in the containment assessment (i.e., tank volume plus rainfall volume). This rainfall/containment scenario is not considered relevant to the Site as the proposed treatment system will continuously treat up to 48 m³ per day of contained stormwater during this rainfall event. That is, where a tank failure vent occurs during a 1 in 10 year storm event encountered over eight days, the rainfall that is collected will be transferred to the remaining operational pre-treatment storage tanks as the contained stormwater within the tanks continues to be treated.</p> <p>Notwithstanding this, following the clearance of the back-log of contained stormwater there will be additional capacity within the tertiary containment area for the storage of untreated stormwater in IBCs. Contained stormwater will not be routinely stored in the tertiary containment area, therefore, based on a tertiary containment volume of 82 m³ (see Question 3), an additional storage capacity of approximately 328 m³ would be available.</p> <p>Consequently, it is deemed that there is adequate containment capacity in the existing bund arrangement and tertiary containment for the storage of contained stormwater.</p> <p>Angus Fire are developing plans to optimise the bunded arrangements on site in alignment with the projected storage approach, and this work would commence as soon as the processing and subsequent removal of accumulated stormwater enables this activity to proceed.</p>
<p>8. Containment</p>	<p>With regard to transfer of potentially contaminated stormwater water from</p>	<p>Various options have been considered. The proposed approach has been selected as it fulfils three key criteria:</p> <ol style="list-style-type: none"> 1. The management and decanting of IBCs is carried out within the boundary of a containment protection area to reduce the risk associated with the loss of containment during storage and handling

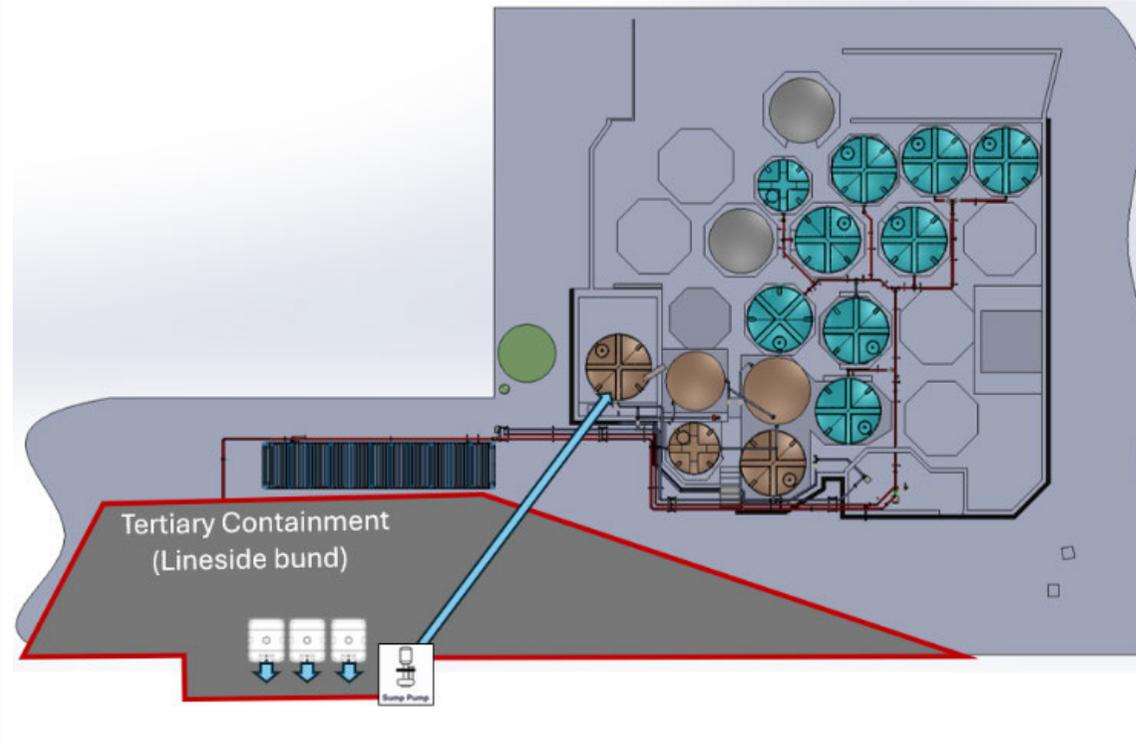
IBCs to the treatment plant confirm:

(a) How this material is transferred without risks of loss of containment.

(b) The inspection/maintenance systems on these transfer routes.

2. Minimise the movement and handling of IBCs both from an employee and forklift truck movement perspective
3. Enables the IBCs to be emptied in a timely way that minimises the risks associated with: the loss of containment during the transfer; impacts on the throughput of the Treatment Train operation; and consistency of the nature and characteristic of the influent standard.

The proposed method for the transfer of potentially contaminated stormwater present in IBCs is to move the IBCs to the catchment pit of the tertiary containment area (Lineside bund), open the IBC tap and allow the stormwater within to feed into the holding sump. From this area, the pumping system that is already in place will transfer the potentially contaminated stormwater from the Lineside Bund into the pre-treatment storage tanks. For clarity, a conceptual model of the process is outlined in the figure below:



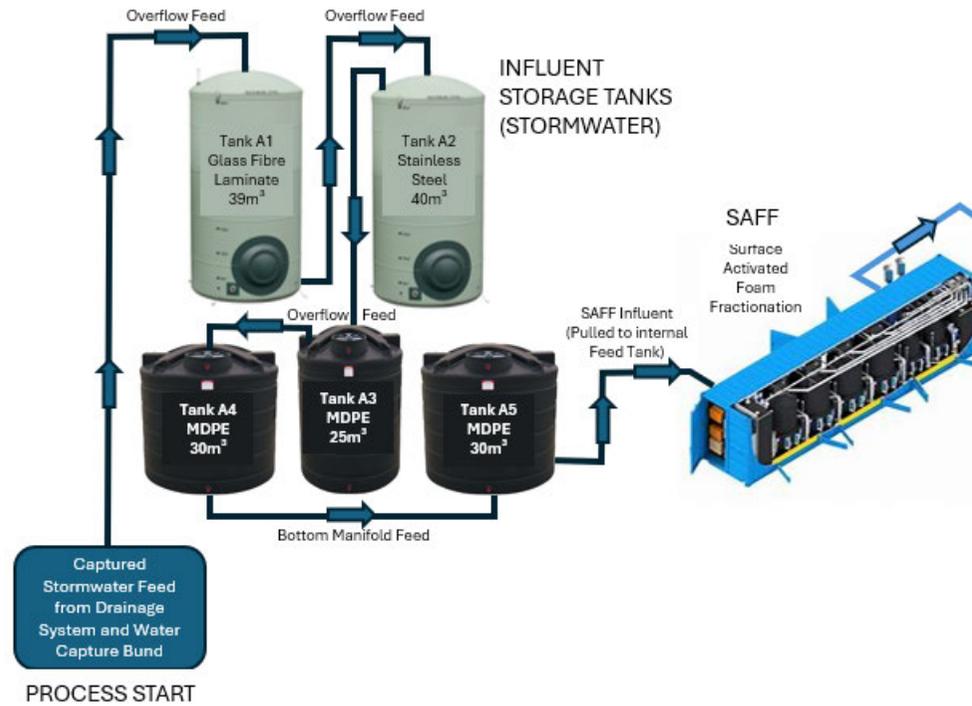
		<p>In addition to meeting the three key on-site criteria described above, the proposed transfer method addresses the queries presented within the EA's comment, as further outlined below:</p> <ul style="list-style-type: none"> (a) The transfer of the contained stormwater occurs within the bunded area of the Site that is isolated from external receptors. There is no transfer of potentially contaminated stormwater over areas of the Site that are not bunded/located within tertiary containment area. <p>NB: As the stockpile of contained stormwater is reduced, IBCs held in areas of the Site with less effective containment will be moved into areas of effective containment at the earliest opportunity.</p> <ul style="list-style-type: none"> (b) The proposed inspection and maintenance of the transfer areas are described in the response provided to Question 20. As the transfer is undertaken within existing containment areas that are subject to inspection and maintenance no additional inspections are considered necessary.
<p>9. Containment</p>	<p>Provide the calculation of bund capacity of 106 m³ for the containment bund containing the post- and pre-treatment storage tanks to demonstrate it has considered the volumes taken up by the tanks themselves and any other structures within the bund.</p>	<p>A summary of the containment assessment has been provided in Question 7.</p> <p>The full details are presented in report reference "REH2023N04164, CIRIA 736 Capacity Assessment Report", Ramboll, June 2024.</p> <p>It is acknowledged that there has been some reconfiguration of the bunding arrangements of the tank farm since the survey and calculations were developed. However, the assessment is considered to be indicative of the current situation and Angus is committed to undertaking a full assessment of the bund arrangement following the processing of the backlog of stormwater and removal of the remaining tanks.</p>
<p>10. Containment</p>	<p>For each pre-treatment and post-treatment storage tank within the containment bund, define the control systems to prevent overflow (such as high-level alarms and high-</p>	<p>Pre-treatment Storage Tanks</p> <p>The contained stormwater is pumped from the collection bund into Tank A1, which once filled will overflow via a top feed line into Tank A2. In turn Tank A2 will overflow via a top feed line into Tank A3. Tank A3 overflows via a top feed line into Tank A4, however, Tanks A4 and A5 are connected by a bottom fed manifold so they effectively fill simultaneously which ensures the influent fed to the SAFF plant has a minimum blended volume of 55m³ to 60m³.</p>

high level shut off valves) and confirm the tank volumes at which these occur.

High and high-high level alarms are not installed on the pre-treatment tanks. However, the fact that they are top filled (with the exception of A4 and A5 which are connected) prevents an incident that results in loss of containment from one tank being exacerbated by the feed from other tanks.

In addition, the bunds are monitored by CCTV.

For clarity, a conceptual model of the influent treatment system is provided in the Figure below.



Post-Treatment Storage Tanks

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

		<ul style="list-style-type: none"> • 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. <p>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.</p> <p>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.</p>																
<p>11. Containment</p>	<p>Confirm (i) the total volume of liquid that can be contained by the containerised SAFF unit itself before overflow and (ii) the total volume of liquids contained within the vessels/tanks in the containerised SAFF unit when they are full.</p>	<p>(i) The bund capacity within the containerised SAFF unit itself is sufficient to accommodate 110% of the largest tank, which equates to 3.85 m³ (Tank 1 has a capacity of 3.5 m³). In addition to this, the unit has spill detection sensors that will stop the operation of the system. This is also communicated to the indoor control panel that will also stop the incoming flow to the unit.</p> <p>NB: In the worst case scenario resulting in multiple failures in the control system were to occur, then the influent and in-process water would release into the tertiary containment bund.</p> <p>The SAFF Containerised unit contains 5 tanks in total; the capacities and outline of their purpose is outlined below. As mentioned previously, the Site policy is to operate to a working volume which is significantly less than the full capacity of the tanks, based around a batch capacity of 2.1m³.</p> <table border="1" data-bbox="891 1139 1957 1409"> <thead> <tr> <th>Tank No:</th> <th>Purpose</th> <th>Volume (Capacity m³)</th> <th>Working Volume (m³)</th> </tr> </thead> <tbody> <tr> <td>Storage Tank 1</td> <td>Influent holding Tank</td> <td>3.5</td> <td>1.75</td> </tr> <tr> <td>Storage Tank 2</td> <td>Primary Discharge Tank</td> <td>1.0</td> <td>0.7</td> </tr> <tr> <td>Storage Tank 3</td> <td>Primary Effluent/Foam Capture Tank</td> <td>1.6</td> <td>1.0</td> </tr> </tbody> </table>	Tank No:	Purpose	Volume (Capacity m ³)	Working Volume (m ³)	Storage Tank 1	Influent holding Tank	3.5	1.75	Storage Tank 2	Primary Discharge Tank	1.0	0.7	Storage Tank 3	Primary Effluent/Foam Capture Tank	1.6	1.0
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Storage Tank 3	Primary Effluent/Foam Capture Tank	1.6	1.0															

Storage Tank 4	Secondary Effluent/Foam Capture Tank	0.825	0.5
Storage Tank 5	Hyper-concentrate storage tank (For disposal)	0.150	0.1
Primary SAFF Vessel (4 @ 2.6m³)	SAFF Primary processing	10.4 (4 x 2.6)	8.4 (4 x 2.1)
Secondary/Tertiary SAFF Vessels 2 @ 0.95m³)	SAFF Secondary/Tertiary processing	1.9 (2 x 0.95)	1.6 (2 x 0.8)
	TOTAL	19.375 m³	14.05m³

<p>12. Discharge of Treated Water.</p>	<p>a. Demonstrate that one sample of treated effluent taken from the feedline from the PAC plant is sufficient to demonstrate consistency in the PFOS concentration of treated stormwater such that up to nine tanks (230 – 265 m³ total tank capacity) of treated surface water can be discharged to the River Wenning on the basis of analyses of this one sample.</p>	<p>During the design of the proposed treatment system, a principal focus was to achieve consistent treatment performance. Consistent treatment performance would result in the discharge of effluent that is compliant with the proposed discharge parameters for PFOS (10 ng/l).</p> <p>To achieve consistent treatment performance, the consultant engaged for the design of the treatment system (Geosyntec) advised that the following aspects were included in the treatment design: -</p> <ul style="list-style-type: none"> (i) Consistent non-PFAS influent characteristics - the contained stormwater from the drainage system is captured rainwater from the Site. Contained stormwater characteristics in regard to dissolved organic carbon, pH, suspended solids etc remain consistent. (ii) Consistent PFAS influent characteristics - a pre-treatment tank farm installed prior to treatment provides storage capability but also assists the generation of a consistent concentration of PFAS in the influent to the treatment system; for example, for total PFOS we report a consistent tank farm influent range of between ~3-5 ug/l. (iii) Consistent Foam Fractionation cycling - the system is automated to provide a consistent treatment cycle to every batch of influent that is processed in the SAFF treatment system. The SAFF always operates as a 2.1 m³ batch, ensuring that the application of the SAFF process is consistent at all times.
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	<p>(iv) Consistent Powdered Activated Carbon (PAC) dosing - unlike Granular Activated Carbon (GAC) filtration where sorption rates decline over time, the PAC system is automated to provide a consistent weighted dose to every batch of the same volume of post treated foam fractionation water. In addition to a consistent dose of PAC, the amount of time and rate of agitation is also programmed to be consistent to provide the same contact time resulting in consistent PAC treatment.</p> <p>The proposed treatment system was designed on the basis of the above consistent influent characteristics and treatment philosophy. Optimisation tests were undertaken throughout the bench-scale and full-scale treatment design which, as expected, confirmed consistent post treatment effluent PFAS concentrations which were below the proposed discharge criterion.</p> <p>During the optimisation of the treatment system, sampling of each of the post-treatment tanks was undertaken. The sample results show that all nine tanks reported post treatment total PFOS concentrations below the low-level MRL of 6.5 ng/l (as discussed in the response to Question 1) and hence meet the proposed total PFOS discharge criterion of 10 ng/l.</p> <p>Review of EA Guidance 'Monitoring discharges to water: guidance on selecting a monitoring approach' showed that there is no specific limit to the volume of effluent that can be validated by a single sample.</p> <p>Therefore, on the basis that influent PFAS (~3-5 ug/l) and non-PFAS concentrations are consistent, the flow rate and batch size for each treatment stage is consistent and the level of treatment is consistent the use of one sample per 230 m³ – 265 m³ of treatment effluent is considered appropriate.</p> <p>Notwithstanding that the above approach is considered appropriate, due to the extreme limitations on space at the Site, continuous full-scale trials cannot be undertaken until permission is given to operate the treatment process to validate the proposed sampling approach. A short-term validation period is proposed to confirm that the above sampling approach is suitable, this approach is provided in response to EA Comment 12(b).</p> <p>Angus would also point out that where similar PFAS treatment technologies (particularly SAFF) have been deployed elsewhere in England, higher discharge flows have been permitted without the need for retention and validation prior to discharge; this appears to be indicative of the confidence the Environment Agency has in the SAFF treatment technology. The approach presented by Angus is therefore precautionary, providing additional layers of protection through the validation process.</p>
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	<p>b. If one sample from the feedline to the PAC Plant is insufficient to demonstrate consistency in PFOS concentration less than 10ng/l, propose alternative measures to ensure confidence in demonstrating PFOS less than 10ng/l in discharged effluent.</p>	<p>As outlined in response to Question 12(a), the sampling approach is considered appropriate for the discharge of treated stormwater at the Site. However, in order to provide additional assurance of the proposed sampling protocol, Angus will undertake additional validation sampling during the initial period of operation to verify the consistency of the discharge concentrations.</p> <p>It is proposed that for the first twelve weeks of operation, supplementary validation sampling will be undertaken. The validation sample will be a composite from each of the post treatment tanks during the fill stage.</p> <p>It is important to note that the proposed validation sample is for verification only, the treatment system will be operated as described in the Permit Variation Application and the treated effluent will be discharged following a compliant test result from the single sample taken from the sample point following the PAC treatment system.</p> <p>If over the 12-week validation period the total PFOS results meet the discharge criterion of 10 ng/l, verification sampling would cease as a sufficient dataset will have been provided to validate consistent treatment performance.</p> <p>Should the validation sampling show that the treatment performance does not meet the discharge criterion then an alternative sampling programme will be proposed, as agreed by the EA.</p>
<p>13. Discharge of Treated Water.</p>	<p>Demonstrate the controls on the tank filling and discharging systems to prevent new treated stormwater which is being input to a tank that has recently been emptied being discharged direct to the River Wenning without further testing (basically how does the operator ensure that the discharge route from an emptied tank does not remain open whilst the tank is</p>	<p>Post treatment discharge tanks are filled and discharged in a sequential manner. Once the identified sequence of post-treatment tanks (normally nine in total) is considered full (i.e. have met the fill levels reported by the sensor controls outlined in response to Question 10) it will then be in a position to be discharged, once the following process steps have been followed.</p> <p>This systems programming architecture allows only one tank to fill at a time. The system is then programmed only to discharge tanks sequentially that are considered full at the time the user gives consent.</p> <p>Discharge is only permissible by entering the Laboratory Test Report Reference, User ID, successful password entry and sample information (this is the reported concentrations for PFOS reported in ng/l). Once a discharge has started, any tanks that reach the full level after this point will not be discharged during this consent cycle.</p> <p>Valves are wholly PLC controlled and cannot be actuated manually. The only way to initiate a discharge process is via the PLC programme. The lab test reference is designed as a</p>

	<p>refilling with newly treated stormwater).</p>	<p>controlling gate review to ensure procedures have been applied. Removing the potential for human error.</p> <p>If a fault occurs on a tank (valves or sensors) the tank in question is then skipped from either the filling or discharge cycle and a fault is reported. The programme works using a logic pointer system for both filling and discharging, for example if the value is 1 then Tank B-10 (tank 1 in sequence) is filled so there can only be one tank filling at any given time.</p> <p>The same is true for discharge. The system also requires that the filling and discharge activity cannot apply to the same tank simultaneously. The tanks are only able to be available to be refilled once the full tank level has been reset and this is done by identifying the level that the tank stops draining. Once this condition is met, the discharge valve is automatically closed and the system will move to the next tank.</p> <p>Therefore, the system programming controls that are in place prevent the operator from discharging from an empty tank whilst it is being refilled with newly treated stormwater, the key controls are:</p> <ul style="list-style-type: none"> • Only one tank can be filled at one time; • A tank cannot be filled and discharged at the same time; and • The tanks are only able to be available to be refilled once the full tank level has been reset. This is done by identifying the level that the tank stops draining (i.e., reaches low level); and • During discharge a tank that is being filled that reaches the full level mark will not be part of that discharge as the tank achieved the full level after the consent was given to commence discharge.
<p>14. Discharge of Treated Water.</p>	<p>Demonstrate how AFL will ensure that water flow in the River Wenning remains sufficient to allow discharge of treated stormwaters in an on-going drought situation.</p>	<p>A H1 Sensitivity Assessment was undertaken to determine the impact of treated waters discharged to the River Wenning at extreme low flow scenarios.</p> <p>The Sensitivity Assessment was completed using the maximum compound concentrations shown in Table 10-1 of the Permit Variation Application Report and Q97.5, Q99.5, Min Flow (recorded on 22 May 2025) and Q99.95 flows of the River Wenning. The flow rates were determined using flow data provided from monitoring station 72009, Wenning at Wennington¹.</p> <p>The H1 Sensitivity Assessment concluded that the process contributions for all compounds are below 4% of Environmental Quality Standard (EQS) for all flow scenarios of the River Wenning in Test 2.</p>

¹ <https://nfa.ceh.ac.uk/data/station/meanflow/72009>

Substances that have a process contribution of <4% are below the EQS insignificance threshold. That is, the impact of the discharge of these compounds to environmental receptors is insignificant even at extreme worst case flow scenarios.

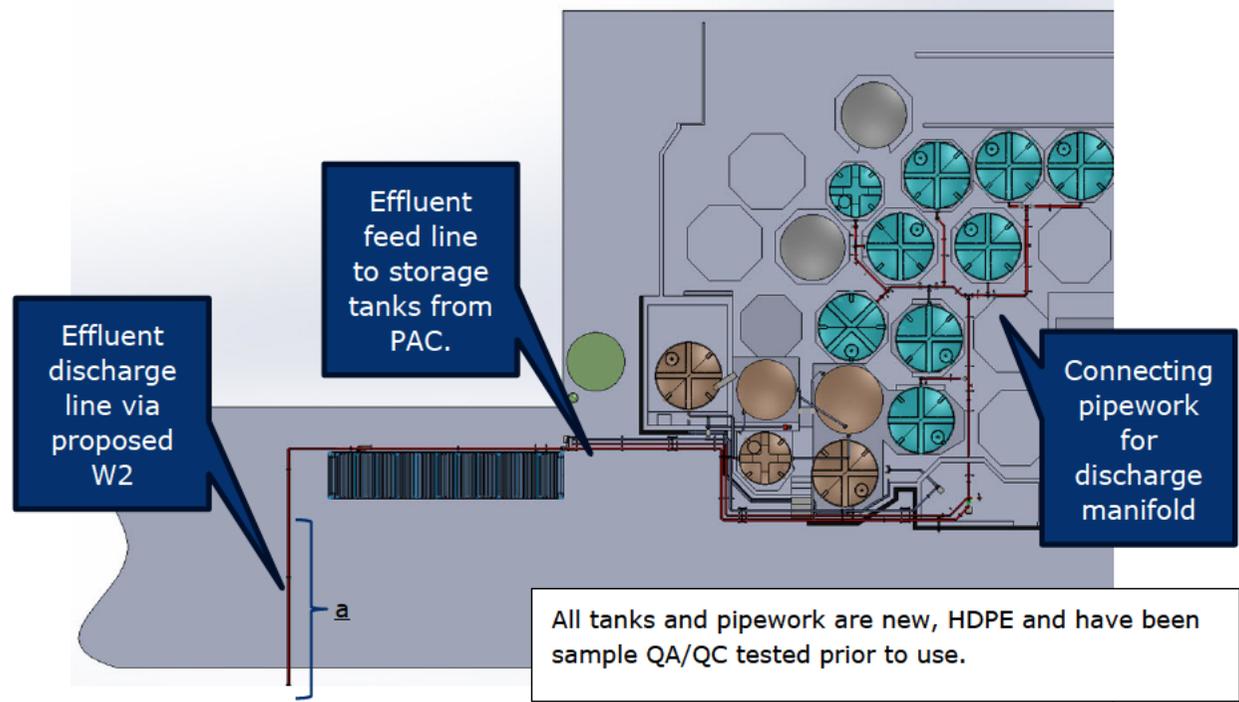
Based on the Sensitivity Assessment completed, the monitoring parameters described in the Permit Variation Application Report are considered appropriate for extreme low flow scenarios.

The H1 Assessments and Sensitivity Analysis is provided in an Attachment 5 to this Letter.

15. Discharge of Treated Water.

a. Confirm the location of the discharge pipework from the treatment plant to the location of the treated effluent discharge from site.

The location and route of the discharge pipework is shown in the diagram below:

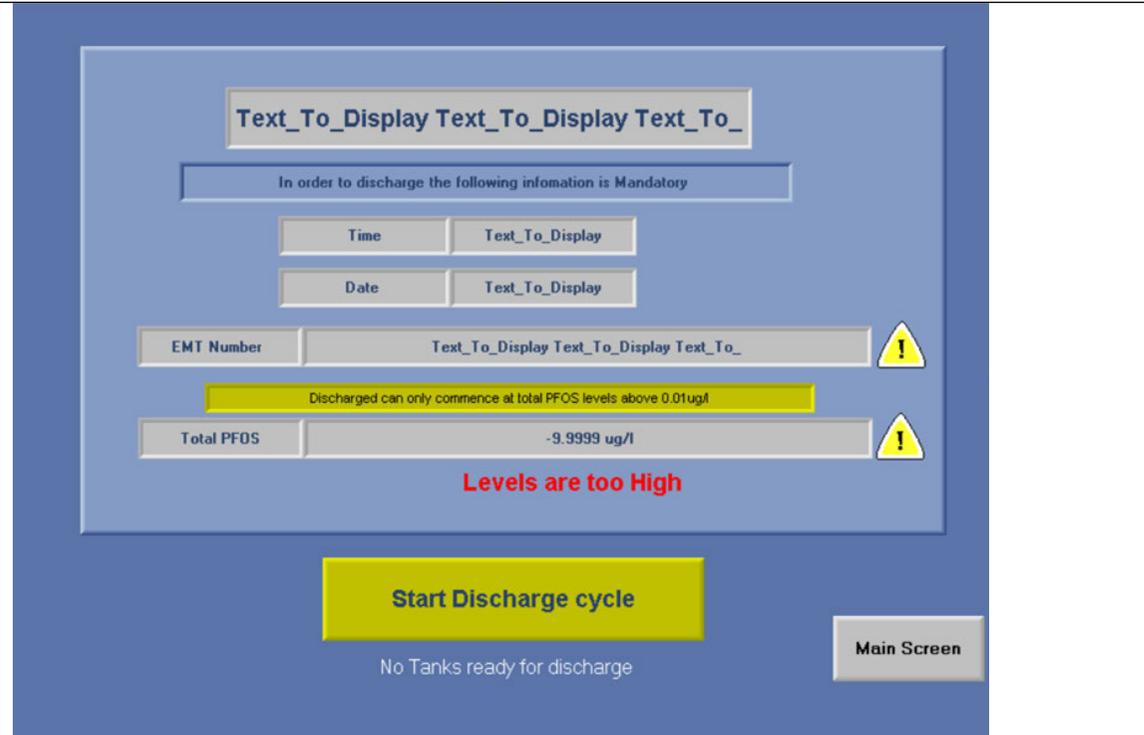


	<p>b. For any sub-surface pipework on this route, demonstrate how the pipework will be inspected and maintained and how any leaks occurring below the surface are identified.</p>	<p>Initially, the effluent will be transferred above ground level. However, to support all potential on-site traffic requirements, the section highlighted 'a' in the above diagram will be amended to sit at ground level to facilitate vehicular traffic.</p> <p>The pipework that is to be set at ground level will be set within an access gulley with a removal grid cover for inspection purposes, of the type shown below. Provision will be included to capture any stormwater that could fall into this gulley.</p> <p>The discharge route is located within the tertiary containment area so any blockages/spills will be captured within the tertiary containment infrastructure.</p> <p>For clarity, an example of the gulley that is proposed is shown in the Figure below.</p> 
<p>16. Discharge of Treated Water.</p>	<p>Demonstrate the PLC system that is used to ensure that treated stormwater can only be discharged by certain site operatives and only after input of laboratory analyses results and laboratory codes (including how unauthorised persons cannot access the PLC system to discharge and how repeat</p>	<p>The PLC discharge system has a user access password. These passwords are set by the administrator. The administrator account is also separately password protected.</p> <p>Users must first log in by touching their name and entering their individual passwords. (Text_to_Display boxes are where user information is displayed).</p>

laboratory codes cannot be input again to trigger release of treated stormwater).



Upon successful entry of credentials, the following screen is displayed.



*Note that this is not from the actual display screen and is for indicative purposes only

Until all fields have been populated the "start discharge cycle" button is disabled therefore cannot be pressed/activated.

Date and time are populated by the PLC. The EMT number (unique reference number from the lab report) must be entered and the total PFOS entry must be entered under the set limits. The PLC will not accept a value equal to or greater than 0.01ug/l to be entered.

If all the above criteria have been met the start discharge button will change colour and allow the user to proceed.

Once started the 'start discharge' button will go green to signify a discharge cycle has been started, the user is then transferred to the main screen logging them out automatically.

		<p>Only four operatives have been issued accounts to facilitate discharge, with individual access accounts and passcodes.</p> <p>These passcodes will be routinely amended as defined by the system management system.</p> <p>Initiation of the discharge process is limited to authorised personnel, and is subject to the site's management systems, procedures and auditing protocol, providing a high level of control to minimise the potential for entry errors. For example, the overall control of issuing received lab reports for batch approval and their subsequent entry into the system is managed centrally for verification and storage to avoid accidental reuse. Angus is also investigating an amendment to the discharge control PLC to prevent a batch being discharged on a duplicate laboratory reference number that has been previously inputted to facilitate a discharge cycle.</p>
<p>17. Discharge of Treated Water.</p>	<p>Confirm the operational system to prevent carry over of carbon from the PAC treatment vessel into the post-treatment stormwater storage tanks and hence from there to the River Wenning.</p>	<p>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 floccs. There is a further settlement that takes place during the sludge removal process that is carried out after the settlement timer.</p> <p>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 will be installed in the pipework below the PAC discharge in order to ensure that no quantity of PAC will enter the discharge tanks.</p>
<p>18. Disposal of Treated Waters that Exceed 10ng/l PFOS Levels.</p>	<p>a. Outline the system for storage and disposal/treatment off-site of stormwaters which, after treatment on-site continue to exhibit PFOS levels greater than 10ng/l. This must include location and duration of storage of stormwaters exceeding the PFOS</p>	<p>It is noted that in the Permit Variation Application it was outlined that treated effluent that did not meet the discharge criterion would be temporarily stored prior to undergoing further treatment or be transferred off-site for disposal.</p> <p>Following further correspondence with the contractor providing the treatment system technology (Cornelson) a new remediation approach was developed. The proposed remediation approach is described in response to EA Comment 18(b) below.</p> <p>The proposed remediation approach does not require separate storage for disposal/treatment of treated stormwater that does not meet the discharge criterion.</p>

	<p>limit for discharge to the River Wenning.</p>	
	<p>b. Should analytical testing indicate that treated stormwater in the nine storage tanks has exhibited PFOS levels greater than 10ng/l, demonstrate how these storage tanks will be cleaned and decontaminated before any further treated stormwater is directed to these tanks.</p>	<p>As outlined in responses to earlier EA Comments, the consistency of influent, SAFF and PAC treatment processes as well as the effectiveness of achieving concentrations below the proposed discharge levels encountered through commissioning, it is not anticipated to experience exceedances of the discharge criterion for PFOS.</p> <p>Should PFOS levels be in excess of 10 ng/l, the following approach would be adopted. This approach would be optimised, refined and scrutinised in the event of such a situation arising and a cleaning and decontamination activity being carried out.</p> <p>Approach</p> <ol style="list-style-type: none"> 1. Utilising the outlet flanges designed into the discharge tank feed and discharge pipework, a low shear pump would be used to enable the affected tank contents to be circulated. 2. Based on the PFAS concentrations tested within the affected tank, the dosing additive PerfluorAd™ (flocculant) would be added. 3. This dosed tank would be circulated via the low shear pump (to ensure that the flocculation is not negatively affected by mechanical pump aspects) for a defined period of 5 hours. 4. Once cycled, an in-line bag filter with a mesh of 1 micron would be integrated into the pumping pipework and the pump triggered to circulate the tank for a period of no less than two volumes in order to capture these flocculated particles. 5. The tank contents would then be sampled via an independent lab to confirm that the necessary level of <10 ng/l PFOS have been achieved. 6. This process will be repeated for each contaminated discharge tank. 7. Once confirmed, the discharge cycle could re-commence. <p>It is anticipated that due to the natural properties of high density polyethylene (HDPE) to not adsorb PFAS compounds, that a satisfactory lab result would also consider that the tank has been effectively decontaminated. However, a conservative approach will be employed 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</p>

		<p>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.</p>
<p>19. Waste Generation.</p>	<p>Define the maximum quantities of PAC and SAFF waste to be stored on site at any time and their maximum storage frequencies.</p>	<p>The maximum quantity of waste to be stored on-site at any time is outlined below:</p> <ul style="list-style-type: none"> • Nine (9) pallets of PAC sludge, each pallet holds 4 x 210 litre drums that contain 142.5 kg of PAC sludge. The maximum quantity of PAC sludge stored on-site will therefore be 5,130 kg. • Five IBCs of SAFF waste concentrate. The maximum volume of SAFF waste concentrate stored on-site will be 5 m³. <p>The waste will be collected by a licenced waste carrier when there is sufficient material to warrant a waste collection. However, due to the small volumes anticipated, this is likely only to be necessary every 48 weeks (in line with hazardous waste guidance, waste will not be stored on site for longer than 12 months).</p> <p>The maximum volume of waste that will be stored on-site will be during the clearance of the back-log of contained stormwater. Following this period, it is expected that the maximum volume of waste stored on-site at any one time will be reduced due to the rate of waste generation and frequency of collection.</p>
<p>20. Site Inspections</p>	<p>Confirm the contents, personal responsibilities and frequencies of site walkover inspections that are carried out by site management, shift personnel and security staff to ensure there are no adverse environmental incidents occurring on site both during and outside of normal working hours.</p>	<p>The Site Inspections and Monitoring Procedure and Security Guard Duties document have been developed for the Site.</p> <p>Inspections are carried out on key containment infrastructure by Site personnel at the following frequencies:</p> <p>Site Drains</p> <ul style="list-style-type: none"> • Inspected weekly by department’s EH&S representative, Team Leader or Supervisor. Site drains are inspected for leaks, defects and damage and the inspections are documented using existing site procedures. <p>Sump</p> <ul style="list-style-type: none"> • Inspected weekly by Team Leaders and operatives assigned to stormwater capture and containment. The sump is inspected for defects and damage and the inspections are documented using existing site procedures. <p>External Tanks and Bund Inspections</p>

		<ul style="list-style-type: none"> • Tank infrastructure is inspected daily by site personnel. visually inspected for functionality and defects. • Tank infrastructure is formally inspected monthly by Team Leaders and operatives assigned to stormwater capture and containment. • Bunds are routinely inspected every month and periodically inspected every six months by trained personnel. Bunds are inspected for leaks, defects and damage and the inspections are documented using existing site procedures. • A detailed inspection of the bunds will be carried out by a qualified contractor every five years. <p>Outside of normal operating hours security staff will conduct six (6) routine inspections of key containment infrastructure and storage areas for leaks.</p> <p>The on-site procedures are considered sufficient to ensure there are no adverse risks to the environment from incidents occurring on-site.</p>
21. Noise	Demonstrate that noise from operation of the SAFF plant, PAC plant and any associated activities, such as traffic movements transporting IBCs, will not cause any adverse impact at local receptors particularly during nighttime operation.	<p>A high-level Noise Assessment 'Angus Fire - Noise Assessment Technical Note Final' is provided in Attachment 6 to this response.</p> <p>The Noise Assessment concluded that the operation of the SAFF and PAC treatment equipment is likely to be equal to or lower than existing noise levels and is not expected to result in an adverse impact.</p>
22. BAT Assessment	Review and update the BAT Assessment to include assessment of the SAFF/PAC technology against existing proven technologies for PFAS removal from water such as ion exchange	<p>A comprehensive BAT Assessment [REF] is provided in Attachment 7 to this response.</p> <p>The assessment considers a wider range of treatment technologies and demonstrates that the application of SAFF and PAC is appropriate for the proposed composition and flow rate of the contained stormwater.</p>

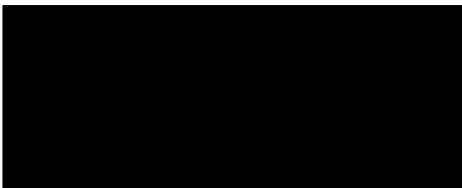
	<p>or high-pressure membranes (for example, reverse osmosis and nanofiltration) and new and emerging technologies such as electromagnetic oxidation.</p>	
<p>23. Composition of Treated Effluent.</p>	<p>Provide further analyses of the composition of liquid effluent to be discharged to the River Wenning (up to 12 individual samples) and update and resubmit the H1 risk assessment based on these analyses.</p>	<p>Further analyses have been undertaken on the composition of the effluent to be discharged into the River Wenning. Nine (9) individual samples were taken. A summary of the analytical results and the H1 Test that each compound screens out is provided in Attachment 5.</p> <p>Following the provision of the analytical results, the H1 Assessments were updated to include the maximum concentrations that were identified across the samples as this provides the most conservative assessment of potential impact to environmental receptors from the discharge of treated effluent.</p> <p>The H1 assessment concluded that the discharge to the River Wenning would not result in a significant impact even at extreme worst case flow scenarios.</p> <p>The H1 assessment consists of a number of tests that are used to screen out significant impacts. Test 1 for releases to freshwaters states that if the concentration of the chemical is less than 10% of the corresponding Environmental Quality Standard (EQS) then it can be screened out as insignificant. All potential pollutants considered were screened out at this stage, with the exception of PFOS, zinc and mercury.</p> <p>PFOS, zinc and mercury all screen out as being insignificant at Test 2 which requires that the process contribution is less than 4% of the corresponding EQS. Again, the data used was the maximum concentration in the discharge and extreme low flow rate in the receiving water course providing the most conservative assessment possible.</p>
<p>Additional Comments Provided in Email of 15 August 2025</p>		
<p>1.</p>	<p>What are the reasons why United Utilities would expect to have to treat further</p>	<p>Discussions with United Utilities have confirmed that, from their perspective:</p> <ul style="list-style-type: none"> • Their Wastewater Treatment facilities do not provide a means of satisfactorily disposing of PFAS containing wastes. These materials are not destroyed by the conventional physical, chemical or biological processes employed;

	<p>stormwater sent by sewer from Angus Fire even if it had already been treated to <10ng/l PFOS at Angus Fire before discharge to sewer? Can Angus Fire Limited provide any responses or comments from United Utilities indicating their reasoning for not accepting stormwater contaminated with PFAS species at their waste water treatment plant – even if that stormwater has been treated to <10ng/l PFOS at Angus Fire before discharge to sewer?</p>	<ul style="list-style-type: none"> • They take a precautionary approach to regulating such materials and require that all organo-halogen compounds be eliminated from trade effluents prior to their discharge to public sewerage systems; and • the Environment Act 2021 places a statutory obligation on sewerage undertakers in England to achieve a progressive reduction in the environmental impact of discharges from storm overflows and reduce the volume of surface water connected to the public sewerage system. This includes demonstrating a reduction in surface water connections to combined sewer systems. The process described involves the collection and treatment of rainwater, rather than an active trade effluent process. Therefore, United Utilities will not permit the discharge of surface water into the foul sewer system where alternative disposal methods are available.
<p>2.</p>	<p>How does Angus Fire demonstrate that stormwater runoff discharged to the River Wenning through points SP2 and SP5 on the water quality consent is not contaminated by PFAS species requiring its assessment by the H1 tool alongside the discharge to the River Wenning from the</p>	<p>SP2 and SP5 are regulated separately under discharge consent 017290164; the flows associated with these discharge points are not associated with the current Installation Permit area and do not contribute to the flows through the proposed effluent treatment plant. On this basis, they do not form a direct part of this Permit Variation and it is therefore not appropriate to consider them in relation to the application. However, the following should be considered in relation to SP2 and SP5:</p> <p>SP2 consists predominantly of throughflow from the Bentham Town area, with additional input from areas of the Angus Fire site not previously involved with firefighting foam production and testing.</p> <p>SP5 consists of mains water used for pressure testing of hoses, and is not in contact with areas of the site previously involved with firefighting foam production and testing.</p>

	PFAS effluent treatment plant?	
3.	What is the percentage reduction of the total PFAS family of chemicals that Angus Fire expects the SAFF/PAC effluent treatment plant to deliver? Will there be a total PFAS reduction rate used by Angus Fire to demonstrate the treatment is effective and, if so, what is that rate? Will Angus Fire introduce any actions to be taken if the overall PFAS reduction rate is not achieved – even if the concentration of PFOS in treated stormwater to be discharged is <10ng/l?	<p>The Treatment train approach using the proven best available technologies of SAFF and PAC at Angus Fire’s Bentham site have been selected and commissioned on the basis of its ability to provide maximum effective reduction of all PFAS compounds encountered on the site.</p> <p>Whilst the current regulated PFAS compound is PFOS, the proposed discharge concentrations targeted by Angus Fire has always been defined as:</p> <p><10ng/l PFOS and a greater than 90% reduction of all other encountered PFAS compounds.</p> <p>To date through testing of commissioning samples, after an extensive phase of optimising system performance, the Treatment Train has delivered PFOS removal to levels to below 6.5 ng/l. However, the project focus has been on optimising the removal of all exhibited PFAS compounds and in this regard has consistently achieved removal rates in excess of 99% during the commissioning phase.</p>
4.	Confirm the sources of information on background PFOS concentrations that Angus Fire checked when attempting to locate a background PFOS concentration that could be used in the H1 assessment.	<p>The H1 assessment referenced the use of 50% of the EQS as a background concentration in the absence of publicly available background data in the vicinity of the site. This was stated so as to provide a basis for assessment in the event that the H1 assessment progressed to Tests 3 and 4.</p> <p>All determinands assessed through the H1 assessment are screened out through Tests 1 and 2, even at very low flows (Q99.5%), and as a consequence the background concentrations are not relevant for the purposes of impact assessment, and specific sources of information on background concentrations are not required.</p>

We trust that the above information is sufficient to close out the information requested in the EA's Schedule 5 Notice of 7th August 2025, allowing you to progress with the determination of the variation of the Permit.

Yours sincerely,



Compliance, Strategy & Transactions UK & Ireland

