

AGC Chemicals Europe, Ltd.
Update to Environment Agency
4th January 2023

1. Introduce [REDACTED])
 2. Update on Thermal Oxidiser
 3. Improvements to our effluent treatment system.
 4. Improved abatement for ETFE emissions to air.
 5. Updates on Part A in December
 6. Update from [REDACTED]
 - EA PFAS Working Group
 - EA Resources (new team member)
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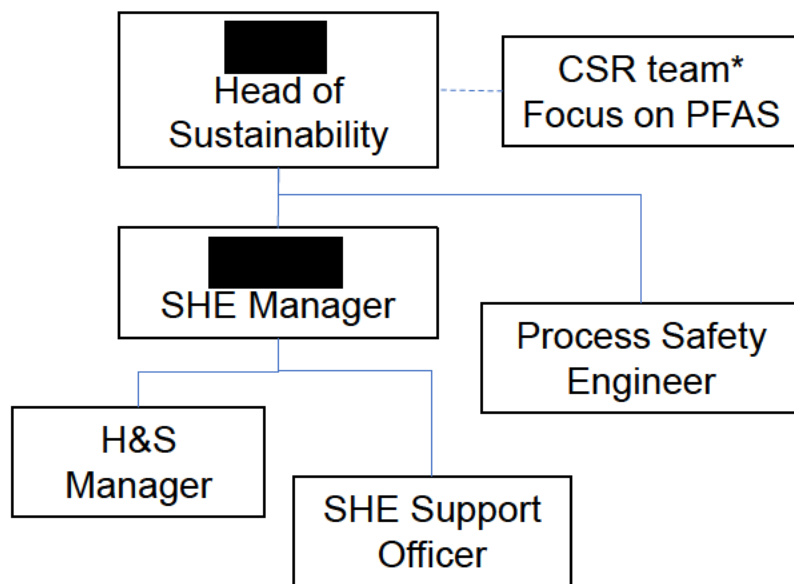
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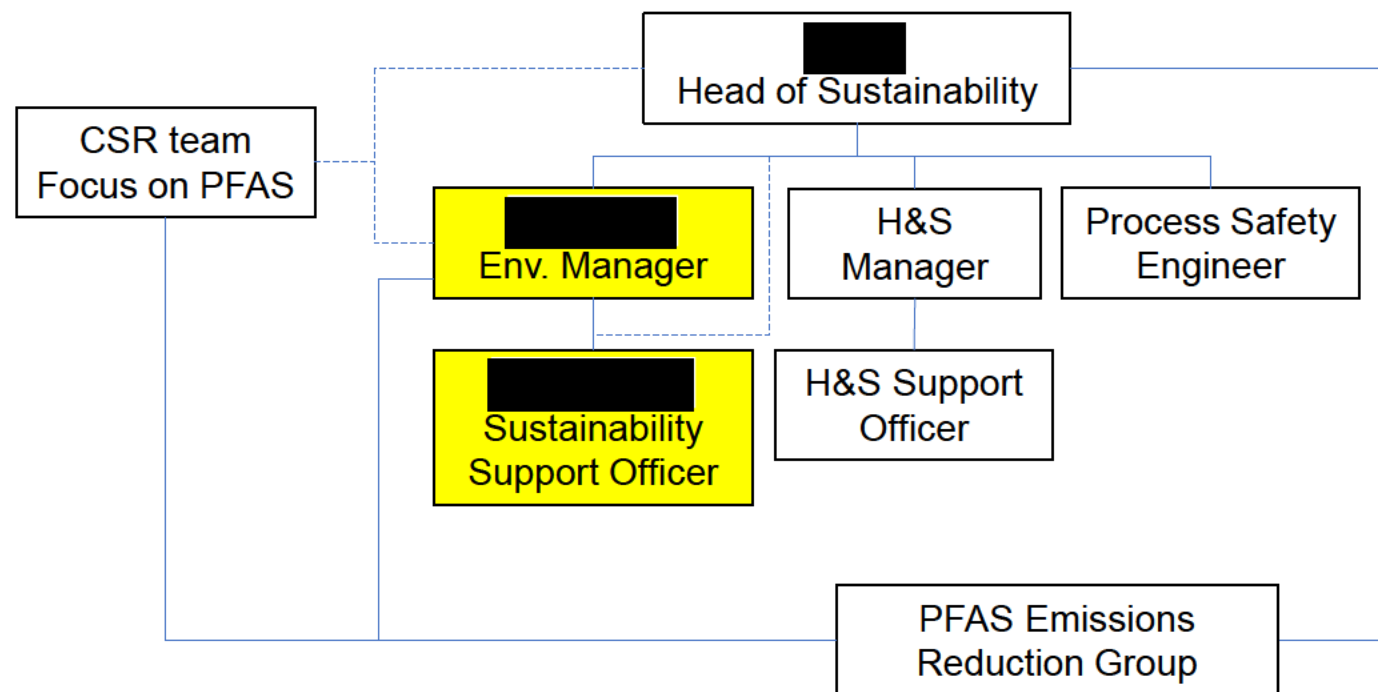
Changes Within AGCCE Team

- When [REDACTED] left the business we reviewed what would be needed to support ongoing operations and future challenges, and have slightly restructured the team.

2021 Structure



2022 Structure



Background and Key Qualifications

- Joined AGCCE October 2022.
 - Previously working in construction industry on major infrastructure projects.
 - [REDACTED]
 - [REDACTED]
 - [REDACTED]
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2. Update on Thermal Oxidiser

TO Recommissioning Timeline

- July 2022 – Full CEMS system service
 - August 2022 – Functional linearity testing completed and passed.
 - Gas burner reliability issues – no waste stream introduction
 - September 2022 - AGCCE plant shutdown (3.5 weeks) – no waste streams available.
 - October 2022 - Holidays for key commissioning personnel
 - lack of availability of test team for AST
 - no waste streams introduced
 - November 2022 – CEMS software service
 - Minor instrument faults on waste streams identified and repaired.
 - Routine QUAL 3 prior to re-introduction of waste identified fault.
 - December 2022 – CEMS failure identified as CPU failures on main CEMS unit
 - Order placed for parts, lead time for replacement CPU defined as 4 to 6 weeks,
 - no waste streams introduced
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TO Recommissioning Timeline

- w/c 2nd January – final checks prior to re-introduction of gas to warm up.
 - w/c 9th January – warm up and achieve operating temperature on natural gas.
 - Sick Engineer to attend site with spares.
 - Spares fitted by Sick
 - Sick complete Qual 3 to demonstrate system functioning.
 - w/c 16th January – re-introduction of waste streams
 - completion of AST (contractor provisionally booked already)
 - 30th January – TO Commissioning complete
 - 31st May – Submission of report for IC1
 - Submission for report for IC4
 - Initial Calibration Report for IC3
 - TBC during 2023 – Repeat of QUAL 2 (5 years since initial QUAL 2)
 - Final report for IC3 (within 18 months of commissioning)
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3. Improvements to our effluent treatment system.

- AGCCE as part of continuous improvement have reviewed emissions to effluent and identified key areas to investigate if further emissions abatement is possible;
 - EEA-NH4 (SAA-1000 from current process, hereafter referred to as SAA-1000 within this presentation consistent with operating Permit EPR/BU5453IY)
 - PFOA (from historical use)
 - Suspended Solids
 - Flow

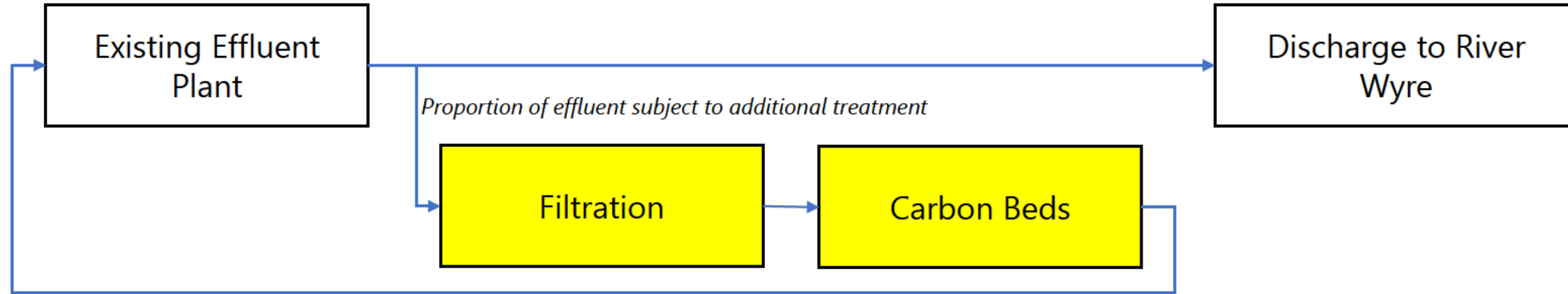
There is potential to be able to achieve reductions in these parameters using a combination of filtration for solids and carbon beds for SAA-1000 and PFOA.

The reductions in these parameters may enable increased grey water recycling on site at AGCCE.

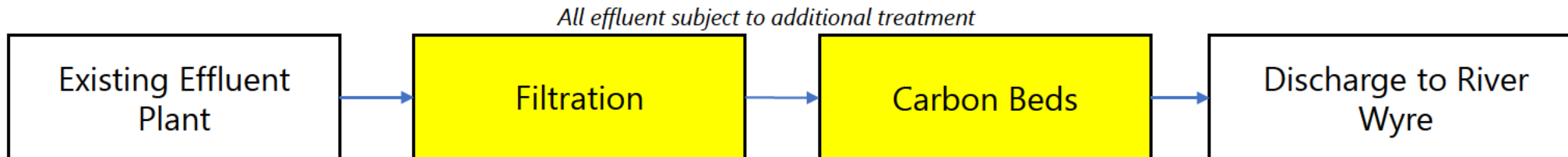
An effluent treatment project has been launched and we are now planning to move to small scale trials on plant, to determine effectiveness and scalability from current laboratory scale experiments and experience at AGC Japan.

Effluent Treatment Improvements Proposal

Trials – Jan / Feb 2022



Full Scale – Q3 2024



Examples of Questions to be Answered During Trial Phase

- What level of Suspended Solids reduction is practical?
 - What is lifespan of activated carbon and filters?
 - How much waste is generated from the additional process?
 - Can the activated carbon be economically regenerated whilst ensuring full destruction of captured SAA-1000 / PFOA?
 - How effective are the carbon beds at this scale compared to lab scale tests in removal of SAA-1000 and PFOA?
 - How large would the full scale plant be? What are the CAPEX and OPEX costs?
 - How much is the effluent quality improved and are there other opportunities for grey water recycling?
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Effluent Treatment Improvements Proposal

Questions for the Environment Agency

- Do we need any authorisation in writing from the EA for the improvement for the trials?
- For the full scale plant AGCCE understanding is the full could be covered by agreement in writing from the EA as per clause 2.3.1 of the permit as it would be an update to the existing operating techniques. Is this correct?

The existing effluent treatment plant is listed in the permit as:

A4	Section 5.3 Part A(1)(a)(ii) Disposal or recovery of hazardous waste with a capacity exceeding 10 tonnes per day involving physico-chemical treatment	Waste acid neutralisation (WAN)	From receipt of effluent in WAN plant to transfer to the West Effluent Pit (WEP)
A5	Section 5.4 Part A(1)(a)(ii) Disposal of non-hazardous waste with a capacity exceeding 50 tonnes per day involving physico-chemical treatment	Solids removal and pH adjustment	From receipt of effluent from the WEP and thermal treatment plant to discharge from the final effluent pit; and collection of filter cake for off-site disposal

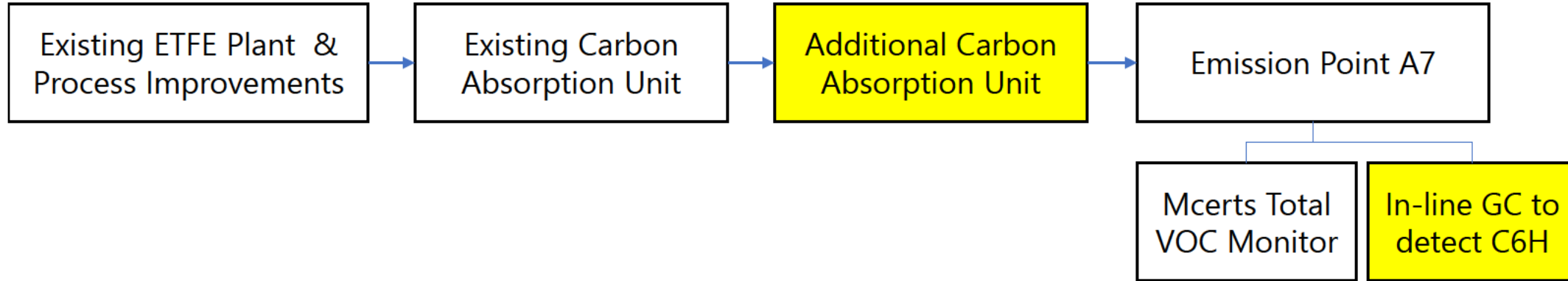
4. Improved abatement for ETFE emissions to air.

- AGCCE as part of continuous improvement have reviewed emissions to air and identified key areas to investigate if further emissions abatement is possible;
 - AC-2000 from ETFE plant (hereafter referred to as C6H within this presentation)

There are a number of sources of these emissions and actions to improve understanding and reduce emissions includes:

- General process improvements to reduce losses.
 - Changes to general process and operating practices to increase the volume of C6H directed to capture systems.
 - Installation of a secondary carbon adsorption unit (Solvent Recovery)
 - Installation of non-MCerts secondary emission monitoring from the carbon adsorption unit to detected speciated C6H to complement current primary MCerts approved Total Carbon emissions monitor.
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ETFE Emissions to Air Improvements



Questions for the Environment Agency

- Do we need any authorisation in writing from the EA for the improvement?
- AGCCE understanding as this is simply an “extension” of existing abatement equipment this could be covered by agreement in writing from the EA as per clause 2.3.1 of the permit as it would be an update to the existing operating techniques. Is this correct?

5. Updates on Part A From December

Part A - Low Boiler Stack R22 & R125 Breach

21st December – Low Boiler Stack R22 & R125 Breach

Initial Indications of cause

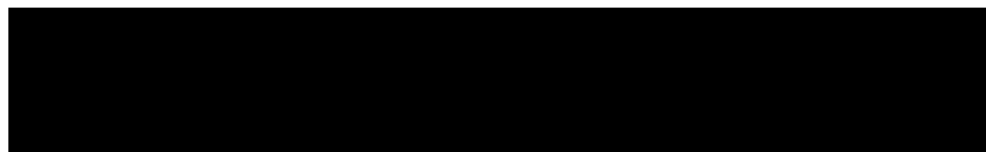
- The extreme cold weather had impacted steam flow, the affect was compounded by other operational variables that led to insufficient separation of components within the distillation column and abnormal process conditions. This impacted emissions to atmosphere.
 - When diagnosed the issue was corrected and normal operating conditions established preventing further abnormal emissions.
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23rd December – Waste Acid Stack R22 Breach

Initial Indications of cause

- Failed level instrument of waste acid storage tanks has led to temporary operation has slightly increased mass emission of R22 to the Waste Acid Stack.
 - Temperature instrumentation on the main process flow has become unreliable and the control system requires additional intervention by the operator in certain circumstances to prevent excess R22 being discharged to the Waste Acid tanks.
 - A combination of these two factors led to an event based increase in R22 emissions on w/c 19th December.
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6. Updates From



- PFAS Working group
 - EA PFAS Working Group
 - EA Resources (new team member)
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Any other questions / comments?
