APPLICATION FOR AN ENVIRONMENTAL PERMIT VARIATION UNDER THE ENVIRONMENTAL PERMITTING (ENGLAND AND WALES) REGULATIONS 2016 (AS AMENDED)

ADDENDUM TO PERMIT VARIATION APPLICATION PAN-028843

BIOTAGE GB LIMITED,
DYFFRYN BUSINESS PARK, YSTRAD MYNACH,
HENGOED, CF82 7TS

ECL Ref: BIOT.01.03/AD
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ACRONYMS/TERMS USED IN THIS REPORT

Biotage	**Biotage GB Limited**
ECL	**Environmental Compliance Limited**
EP	**Environmental Permit**
HBr	**Hydrogen Bromide**
HCl	**Hydrogen Chloride**
NO_X	**Oxides of Nitrogen**
NRW	**Natural Resources Wales**
The Installation	**Area contained within the Environmental Permit boundary at Biotage GB Limited**
VOC	**Volatile Organic Compounds**

1. Addendum

1.1. Context

1.1.1. This Variation Application Addendum to be read in conjunction with the associated supporting documentation submitted as part of PAN-028843 to Natural Resources Wales ("NRW") has been prepared on behalf of Biotage GB Limited ("Biotage") by Environmental Compliance Limited ("ECL") and relates to Environmental Permit ("EP") reference number DP3832EF, for their site located at Dyffryn Business Park, Ystrad Mynach, Hengoed, CF82 7TS ("the Installation").

1.1.2. Since the issue of Biotage's permit in 2014, due to profile of the emissions, the operator has struggled to meet the emission limits imposed by the Environmental Permit. The process that is carried out at the Installation is a batch process with the emissions peak occurring at the beginning of the batch reaction.

1.1.3. Discussions occurred August 2015 with the site regulatory officer and taking into account the nature of the operation, the site regulatory officer suggested a move from a concentration-based emission limit to a mass emission limit with the aim to encapsulate the peaks and troughs in the emission profile. The duration of the monitoring period was defined as the duration of the batch reaction to capture the average over the whole batch period. This is due to the emissions profile of the reaction having high spikes and tailing off. The duration of the batch reaction has been defined by the operator to NRW as 3-8 days depending on the products being produced. The peak of the emissions profile across all reactions is understood to be at the beginning of the reaction.

1.1.4. To carry out an annual monitoring exercise for 3-8 days would result in unreasonable costs and poses logistical challenges. For the four activities carried out at the Installation this would result in a month-long monitoring exercise on an annual basis. Given the batch nature of the activities at the installation it is considered that this is disproportionate regulation compared to the scale of the operation. The annual operational hours at the Installation are 1,950 which represents 22% operational time throughout the year.

1.1.5. To confirm the emissions profile at the installation a 36 hour and 48 hour monitoring exercise was carried out in October and November 2025, at great financial expense to the operator. This data set, summarised in Table 1, showed compliance with the mass emission limit over the extended period and includes the bulk of the emissions based on the understanding of the chemical reaction.

Table 1: Comparision of Measured Emissions with ELVs

Emission Point	Activity Reference	Parameter	Emission Limit Value	Measured Emissions 2025	Percentage of ELV/ %
A1	AR2 – Chlorosilation	HCl	15.12 g/hr	13.39g/hr (2)	88.56
		VOC – Methanol	4.0824kg/hr	0.0009kg/hr (2)	0.02
A2	AR4 – Sulphonation	HCl	49.068 g/hr	8.02 g/hr (2)	16.34
		VOC – Methanol	45.684 g/hr	2.02 g/hr (2)	4.42
A3	AR3 - Oxidation	NOx	48.84 g/hr	14.47 g/hr (3)	29.63
		VOC – Methanol	355.68 g/hr	7.7185 g/hr (3)	2.17
A4(1)	AR1 - Bromination	HBr	0.6264 g/hr	0.11614g/hr (3)	18.54

Notes to Table 1
(1) A4 is the sum of the new emission point configuration A4, A4a, A4b, A4c
(2) Monitoring period of 48 hours
(3) Monitoring period of 36 hours

1.1.6. It should be noted that this 36 hour and 48 hour period represented less than 50% of the duration of the batch reaction (see paragraph 1.1.3). The profile for each reaction indicates the remaining period of the batch reaction, if monitored would likely produce results below the limit of detection further reducing the mass emission over the duration of the batch reaction.

1.1.7. Furthermore, an Air Dispersion Modelling study (document reference BIOT.01.03/ADM) has been carried out using the data available from the extended monitoring period. The study concluded that emissions arising from Biotage's operations will not have a detrimental impact on local air quality, human health or on the surrounding designated ecological sites.

1.1.8. To propose an emission monitoring reference period that is less than the duration of the batch reaction would result in more appropriate emission test periods, however this would require a high ELV due to the peaks at the beginning of the reaction. However, if monitoring was undertaken during the middle of the batch reaction time, this would likely result in emissions monitoring results at the limit of detection, and if monitoring was undertaken at the end of the reaction it is possible emissions would be below the limit of detection. In summary, emissions monitoring that is of a short duration therefore provides no real value.

1.1.9. Given the aforementioned points, and due to the nature of the operation and to avoid disproportionate regulation, it is proposed that the emission limits to air be removed from Biotage's Environmental permit moving forward.