Veolia Garston Solvent Recovery Facility

Supplementary Information to inform HRA

Prepared for Veolia

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Unit 14 The Greenhouse Greencroft Industrial Park

Veolia Garston Solvent Recovery Facility

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1 Introduction

1.1 This document provides supplementary information to assist in the Habitats Regulations Assessment (HRA) of a development located at the Veolia Garston Solvent Recovery Facility (the 'Proposed Development'), King Street, Garston, Liverpool. It should be read in conjunction with the *Information to inform HRA* report prepared by Argus Ecology Ltd. on 19/04/2021.

1.2 An HRA was prepared by Merseyside Environmental Advisory Service (MEAS) on behalf of Liverpool City Council (the 'Competent Authority') on 08/07/2021. This assessment considered that the Proposed Development could have a likely significant effect on Mersey Estuary SPA and Ramsar Site through noise and visual disturbance, and through emissions to water. The Appropriate Assessment concluded that these would not have an effect on site integrity, subject to mitigation measures which should be incorporated into a Construction Environmental Management Plan (CEMP).

1.3 Natural England were consulted on the planning application, and submitted their response to the Competent Authority on 07/10/2021. They requested further information to support the conclusions of the HRA, relating to the following areas:

- **Air quality:** further justification for use of the 200µg/m^3 critical level for short-term NOx levels;
- **Noise and disturbance:** bird disturbance on mudflats arising from noise levels of 75dB from operation of the loading bays; and
- **Water quality:** further consultation with Environment Agency and confirmation that increased surface water discharge rates are acceptable to the EA and will not have a significant effect on the SPA.

1.4 Further information has been sourced from relevant specialists to address each of these issues, and are summarised below.

2 Air quality

Summary of issue

2.1 The Air Quality Assessment (AQA; Fichtner Consulting Engineers, 2021[1]) predicted a maximum process contribution (PC) to short-term oxides of nitrogen (NOx) levels at the Mersey Estuary SPA and Ramsar Site of 15.94%, in circumstances where modelled background levels exceed the lower critical load of 75µg/m^3. Note that for short-term (24-hour) impacts, a 10% screening threshold is applied.

2.2 The ecological interpretation of this prediction was set out in paragraphs 4.20-4.21 of the *Information to inform HRA*, which stated: *'The PEC for long-term (annual mean) levels remains safely below the critical level for protection of vegetation. The short-term (24 hour) PEC slightly exceeds the critical level of 75µg/m³, but scientific evidence and professional guidance indicates that this is not likely to result in any ecological effect. Although it is possible for short-term elevated NOx levels to cause damage to vegetation, the effects of such episodic pollution are exacerbated in circumstances where ozone (O_3) and sulphur dioxide (SO_2) levels are also elevated. It is in these circumstances that the 75µg/m^3 is most appropriate. IAQM (2020)[2] guidance (paragraph D4.9) suggests in UK where SO_2 levels are low that the 4-hour mean critical level of 200µg/m^3 can be applied to 24-hour mean values. Given that the PEC is well below the 4-hour mean critical levels, there is no risk of short-term NOx levels affecting vegetation which could be regarded as supporting habitat for Mersey Estuary SPA and Ramsar Site*.' This was accepted by MEAS, with a conclusion of no likely significant effect from emissions to air.

2.3 Natural England stated: *'We do not concur with this conclusion and advise that further information is required to justify the use of the 200ug/m3 threshold for this development. We advise that this justification should be considered in the appropriate assessment as the critical levels for the Mersey Estuary SPA/Ramsar/SSSI are exceeded at the screening stage.. The appropriate assessment should include local monitoring data, including evidence of the current SO2 levels, to demonstrate why the higher threshold can be applied, and to justify the conclusion that the project will have no adverse effects. Where the use of the 200ug/m3 threshold can be justified we advise that the relevant % PC is also provided within the documentation*.'

[1] Fichtner Consulting Engineers (2021). AQA - S2985-0030-0006SMN Air Quality Assessment
[2] Holman *et al* (2020). *A guide to the assessment of air quality impacts on designated nature conservation sites – version 1.1,* Institute of Air Quality Management, London

Further information

Background sulphur dioxide and ozone levels

2.4 Fichtner Consulting Engineers have undertaken further analysis of background monitoring data for baseline ozone and sulphur dioxide concentrations. The closest monitoring location is at Liverpool Speke (4 km east of the Garston Facility), which was included in the baseline analysis for the AQA. Sulphur dioxide is straightforward, as tabulated below:

Table 2.1: Sulphur Dioxide Monitoring from Liverpool Speke

Year	Annual Mean Concentration – Liverpool Speke Automatic Monitoring Site	
	µg/m³	**% of Critical Level (20 µg/m³)**
2016	1.99	10.0%
2017	2.11	10.5%
2018	2.02	10.1%
2019	1.68	8.4%
2020	1.90	9.5%
Source: © Crown 2021 copyright Defra via uk-air.defra.gov.uk, licenced under the Open Government Licence (OGL)		

2.5 Annual mean sulphur dioxide is no more than 10.5% of the Critical Level of 20 µg/m³. No short-term Critical Level has been set for sulphur dioxide.

2.6 For ozone, Fichtner consider that the most appropriate Critical Level is AOT40, i.e., the accumulated concentration above 40 parts per billion during daylight hours during the growing season (May to July). This relates to the European and UK standard, with the Critical Level being 3,000 ppb.h over the 3 month growing season for agricultural crops and herbaceous natural vegetation.

2.7 Fichtner looked at the concentrations at Speke and also at the two closest rural background sites, as ozone levels tend to be lower in urban areas as it reacts with urban pollutants, e.g. NO + O3 -> NO2 + O2. Monitoring results are set out overleaf:

Table 2.2: Ozone Monitoring – Accumulated Ozone Concentration Above 40 ppb (ppb.h) – May to July Daylight Hours

Site	Type	Ozone AOT40 (ppb.h)						
		2016	2017	2018	2019	2020	Averag	Max
Speke	Urban background	1,585	974	2,586	1,034	2,206	1,677	2,58
Glazebury	Rural background	1,587	822	3,420	988	1,006	1,565	3,42
Aston Hill	Rural background	3,903	1,800	5,672	1,251	3,071	3,139	5,67
Source: © Crown 2021 copyright Defra via uk-air.defra.gov.uk, licenced under the Open Government Licence (OGL)								

Table 2.3: Ozone Monitoring – Accumulated Ozone Concentration Above 40 ppb (% of Critical Level of 3,000 ppb.h) – May to July Daylight Hours

Site	Type	Ozone AOT40 (ppb.h)						
		2016	2017	2018	2019	2020	Averag	Max
Speke	Urban background	52.8%	32.5	86.2%	34.5	73.5%	55.9%	86.2%
Glazebury	Rural background	52.9%	27.4	114.0	32.9	33.5%	52.2%	114.0
Aston Hill	Rural background	130.1	60.0	189.1	41.7	102.4	104.6%	189.1
Source: © Crown 2021 copyright Defra via uk-air.defra.gov.uk, licenced under the Open Government Licence (OGL)								

2.8 At Speke the average over the last 5 years is only 55.9% of the Critical Level of 3,000 ppb.h and the maximum is 86.2% of the Critical Level. At Glazebury the average is well below the Critical Level, although an exceedance was recorded in 2018. At Aston Hill the Critical Level was exceeded in 3 of the last 5 years, and the average slightly exceeds the Critical Level – but this is for a much more rural location. The monitoring data from Speke is likely to be most representative of conditions near the Garston Facility. The data from Speke shows that the ozone concentrations are well below the relevant Critical Level in the vicinity of the Facility.

2.9 Thus both SO_2 and O_3 are below the respective critical loads in the vicinity of the Proposed Development, and it is legitimate to apply the 200µg/m^3 critical load for short-term (24 hour) NOx levels.

Inclusion of % Process Contribution in Documentation

2.10 This was included in Table 27 of Fichtner's AQA, one of the documents reviewed by Natural England; for convenience, the relevant extract is reproduced below:

Argus Ecology has advised that It is most relevant to consider oxides of nitrogen levels at the edge of the nearest saltmarsh habitat within the Mersey Estuary designated site, which is the only vegetated habitat within this part of the designated site which could be regarded as potentially sensitive to elevated concentrations. The modelling results at this point are presented in Table 27.

Table 27: Oxides of Nitrogen Concentrations at Nearest Saltmarsh Habitat – Distillate Fuel

Location	Annual mean (% of CL of 30 µg/m³)		Maximum Daily (% of CL of 75 µg/m³)		Maximum Daily (% of CL of 200 µg/m³)	
	Max PC	Max PEC	Max PC	Max PEC	Max PC	Max PEC
E1 340279, 383222	3.21%	71.93%	15.94%	104.60%	5.98%	39.23%

3 Noise and disturbance

Summary of issue

3.1 Natural England express concern about the assessment of noise impacts on birds in the HRA, stating: *'We note the HRA identifies the loading bays which are in close proximity to the mudflats which form part of the designated sites could have noise levels of up to 75dB. However the assessment concludes no likely significant effects as it is unlikely the mudflats support a high number of SPA birds*.'

3.2 Natural England do not accept that there would be no likely significant effect, in the absence of evidence for low numbers of birds using the adjacent mudflats, stating *'Natural England advise further information should be included in the HRA to support this conclusion. Evidence should be provided to demonstrate why they provide suboptimal foraging habitat for SPA birds, together with any additional bird data that show they are used in low numbers*.'

3.3 The source for this statement is the table at HRA paragraph 32, which identifies operational phase noise disturbance from loading bays, stating: '...*the loading bays which are c.20m from mudflats have no mitigation provided and would intermittently have noise levels of 75dB which could have a moderate to high level of impact*.'

3.4 The source for the figure quoted above is the Noise Assessment Report produced in July 2020 by Wardell Armstrong, and listed as one of the documents reviewed by Natural England. This refers to a predicted sound pressure level of 75.1dB(A) 1m from source (Table 1). This is not the predicted level experienced at the SPA.

3.5 It should be noted that the HRA does not completely rely on the assertion that the adjoining habitats are suboptimal; it also notes that the existing industrial nature of the site makes habituation likely, stating: *'The internal access route will remain at this location with the addition of the loading bays and this part of the site has been used for loading and vehicle movements for several years (Google Earth, accessed 03/09/2021*.)'

Further information

3.6 Wardell Armstrong have carried out a further analysis of noise levels which identify proximal areas of the SPA as a sensitive receptor[3]. Based on the currently intended layout of the Proposed Development, overall operational noise levels of 53.3dB(A) have been calculated at the boundary of the SPA. This includes a contribution of

[3] Wardell Armstrong letter to Veolia ref. RP/SCU/GM12101 /L001, 17/11/2021

49.1dB from the tank farm and 45.6dB from the loading bays, the two closest noise sources to the SPA boundary.

3.7 Reference to the *Waterbird Disturbance Mitigation Toolkit*[4] indicates that predicted noise levels are lower than the 55dB threshold identified as the upper boundary of a 'low level noise effect'. These are defined as follows: *'Low level noise is classed as that which is unlikely to cause response in birds using a fronting intertidal area. As such noises of less than 55dB at the bird are included in this category. These effects are likely to be masked by background inputs in all but the least disturbed areas and thus would not disturb the birds close by. Noise between 55-72dB in some highly disturbed areas e.g. industrial or urban areas and adjacent to roads, may feature a low level of disturbance provided the noise level was regular as birds will to often habituate to a constant noise level.'*

3.8 Predicted sound pressure levels cannot therefore be regarded as having a likely significant effect on birds using adjoining areas of the estuary. The fact that the area is currently a working site means that baseline levels will already be elevated and habituation is likely; this gives a greater degree of headroom, and consequent confidence in this prediction.

3.9 It should be noted that the HRA did identify construction phase noise and disturbance as a likely significant effect, and proposed that this is addressed in a Construction Environmental Management Plan (CEMP). It is understood that this will be a pre-commencement condition of development, and that a draft CEMP has currently been prepared on behalf of Veolia.

[4] Cutts, N, Hemingway, K., & Spencer, J. (2013). *Waterbird Disturbance Mitigation Toolkit*. Version 3.2. Institute of Estuarine and Coastal Studies, University of Hull.

4 Water environment

Summary of issue

4.1 The HRA noted the existing pollution containment measures in place at the currently operational facility, and concluded subject to the agreement of the Environment Agency that there would be no likely significant effect as a consequence of increasing discharge rates from 35 m³ to 100 m³ in a 7-day cycle. As noted in the *Information to inform HRA report* (paragraph 4.21) this comprises boiler blow down water, cooling water and small amounts of uncontaminated surface water.

4.2 Natural England required further confirmation of Environment Agency agreement, stating: '*Natural England advise that further information is required to demonstrate that the EA have been contacted and are satisfied with the details on discharges prior to adoption of the conclusions here. We advise you to contact the EA to get their guidance on this, and gauge whether the options outlined in this proposal are suitable to control the increased flow rate and ensure no pollution is discharged to the above designated sites*.'

Further information

4.3 Veolia have produced the following response to clarify the situation regarding the Environment Agency and the Environmental Permit (EP) application process.

4.4 Veolia has included within the revision to the permit a proposal to vary the surface water discharge rate. The permit will be varied to include an updated table for point source emissions to water, including the increased volume from W1.

4.5 An assessment of the environmental impact of the increased surface water discharge rate was included as part of the Environmental Permit (EP) variation application. The permit application includes a H1 assessment for the additional effluent flows to the Mersey via discharge point W1. This assessed an increase in discharge from 35m^3 to 100m^3 over a 7 day period. The assessment also looked at the effects at the maximum discharge rate of 27m^3 over 2 hours (a full batch discharge). All parameters were screened out under these circumstances, so no further modelling was required. There was predicted to be no change in the water chemistry. Consequently, there was predicted to be no environmental consequences of the increased discharge rate. Existing measures would continue to be followed to sample the effluent prior to discharge in order to prevent contaminated discharges.

4.6 With regard to surface water from rainfall runoff on the yard area (discharged from W3), we were proposing no additional changes.

4.7 This application was submitted in May 2021 (so the planning and permitting processes are parallel, as recommended by NE). That is also the standard approach which Veolia take on such applications as it is considered to be best practice.

4.8 As part of the planning application process, the EA confirmed that they had no objections to the proposals[5] and advised that as the site is regulated under an Environmental Permit issued by the EA, the proposed changes will be subject to permit variation. The assessment which accompanies the permit variation application has been undertaken in accordance with EA guidance and shows that the impact can be screened out. It is anticipated that detailed management measures will be included within the Permit, which will reflect the detailed controls already set out within the existing permit given the sensitive nature of the site. It is anticipated that the EA will engage with NE on the detailed control measures as part of site operations during the permit process.

[5] Environment Agency letter to Liverpool City Council ref. SO/2021/121463/01-L01, 09 September 2021