

Wren Kitchens

Barton Lorry Park

Response to Natural England – Air Quality

1 Introduction

Wren Kitchens has submitted a planning application (Ref: PA/2021/2257) for the development of a new lorry park (the Proposed Development) at land off Victory Way, Falkland Way, Barton upon Humber, in North Lincolnshire Council's (NLC's) administrative area.- Fichtner produced an Air Quality Assessment (AQA, ref: S3590-0300-0001HKL) which concluded that the proposals would not have a significant adverse effect on air quality.

Natural England (NE) has submitted a consultation response objecting to the Proposed Development. NE's consultation response advised that the objection is due to further information being required regarding air quality impacts on the Humber Estuary designated site, which is designated as a Special Protection Area (SPA), Ramsar Site and Site of Special Scientific Interest (SSSI). NE's requirements for further information are summarised below:

1. Although the impact of the Proposed Development on concentrations of oxides of nitrogen (NOx) at the Humber Estuary designated site can be screened out as 'insignificant', it is not appropriate to rule out in-combination effects. At a minimum, the Wren Factory Expansion (planning ref: PA/2019/1147) should be considered in-combination;
2. Confirm why nitrogen deposition was not considered in the AQA; and
3. Ammonia emissions from vehicles were excluded from the AQA and require consideration.

These objections have been considered in turn below.

2 In-combination Assessment

As detailed in the AQA, emissions from vehicles are considered relevant up to 200 m from the affected road. The traffic generated by the Wren Factory Expansion will travel along the A1077 and along Falkland Way up to the existing access to the Wren Factory. None of these roads lie within 200 m of the Humber Estuary designated site, so in-combination effects due to vehicle emissions from the Wren Factory Expansion are screened out as 'insignificant'.

The original planning application for the Wren Factory Expansion included a regenerative thermal oxidiser (RTO) to abate emissions of volatile organic compounds. The RTO would emit NOx which would be relevant to the in-combination assessment. A consented Section 73 application (planning ref: PA/2020/460) amended some aspects of the proposals, which resulted in a minimal change to the predicted impact of the RTO. A second consented Section 73 application (planning ref: PA/2020/1551) amended the proposed Wren Factory Expansion to exclude the RTO. Therefore, the Wren Factory Expansion as currently planned would not result in any emissions relevant to an assessment of in-combination effects of the Proposed Development.

Notwithstanding that the Wren Factory Expansion now excludes the RTO, the in-combination effect of emissions from the RTO as previously consented has been considered for completeness. An analysis of the dispersion modelling undertaken to support the AQA submitted with the Section 73 planning application PA/2020/460 shows that, at the section of the Humber Estuary that lies within 200 m of the Proposed Development, emissions from the RTO would contribute a maximum of 0.243 $\mu\text{g}/\text{m}^3$ of NO_x, which is 0.81% of the Critical Level of 30 $\mu\text{g}/\text{m}^3$.

The total in-combination effect is detailed in Table 1.

Table 1: In-Combination Impact

Proposed Development Impact		RTO Impact		Total In-Combination Impact		Baseline Concentration ¹		Total Concentration	
$\mu\text{g}/\text{m}^3$	% of CL	$\mu\text{g}/\text{m}^3$	% of CL	$\mu\text{g}/\text{m}^3$	% of CL	$\mu\text{g}/\text{m}^3$	% of CL	$\mu\text{g}/\text{m}^3$	% of CL
0.174	0.58%	0.243	0.81%	0.417	1.39%	17.32	57.7%	17.74	59.1%

The total in-combination impact exceeds the relevant 1% screening criterion and cannot be screened out as 'insignificant' based on the impact alone. The predicted environmental concentration (PEC) is 17.74 $\mu\text{g}/\text{m}^3$, which is 59.1% of the Critical Level. This is well below the 70% screening criterion specified in the relevant Environment Agency guidance² and therefore the emissions are screened out as 'insignificant'. In addition this demonstrates that there is no risk of exceedance of the NO_x Critical Level either alone or in-combination with other projects and the in-combination effect will be 'not significant'.

3 Nitrogen Deposition

The section of the Humber Estuary designated site that lies within 200 m of the affected roads and the development site itself is Unit 131 of the co-designated SSSI. A review of NE's Designated Sites website³ shows that the main habitat in Unit 131 is 'Standing Open Water and Canals'. A search of the APIS website shows that no nitrogen deposition Critical Load has been defined for this habitat site. Therefore, nitrogen deposition was excluded from the assessment.

4 Ammonia

NE has recommended that emissions of ammonia be considered using the Calculator for Road Emissions of Ammonia (CREAM) tool developed by Air Quality Consultants Ltd.

When preparing the AQA for the Proposed Development it was considered that detailed modelling was not required and the DMRB screening tool was used. To calculate the impact of ammonia emissions, the emission rate of NO_x from the DMRB screening tool has been compared with the predicted ammonia emission rate from the CREAM tool for the same traffic parameters and the contribution at the Humber Estuary has been factored accordingly. This calculation is shown in Table 2.

¹ Taken from the Air Pollution Information System website: <http://www.apis.ac.uk>

² <https://www.gov.uk/guidance/air-emissions-risk-assessment-for-your-environmental-permit>

³ <https://designatedsites.naturalengland.org.uk/>

Table 2: Calculation of Ammonia Impact

Pollutant	Critical Level ($\mu\text{g}/\text{m}^3$)	Emission rate ($\text{g}/\text{km}/\text{s}$)	Predicted Impact	
			$\mu\text{g}/\text{m}^3$	% of Critical Level
NOx (from DMRB tool)	30	0.0193	0.17	0.58%
Ammonia (from CREAM tool)	3 ⁽¹⁾	0.00034	0.0031	0.10%
<p><i>Note:</i> ⁽¹⁾The APIS website confirms that an ammonia Critical Level of $3 \mu\text{g}/\text{m}^3$ for higher plants is appropriate for the Humber Estuary designated site.</p>				

As shown, the ammonia emission rate is much lower than the NOx emission rate. The predicted impact is only 0.1% of the ammonia Critical Level of $3 \mu\text{g}/\text{m}^3$. As such, the impact of ammonia can be screened out and is 'not significant' in planning terms.

5 Summary

NE has objected to the Proposed Development as further information was required regarding air quality impacts on the Humber Estuary designated site. The information provided in this note provides the further information requested and confirms that the Proposed Development will not have a significant adverse effect on the Humber Estuary designated site.