King's Cross Central – T1 Energy Centre:
Response to LBC Queries

September 2013

Experts in air quality management & assessment

Document Control

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Job Number	J0278

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Document Status and Review Schedule

Report No.	Date	Status	Reviewed by
0278/5/F1	9 September 2013	Final Report	Prof. Duncan Laxen

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1 Introduction

1.1 Air Quality Consultants (AQC) prepared a report for Argent (King's Cross) Ltd related to the air quality impacts of the revised T1 Energy Centre, on 26 July 2013 (Report ref: 0278/4/F3). That report was submitted to the London Borough of Camden (LBC) in support of an application to discharge condition 1(c) of Reserved Matters approval 2009/0415/P dated 24 April 2009 (ref. 2013/5120/P). This note sets out the AQC response to the queries raised by LBC Officers in relation to that application.

2 Response to Queries

2.1 Three principal queries have been raised by Officers, specifically:

- What are the predicted ground-level concentrations at the existing sensitive receptor locations?
- What methodology was used to derive the 2011 and 2020 background concentrations?
- What consideration has been given to the emissions standards for CHP recently published by GLA in a draft SPG?

Predicted Ground-level Concentrations

2.2 The predicted annual mean ground-level nitrogen dioxide concentrations at the existing sensitive receptor locations are shown in Table 1. The highest predicted concentration is 0.35 µg/m^3 at Bingfield Street. All predicted concentrations are below the threshold (0.4 µg/m^3) at which process contributions are judged to be insignificant, based on criteria published by the Environment Agency. It should be noted that these criteria are judged to apply even where concentrations exceed the objective due to emissions from other sources. The ground-level concentrations associated with the T1 Energy Centre are imperceptible and insignificant.

Table 1: Predicted Annual Mean Nitrogen Dioxide Concentrations (µg/m^3) at Sensitive Receptors

	Annual Mean NO_2
Camley Street	0.19
Granary Street	0.14
Hospital Granary Street	0.27
School (Charrington Street)	0.25
Hospital (Euston Road)	0.11
Bingfield Street	0.35
Gifford Street	0.26
Outram Place	0.33
Allensbury Place	0.20
School (Bayham Place)	0.21

Derivation of Background Concentrations

2.3 LBC has queried the derivation of the 2011 annual mean background concentration (42.2 µg/m^3) used in the assessment. Specifically, LBC draws attention to the 2011 measured concentration (50.8 µg/m^3) at the Brill Street diffusion tube monitoring site. The Brill Place monitoring site lies approximately 250 to the west of the T1 Energy Centre, but is classified by LBC as a "roadside" site (not an "urban background" site), and is likely to be significantly affected by traffic emissions from Midland Road. Concentrations measured at this site are likely to reflect those close to Pancras Road or York Way, but are unlikely to represent those at +40 metres elevation at the KXC buildings, which was the principal focus of the assessment[1]. For this reason, the 2011 annual mean background concentration was derived from the Defra 1x1 km maps, using the approach set out in Appendix 4 to the assessment report; this is more likely to represent a "true" background concentration for the study area, at locations that are remote from road traffic sources (such as at the top of the T1 building).

2.4 The 2020 background concentrations have been conservatively derived by holding the road traffic component constant at 2010 values, while 2020 values are taken for other components. This reflects the concern, acknowledged by Defra, that NOx emissions associated with the road transport sector are not declining as expected (although recent evidence suggests that levels may now be declining in London), whilst allowing the emissions from other sources such as the commercial and industrial sectors to decline in line with official forecasts,. Thus, 2020 background values are lower than in 2011, even when road transport emissions are held constant. The derivation of the 2020 background concentration is set out in Appendix 4 of the assessment report.

[1] As set out above, the predicted concentrations at ground level are insignificant, and the background concentration is of limited relevance.

CHP Emissions Standards

2.5 The GLA launched a public consultation on its draft Supplementary Planning Guidance (SPG) on Sustainable Design and Construction on 30 July 2013. The consultation closes on 21 October 2013.

2.6 The draft SPG proposes new emissions standards for CHP; for areas falling within the "APEC B or C band", where the annual mean nitrogen dioxide concentration is above the objective, or below it by 5% or less, an emissions limit of 150 mg/Nm^3 is proposed. This compares with the 250 mg/Nm^3 emission proposed for the T1 Energy Centre. The focus of the GLA emissions standard is not to provide local environmental protection related to individual CHP emissions, but rather to safeguard against the cumulative impacts of widescale uptake of CHP across London. It is important to note that the current, 2006 SPG on Sustainable Design and Construction, requires that "*all developments should incorporate CCHP or CHP wherever feasible*", but it does not set any emissions standards for NOx.

2.7 CHP less than 20MW net rated thermal input (which refers to the individual input of each appliance) are regulated under the Clean Air Act (CAA) 1993. The CAA does not directly control emissions of NOx, and there are no emissions standards set.

2.8 It is important to understand the chronology of events during which the design of the T1 Energy Centre has evolved, to provide context to the current submission and in particular, the proposition that no additional mitigation is required. A report setting out the air quality impacts associated with the proposed T1 Energy Centre (AQC Report 0278/2/D2) was submitted to LBC in September 2009 in relation to condition 1(c) of the Reserved Matters approval 2009/0415/P, albeit that this was seemingly never the subject of any formal application for approval. Various comments on the report were raised by Gloria Esposito, the LBC Air Quality Officer at the time, and a response was provided by AQC on 13 November 2009. The content of the report was subsequently, verbally accepted by LBC's Air Quality Officer, but in the absence of a formal application, did not discharge Condition 1(c). Nonetheless, these early discussions and acceptance of the approach set out in the original report informed all subsequent design work and specification of the engines in the Energy Centre.

2.9 As there were no emissions standards for small CHP (<20 MW_{th}) in place at the time of undertaking the air quality assessments, the focus was on demonstrating that the emissions were adequately dispersed and that changes to nitrogen dioxide concentrations were insignificant and did not cause exceedences of the air quality objective. This approach was subsequently confirmed in the Camden Planning Guidance on Amenity (CPG6), which was adopted on 7 September 2011, and which states:

"We will require evidence that the exhaust stack height of gas CHP/CCHP has been appropriately calculated to guarantee that NOx emissions are adequately dispersed, and do not risk increasing

ground level NO_2 concentrations. Where the assessment reveals a negative impact on air quality, mitigation measures will be required entailing the best available techniques to reduce emissions" (Para 2.24).

2.10 The air quality assessment report submitted to LBC as part of the current application to discharge condition 1(c) of Reserved Matters approval 2009/0415/P complies with CPG6 and demonstrates that no additional mitigation is required. At the time this report was drafted, guidance on best-practice emissions standards for CHP had been published by EPUK[2]. Typical NOx emissions for gas-fired spark-ignition engines are stated to be 5-20 g/kWh, whilst lean-burn engines can achieve 3 g/kWh. The CHP engines in the T1 Energy Centre will emit 1.04 gNOx/kWh, and are thus well below industry best standard.

2.11 We acknowledge that the GLA's draft SPG on Sustainable Design and Construction is a material consideration for the purposes of determining planning applications. However, the weight afforded to the document should reflect its status as a consultation draft. Work on the specification of the engines in the T1 Energy Centre commenced in 2008, well before the draft SPG was published for consultation. The emissions standards set out in the draft SPG may be revised as a result of the consultation. It is therefore considered inappropriate to revise the scheme design at this stage (which complies with all current standards, and would require substantial infrastructure changes if additional mitigation were applied) on the basis of guidance that has not been formally adopted.

[2] EPUK (2012) Combined Heat and Power: Air Quality Guidance for Local Authorities.