**Air Quality Review:**
West Midlands Interchange – additional comments

April 2019

Experts in air quality
management & assessment

## Document Control

| **Client** | South Staffordshire District Council | **Principal Contact** | Wendy Green |
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| **Report Prepared By:** | Penny Wilson |
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Document Status and Review Schedule

| Report No. | Date | Status | Reviewed by |
|---|---|---|---|
| J3582A/2/F1 | 1 April 2019 | Final Report | Stephen Moorcroft (Director) |

# 1      Introduction

1.1     Air Quality Consultants Ltd (AQC) has previously reviewed the information submitted in relation to air quality in support of the DCO application for the West Midlands Interchange. Reports J3582/1/F1 and J3582/1/F2 highlighted a number of weaknesses in the modelling and these were discussed at a meeting between AQC, SSDC and Ramboll on 21st February 2019.

1.2     In response, Ramboll has provided a further note (Response to South Staffordshire District Council Review – Revision 2, 11th March 2019).  This resolves some of the previously identified issues, although there remain some concerns.  These are described in the following section.

1.3     It should be noted that this, and previous reviews, have only taken into consideration predicted concentrations and impacts within South Staffordshire.

## 2    Review

### Model Verification [Moderate Issue]

2.1     This was previously identified as a 'major issue' that could potentially alter the conclusions of the assessment.

2.2     Following the meeting, Ramboll state that, "*a review of the receptor and monitoring locations has been undertaken and we have taken the opportunity to check all aspects of the model set up*". Information about the specific changes made has not been provided.

2.3     Information about the revised model verification has been provided.  The model is now performing better than in previous iterations but there are some remaining concerns, which are set out below.

#### *Verification graph*

2.4      The axes on the graph appear to be incorrectly labelled.  Based on the values provided in the accompanying table, it appears that the x-axis actually shows the measured values and the y-axis shows the modelled values.  It is not clear if the verification factor derived from this graph has been calculated or applied correctly.

#### *Inclusion of motorway sites*

2.5     Two near motorway monitoring sites, ES4 and PE have been included in the calculation of the verification factor on the basis that "*whilst influenced by emissions from a motorway, are not particularly close to the motorway*".  Whilst these sites do not appear as outliers in the graph, and it probably reasonable to do this, it is not appropriate to apply this verification factor to receptors nearer to motorways as this can lead to large overpredictions in concentrations (as discussed in the next section).

### Results [Minor Issue]

2.6     A full set of revised model results for nitrogen dioxide, $PM_{10}$ and $PM_{2.5}$ have been provided, alongside those included in the Air Quality chapter of the ES.  There appears to be a broad range in differences, with concentrations being higher than presented in the ES at some receptors and lower at others.  Without understanding what specific changes have been made to the model, it is not possible to comment on whether these changes are appropriate.

#### *Predicted Concentrations*

2.7     In 2021, exceedances of the annual mean nitrogen dioxide objective are predicted at a number of locations close to motorways. This is very unlikely to occur in practice and it is misleading to present such results.  The predicted exceedances include areas where AQMAs have previously been declared and subsequently revoked following local monitoring which demonstrated that the

objectives are being achieved.  Dispersion of emissions is much greater alongside motorways and therefore, the same verification factor should not have been applied to these roads.

2.8     SSDC sent an initial comment to Ramboll explaining their concerns about these results.  In response, a further iteration of the model results has been provided, this time with adjustments to the receptor elevations in relation to nearby roads.  This resulted in the 'with development' concentrations reducing from 40.2 to 34.0 µg/m$^3$.

2.9     The predicted concentrations in 2016 show poor correlation with the measured concentrations at the worst-case location.  However, with the exception of near-motorway receptors, concentrations of all pollutants are predicted to be below the objectives in 2021 and beyond.  Based on current measured concentrations being below the objectives everywhere, this is a reasonable conclusion.

### *Changes in Concentrations*

2.10    The predicted changes in annual mean nitrogen dioxide concentrations lead to the impacts being described as negligible in 2021 at all receptors except for,PS_06a (A5_Penkeridge2) and 24a (Stafford Rd S of Four Ashes).

2.11    There appears to be an error in the presentation of PM$_{10}$ results, with some relatively large changes predicted in 2028 which are not apparent in the other years, or the corresponding nitrogen dioxide concentrations.  For example, at HA2 the predicted change in nitrogen dioxide concentration is 0.5 µg/m$^3$, whereas the change in PM$_{10}$ is shown to be 1 µg/m$^3$.  Exhaust emissions of PM$_{10}$ are much smaller than those of NOX and it is expected that the changes would be smaller, as they are in the other years.  This suggests that that there is an error in the tables or the model.  However, if it is assumed that all changes in PM$_{10}$ would be equal or less than the predicted changes in nitrogen dioxide, this does not alter the conclusions of the assessment.

# 3    Summary

3.1    The air quality chapter of the ES and subsequent documents have been reviewed.  The review process has highlighted a number of errors and inaccuracies in the air quality assessment, some of which remain.  However, sufficient information has been submitted to determine that, in South Staffordshire, the air quality objectives are unlikely to be exceeded in the opening year or beyond. The predicted changes, in combination with concentrations below the objectives, indicate that the overall impacts of WMI will be 'not significant'.

3.2    It should be noted that this review has focussed on specific locations of concern in South Staffordshire, and does not consider the model performance or impacts on adjacent districts, where there may be locations more sensitive to impacts of the proposed development.

# A1    Professional Experience

## Penny Wilson, BSc (Hons) CSci MIEnvSc MIAQM

Ms Wilson is an Associate Director with AQC, with more than seventeen years' relevant experience in the field of air quality.  She has been responsible for air quality assessments of a wide range of development projects, covering retail, housing, roads, ports, railways and airports.  She has also prepared air quality review and assessment reports and air quality action plans for local authorities and appraised local authority assessments and air quality grant applications on behalf of the UK governments.  Ms Wilson has arranged air quality and dust monitoring programmes and carried out dust and odour assessments.  She has provided expert witness services for planning appeals and is Member of the Institute of Air Quality Management and a Chartered Scientist.

## Stephen Moorcroft, BSc (Hons) MSc DIC CEnv MIEnvSc MIAQM

Mr Moorcroft is a Director of Air Quality Consultants, and has worked for the company since 2004.  He has over thirty-five years' postgraduate experience in environmental sciences.  Prior to joining Air Quality Consultants, he was the Managing Director of Casella Stanger, with responsibility for a business employing over 100 staff and a turnover of £12 million.  He also acted as the Business Director for Air Quality services, with direct responsibility for a number of major Government projects.  He has considerable project management experience associated with Environmental Assessments in relation to a variety of development projects, including power stations, incinerators, road developments and airports, with particular experience related to air quality assessment, monitoring and analysis.  He has contributed to the development of air quality management in the UK, and has been closely involved with the LAQM process since its inception.  He has given expert evidence to numerous public inquiries, and is frequently invited to present to conferences and seminars.  He is a Member of the Institute of Air Quality Management.

Full CVs are available at www.aqconsultants.co.uk.