Rebuttal Proof regarding Air Quality

along the existing A555

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<u>In relation to the Public Inquiry</u>

<u>into the A6 to Manchester Airport Relief Road Proposals</u>

Contents

1) The existing A555 sees the highest traffic impact anywhere in the study area, much higher than in Disley but it is not identified in the ES as an area at risk of poor air quality. NO2 contour maps published on the SEMMMS website although perhaps not part of the application, show concentrations greater than 40ug/m3 NO2 annual mean along most of the existing A555.

> *The contours presented in Mr Houston's proof represent predicted annual mean NO2 concentrations with a limit value of 40ug/m3. Short term exposure, such as that experienced by members of the public on the cycleway would need to be assessed against the short term (1 hour) objective for NO2 of 200ug/m3.*

<div align="right">50/R13, Paul Colclough, Rebuttal Proof</div>

2) Despite the very poor allocation of measurement locations some of the data provided by the applicants does actually indicate exceedences of the hourly 'objective' of 200ug/m3. It would appear the A555 is at risk of breaching the Directive hourly limit values as a result of the proposed road in the opening year.

3) The Council provided no measurements at all along the existing A555 but in 2009 the SEMMMS team set up 64 additional locations. One of these locations is within 50m of the road -sufficiently close to apply a correction formula to calculate the equivalent concentration at 4m from the kerb.

Source ES Figure 8.4 with added notes

4)

The results from the 64 locations are recorded in the table titled;

'2009 Mouchel Monitoring Diffusion Tube Sites, Appendix 8C: Scheme Specific Diffusion Tubes Data, Table 8C-1 Mouchel 2009 Diffusion Tubes'.

Source, SMBC FOI 7874

Location number 31, Spath lane East, is located on the old static caravan site next to the A555 at the end of the lane.


Aerial View of Spath Lane East, A555 in foreground

5) The location no. 31 is about 35.8m from the kerb. The 2009 base year concentration is recorded as 20.4ug/m3. The Council have not made known the background level here but using the DM level at Queensway School of 11.9ug/m3, and applying the correction described by IAN175/13 the concentration of NO2 is 33.9ug/m3 at 4m from the kerb in the base year. Applying pro rata the traffic increase from 23800 to 59000 (base year to DS) the concentration is 66.3ug/m3 annual mean NO2. It is generally accepted that annual mean concentrations greater than 60ug/m3 are associated with exceedences of the hourly mean limit value (200ug/m3).

From this simple calculation it would appear the A555 is at risk of breaching the Directive hourly limit values as a result of the proposed road in the opening year.

6) As an alternative method by way of a check the NO2 contour maps available on the SEMMMS website show the DS 40ug/m3 contour touches the corner of the nearby house nearest the A555. This point is 24.6m from the kerb. Using the IAN175/13 correction, the concentration is 69.0ug/m3 at 4m from the kerb -slightly higher still than that calculated above. (The 40ug/m3 at a residence is in itself a marginal breach of the critical level which should have been identified in the ES.)
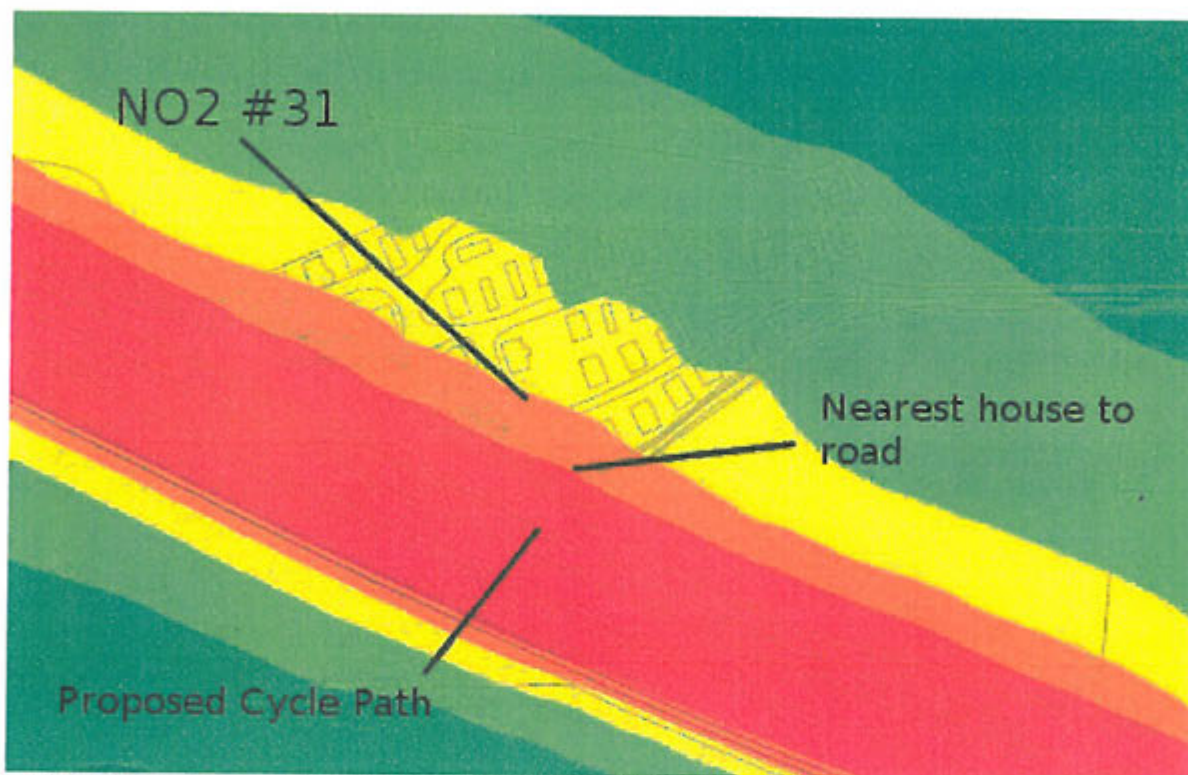
NO2 Annual Mean Contour Map, Spath Lane East; Source SEMMMS website

Red is >=40ug/m3, Orange is =>35~<40ug/m3

7) Summary

Contrary to Paul Colclough's Rebuttal Proof the existing A555 is at risk of breaching the hourly mean limit value described in the Air Quality Directive and which is the legally binding value.

The risk has been calculated by two different methods that give quite similar results both indicating exceedences of the hourly mean.

Appendix 1

Formula used to estimate concentration at various distances from the kerb

The formula is taken from IAN175/13 where it is used to estimate equivalent concentrations 4m from the kerb in order to assess compliance with the Directive. This empirical formula was developed by Professor Duncan Lexan for Defra in 2008.

It is not considered sufficiently accurate at distances greater than 50m.

$$CZ = ((Cy-Cb) / (-0.5476 \times Ln(Dy) + 2.7171)) \times (-0.5476*Ln(Dz)+2.7171) + Cb$$

	Cz is the total predicted concentration ($\mu g/m^3$) at 4m from the edge of the hard shoulder;
	Cy is the total measured concentration ($\mu g/m^3$) at modelled / monitored location;
	Cb is the background concentration ($\mu g/m^3$);
	Dy is the distance from the edge of the hard shoulder (m) at which concentrations were modelled/measured; and
	Dz is the distance 4m from edge of the hard shoulder at which concentrations are to be predicted