Rebuttal Volume 35/1

3rd October 2014

THE HIGHWAYS ACT 1980

-and-

THE ACQUISITION OF LAND ACT 1981

THE HIGHWAYS (INQUIRIES PROCEDURE) RULES 1994

COMPULSORY PURCHASE (INQUIRIES PROCEDURE) RULES 2007

REFERENCE: LAO/NW/SRO/2013/40 and LAO/NW/CPO/2013/41

REBUTTAL PROOF

-of-

Paul Colclough in relation to the Report

of

AQC, Review of Air Quality Assessment, presented by Stephen Houston 218 Chester Road, Poynton, Cheshire SK12 1HP

The Metropolitan Borough Council of Stockport

acting on its behalf and on behalf of

-Manchester City Council -and-

Cheshire East Borough Council

to be presented to a Local Public Inquiry on the 30th September 2014 to consider objections to

THE METROPOLITAN BOROUGH OF STOCKPORT (HAZEL GROVE (A6) TO MANCHESTER AIRPORT A555 CLASSIFIED ROAD) COMPULSORY PURCHASE ORDER 2013

THE METROPOLITAN BOROUGH OF STOCKPORT (HAZEL GROVE (A6) TO MANCHESTER AIRPORT A555 CLASSIFIED ROAD) (SIDE ROADS) ORDER 2013

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This rebuttal proof of evidence sets out the Council's response to the objector's AQC report in relation to their objection to the A6 to Manchester Airport Relief Road Compulsory Purchase Order and/ or Side Road Order that was submitted to the Department for Transport by Stephen Houston, 218 Chester Road, Poynton, Cheshire SK12 1HP
This rebuttal proof is presented by the Council's Air Quality specialist for the A6MARR scheme, Paul Colclough.

Expert Witness	Initials	Proof of Evidence Name and Reference Number
Paul Colclough	PC	Volume 5

50/2: Stephen Houston, 218 Chester Road, Poynton, Cheshire SK12 1HP			
Element of objector proof	**Objection**	**Response**	**Expert Witness**
50/2/01	The approach to the air quality assessment and methodology used appear to be generally acceptable and in-line with current best practice for a non-trunk road. However, there is insufficient information provided to ascertain whether the described approach has been applied correctly.	The assessment was in-line with current best practice for a non-trunk road. The information provided was that required for an EIA (Schedule 4 of the EIA Regulations) • A description of the aspects of the environment likely to be significantly affected by the development • the description by the applicant or appellant of the forecasting methods used to assess the effects on the environment. • A description of the measures envisaged to prevent, reduce and where possible offset any significant adverse effects on the environment	PC
50/2/02	2.2 In relation to monitoring data included in the air quality chapter, there is insufficient information provided on; • the diffusion tube bias adjustment factor applied to the scheme specific monitoring data, and how this was derived; • the exact locations of the monitoring sites included in the scheme specific monitoring survey; and • whether the 10 months of monitoring were adjusted to an equivalent annual mean.	The level of detail required for presentation in the ES does not require full technical information to be provided. By virtue of the fact that we have stated that the assessment has been undertaken in accordance with relevant guidance, it is taken as read that this information was part of the assessment. Diffusion tubes were bias corrected using local authority continuous analyser co-location sites The exact locations of every monitoring location were determined for the verification process and can be provided to the inquiry if required. Scheme specific monitoring was for 12 months – providing an annual mean.	PC
50/2/03	2.3 Without this information it is not possible to determine whether appropriate QA/QC has been applied to the monitoring data used to verify the air quality model on which	Appropriate QA/QC has been applied to the monitoring data used to verify the air quality modelling.	PC

	the assessment is based.		
50/2/04	There is insufficient information provided on the following model inputs: • traffic flows, proportions HGVs and speeds for each section of road, for each scenario; • whether any sections of road have been modelled as 'street canyons'; and • the specific adjustments applied to background concentrations (to which the modelled road contribution is added) and the data used to derive these.	The level of detail required for the ES does not require provision of full technical information. The assessment included traffic for approximately 5,000 road links and 11,000 receptors. The provision of all that information would not aid the EIA process. The assessment was undertaken by an independent Consultant with extensive experience in the assessment of major road schemes using current best practice guidance for clients which include the Highways Agency. This included influences associated with traffic characteristics, local atmospheric dispersion and background pollutant concentrations.	PC
50/2/05	2.5 It is not possible to determine whether the air quality model has been set up appropriately without this information.	The assessment was undertaken by an independent Consultant with extensive experience in the assessment of major road schemes for clients which include the Highways Agency, to ensure the air quality modelling was undertaken to existing best practice. The air quality model has been set up appropriately and undergone QA/QC processes.	PC
50/2/06	In relation to verification of the model results, there is no information supplied on: • the specific monitoring sites used to verify the model results; • the method used to derive verification factors, applied to the model results; and • the verification factors applied to model results for specific areas.	All the monitoring results presented were used in the verification process. Monitoring sites which did not meet the criteria presented in LAQMTG09 were rejected as required. The method used to derive verification factors was that required in LAQMTG09 as specified in the ES (8.3.1) The model was split into zones which reflected local atmospheric dispersion conditions. Monitoring data from within these zones was used to obtain relevant local verification factors.	PC
50/2/07	2.7 Without this information it is not possible to ascertain the performance of the model in Disley, to determine whether model results represent a reasonable reflection of measured concentrations in the area.	The requirements of LAQM TG09 were employed for the Disley AQMA. The Disley AQMA was identified as a separate verification zone with site specific factors to provide an appropriate assessment in this location. Monitoring data from Disley was used to derive local verification factors to enhance the accuracy of the model in this area	PC

50/2/08	2.8 The level of detail of results provided is not sufficient to determine the impacts at specific locations.	The level of detail provided was that required to assess the significance of the impact of the scheme on air quality and compliance with the EU Directive. The EIA Regulations do not require the presentation of all data for all 11,036 receptors in the study area. Graphical representations of the locations of pollutant concentrations with and without the scheme (and the change associated with the scheme) were provided in the ES to enable the reader to ascertain areas of improvements and worstening.	PC
50/2/09	2.9 The Disley AQMA is mentioned in the ES. However, there is no reference to the Disley Air Quality Action Plan. Whilst this has not been finalised, a draft version was available from June 2013[2]. Priority measures identified in the Action Plan include "DIS1 - ensure that A6 corridor is managed as part of the SEMMMS scheme" and "DIS 2 Improved rail facilities (linked with DS1)."	The Disley AQAP is draft. It was not made available during our consultations with Cheshire East. It was not publicly available at the time of the preparation of the ES. The AQAP for Disley does not currently appear on the CEC website. The requirements specified in "DIS1 - ensure that A6 corridor is managed as part of the SEMMMS scheme" are effectively dealt with by Condition 8 of Cheshire East's planning consent for the proposed scheme.	PC
50/2/010	2.13 Disley falls within the North West and Merseyside zone (UK0033), whereas the majority of the improvements identified as a result of the scheme are within the Greater Manchester Urban Area agglomeration (UK0003). In Table 8-19 it is acknowledged that the scheme does increase the road length that exceeds the EU LV (question D) in zone UK0033. However, it does not consider the effectiveness of the AQAP, which is a requirement where the answer to question D is "yes".	The Disley AQAP is draft, was not publicly available at the time of the preparation of the ES and is still, not available today. The requirements specified in "DIS1 - ensure that A6 corridor is managed as part of the SEMMMS scheme" was conditioned as part of the Planning Application. The increase in length of roads in exceedence in the zone is not greater than 1% when compared with previous road lengths. (Section 2.6 IAN 175/13).	PC
50/2/011	2.15 IAN174/13 specifically states that, "*modelled results and the assessment of changes in pollutant concentrations between without and with scheme scenarios should be* ***reported to 1 decimal place****. 24 hour mean PM_{10} concentrations results should be rounded to the nearest whole day*" (emphasis added by HA). As noted above,	11.036 receptors were assessed as part of the schemes Significance test. All concentrations were determined to 1 decimal place for the determination of Significance to minimise rounding errors and ensure consistency as required by IAN174/13. Rather than the presentation of 11,036 data sets, summaries of the number of properties in pollutant concentration bands, and the	PC

	predicted concentrations with and without the scheme at specific receptors have not been reported. This is a clear deficiency of the assessment.	number of properties with changes (increases and decreases) in pollutant levels with and without the scheme were provided in the ES – Table 8-9 to 8-13.	
50/2/012	2.16 IAN174/13 notes that "the significance of the change is greater, the higher above the air quality thresholds the changes are predicted to occur. Where it is predicted that the short term NO2 and / or PM10 thresholds are exceeded, then more significance should be attributed to these effects." The ES fails to identify the concentrations exceed the thresholds in Disley and that there is a risk of the short-term nitrogen dioxide objective being exceeded.	The Significance test is applied to the scheme's study area and not individual parts of it. The impact of the scheme on short term exceedences was identified in para 8.5.3 where the number of short term exceedences of NO_2 "*will reduce from 217 to 145 should the proposed scheme be implemented*". No PM_{10} short term exceedences were predicted, with or without the scheme. Paragraph 8.5.13 of the ES states "*Predicted changes in NO_2 concentration are greater than the upper guideline band in five of the magnitude categories. In all five instances the number of affected receptors is markedly higher than the upper guideline band, indicating a strong likelihood the proposed scheme will involve significant effects which are both detrimental and beneficial relative to the pollutant*."	PC
50/2/013	2.17 Overall, the approach to the assessment and conclusions presented in the ES are generally in accordance with the required methodology. However, the missing information outlined above make it difficult to ascertain whether the calculations on which the assessment is based have been carried out correctly.	It is noted that "*the approach to the assessment and conclusions presented in the ES are generally in accordance with the required methodology*". The `missing information" has been provided in summary to aid the readers understanding of the findings of the modelling.	PC
50/2/014	2.20 The PoE acknowledges that the approach used in the ES to estimate future year concentrations was overly conservative. The PoE therefore reconsiders the number of people likely to be exposed to concentrations above the objective in the Disley AQMA, both with and without the scheme, using the revised approach.	The ES was undertaken using the guidance available at that time, which, given current information suggests it to have been very conservative and worst case rather than optimistic. The new assessment for Disley was undertaken to inform the Inquiry of projected changes to local air quality following the issue of new guidance after the issue of the ES.	PC
50/2/015	2.21 As expected, the revised approach indicates that fewer people would be exposed to concentrations above the objective, both with and without the scheme. However, based	The modelling data, using new guidance indicates that fewer people will be exposed to concentrations above the annual mean objective, both with and without the scheme.	PC

	on the updated analysis, the scheme would cause 5 additional properties to be exposed to concentrations above the objective, compared with the 3 additional properties presented in the ES.		
50/2/016	2.22 The exercise described above has been repeated again using new vehicle emission factors published since the ES was published. These are generally more conservative than those previously used, i.e. lead to slightly higher concentrations being predicted in future years. 2.23 When the results using the revised emission factors are combined with the revised Highways Agency approach, even fewer properties in Disley are predicted to be subject to exceedences of the objective. However, using this approach the scheme is expected to lead to an additional 11 properties exposed to concentrations above the objective.	With the new emission factors (EFT v6.01) and new HA guidance fewer properties in Disley are predicted to be subject to exceedences of the annual mean NO_2 objective in the opening year compared with that presented in the ES. The number of exceedences would be expected to fall even further in the following years as Euro VI engines replace the more polluting engines in the UK fleet. While the overall number of properties exceedences decreases, the scheme would give rise to 11 new exceedences.	PC
50/2/017	2.27 The PoE correctly acknowledges that the reduction in speed would lead to an increase in emissions per vehicle which would counteract the reduction in total vehicle flows, leading to higher concentrations than would be predicted without mitigation. This suggests that the mitigation currently proposed is not appropriate to alleviate the impacts of the proposed scheme and would actually make air quality worse in Disley.	As stated in para 4.8 of the PoE of Mr Colclough "*In designing a mitigation scheme for Disley, the design team should bear in mind the impact on road traffic emissions of reduced speeds through the AQMA. The mitigation scheme designed to discharge the Planning Condition should therefore have the twin objective of reducing the forecast increase in traffic on the A6, but without any significant reduction in traffic speed through the Disley AQMA. Speed reduction measures could, for example be applied elsewhere along the A6 to achieve this*."	PC
50/2/018	3.1 The most important issue to consider is the scale of the impact of the scheme in Disley, which is underrepresented in the ES. At The Crescent, annual mean nitrogen dioxide concentrations of 50-60 µg/m3 have consistently been measured at the façade of residential properties and the scheme is expected to increase concentrations by more than 4 µg/m3. These concentrations are already significantly above the air quality objective of 40 µg/m3 and the increase	The study area consisted of 11,036 sensitive receptors. It is predicted that there will be 4,357 annual mean NO_2 exceedences in the Greater Manchester AQMA and 85 in the Disley AQMA without the scheme. We would reject the assertion that Disley has been under represented in the ES. It is accepted that the scheme will introduce additional traffic through Disley which will add to local pollutant emissions.	PC

	expected as a result of the scheme is substantial.	The Further Assessment, A6 Disley, issued by CEC in December 2011 which indicates that the property at the Crescent experiences annual mean nitrogen dioxide concentrations of 50-60 µg/m^3 goes on to predict annual mean NO_2 concentrations of 38 µg/m^3 in 2016 (Appendix 50/2/1), which is below the annual mean objective, 12 months before the opening of the A6MARR scheme. Predicted increases in NO_2 associated with the proposed scheme would not exceed short term objectives under these conditions.	
50/2/019	3.2 The model results presented in the ES indicate that concentrations would exceed the objective at locations outside the AQMA, and therefore the AQMA would need to be extended.	This is incorrect. The 3 new exceedences in Disley are properties within the existing AQMA. Therefore the AQMA in Disley would not need to be expanded.	PC
50/2/20	3.6 There are differences between where and how the UK air quality objectives and EU Limit Values apply. It is important to note that although exceedences of the UK air quality objective are measured in Disley, it is not identified in the Defra reporting as a location where the EU Limit Value is being exceeded. This is not unusual and occurs in many similar situations across the UK. However, there are numerous other locations identified in the North West and Merseyside compliance zone where the Limit Value is being exceeded. As Disley is not considered a location where the EU Limit Value is being breached, the scheme does not delay compliance of the zone with the EU Limit Values.	It is agreed that the scheme does not take a zone/agglomeration into exceedence nor delay compliance of the zone with the EU Limit Values. Consequently, it does not breach EU Air Quality Directive.	PC
50/2/021	3.7 The Environmental Statement has not considered the impact of the scheme on the Disley Air Quality Action Plan. Due to the location of residential properties and the topography of the area, possible measures to achieve compliance with the air quality objectives are limited and the objectives are not likely to be achieved, even with the Action Plan in place.	It is agreed that given the location of residential properties and the topography of the area, measures to achieve compliance with air quality objectives along this strategic highway are limited	PC
50/2/022	3.9 The currently proposed mitigation measures have not	Agreed	PC

	been demonstrated to lead to a reduction in air quality impacts of the scheme. In fact, it appears that the currently proposed "enhanced mitigation measures" package could actually increase the air quality impacts. 3.10 Due to the topography of the area, it unlikely that any local mitigation measures are available that would reduce concentrations in Disley to below the air quality objectives. The mitigation measures need to achieve some or all of the following in Disley, in order to actually mitigate the impacts of the scheme: • reduce traffic flows; • smooth driving conditions; and • reduce emissions (queuing and acceleration), adjacent to sensitive receptors, particularly those in The Crescent, Market Street and Buxton Road. 3.11 One possible measure could be to co-ordinate traffic signals through Disley to avoid queuing adjacent to the most affected receptors. This would need to include the proposed signals at the Redhouse Lane junction, associated with a development in the area.	As stated in para 4.8 of the PoE of Mr Colclough "*In designing a mitigation scheme for Disley, the design team should bear in mind the impact on road traffic emissions of reduced speeds through the AQMA. The mitigation scheme designed to discharge the Planning Condition should therefore have the twin objective of reducing the forecast increase in traffic on the A6, but without any significant reduction in traffic speed through the Disley AQMA. Speed reduction measures could, for example be applied elsewhere along the A6 to achieve this*."	
50/2/023	4.1 The approach taken to assess the air quality impacts of SEMMMS appears to be in accordance with guidance. However, insufficient information is provided in the ES to determine whether the calculations have been carried out correctly. In addition, the ES fails to acknowledge the scale of the impact on the Disley AQMA and the Disley Air Quality Action Plan.	Air Quality modelling for large highways schemes is highly complex. An independent consultant (Mouchel) whose major client is the Highways Agency, was employed by the relevant councils to undertake the assessment using current guidance and best practice. It has been accepted by AQC that current guidance and best practice has been applied. Modelling is subject to internal QA/QC processes and the information presented was judged to be that which provides the client and the public with information to understand the impacts and implications of the proposed scheme in the study area. The ES identified Disley separately as this is the area which received disbenefits associated with the scheme.	PC

50/2/024	4.2 In Disley, the scheme would lead to: • a substantial adverse impact on nitrogen dioxide concentrations, where the air quality objectives are already being exceeded by a substantial margin; • possible extension of the AQMA; and • exceedences of the 1-hour objective, which is not currently exceeded.	The scheme will introduce additional traffic which will introduce additional pollutants within Disley AQMA along this strategic highway. The scheme provides substantial benefits to large areas of Greater Manchester, Stockport and parts of Cheshire East. The exceedences referred to are all within the existing AQMA and so no extension of the Disley AQMA has been indicated. The conservative assessment undertaken indicates that properties in Disley will exceed the 1-hour objective in the base year (2009) and the opening year (2017) with and without the scheme. However, information provided by CEC (Further Assessment, A6 Disley) indicates that it predicts receptors at the Crescent in Disley will not exceed annual mean NO2 concentrations in 2016. It would not be expected that the scheme will cause properties not in exceedence of annual mean to exceed the 1-hour average objective.	PC
50/2/025	4.3 The majority of the benefits of the scheme fall within the Greater Manchester EU compliance agglomeration, whereas the disbenefits would occur in the North West and Merseyside zone.	These were the findings outlined in the ES	PC
50/2/026	4.4 A robust package of mitigation measures is a Condition of the planning permission. It is essential that these are carefully considered to ensure that they will mitigate, rather than exacerbate the impacts off the scheme. The assessment presented in the PoE of Paul Colclough demonstrates that the mitigation package developed to date does not address the air quality problem in Disley, and it therefore cannot be considered appropriate to discharge the planning condition	As state d in para 4.8 of the PoE of Mr Colclough "*In designing a mitigation scheme for Disley, the design team should bear in mind the impact on road traffic emissions of reduced speeds through the AQMA. The mitigation scheme designed to discharge the Planning Condition should therefore have the twin objective of reducing the forecast increase in traffic on the A6, but without any significant reduction in traffic speed through the Disley AQMA. Speed reduction measures could, for example be applied elsewhere along the A6 to achieve this*."	PC

Appendix 50/2/1

LOCAL AIR QUALITY MANAGEMENT

FURTHER ASSESSMENT

A6, DISLEY

10.0 Date by which the objective will be met

It is necessary to project current concentrations to future years to determine whether the objective will be achieved by the relevant year using the projection calculations shown in revised Box 2.1 from Technical Guidance LAQM TG (09). Table 6.1 provides an indication of the potential timescales involved should reductions continue at a rate originally thought. Figures in *italics* are predicted values only.

CE16- The Crescent	2010	2011	2012	2013	2014	2015	2016
	56.8	*53.4*	*50.1*	*46.9*	*43.6*	*40.3*	*38.0*

Table 6.1 Date by which the Objective will be met

11.0 Source Apportionment

It is a requirement of the Further Assessment to refine the knowledge of the sources of pollution to ensure the Action Plan can be targeted effectively. In respect to the A6 Disley, the only source influencing nitrogen dioxide levels is road traffic.

The concentration of nitrogen dioxide is made up of the regional background, the local background and the source itself, in this case the vehicles on the road.

The stretch of road in question is a 1 KM length of the A6. The length of the road contains one key junction, and a pedestrian crossing. Traffic is congested at most times, especially at peak times and school collection times. Whilst the road is not a true canyon[13], the topography is such that there is a steep gradient on the Southern side of the road and the properties on the Northern Side are likely to be interfering with normal dispersion. In particular, the properties in The Crescent are subject to canyon like effects.

The methodology described in LAQM.TG (09) Box 7.1 and accompanying text has been followed to undertake the source apportionment calculation. Traffic composition data was obtained from the DFT Traffic Count Matrix[14].

[13] In this context, a street canyon may be defined as a relatively narrow street with buildings on both sides, where the height of the buildings is generally greater than the width of the road.

[14] Count data was obtained for 2010 from http://www.dft.gov.uk/matrix