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THE TOWN AND COUNTRY PLANNING ACT 1990 – SECTION 78

TOWN AND COUNTRY PLANNING (INQUIRIES PROCEDURE) (ENGLAND) RULES 2000

APPEAL REFERENCE: APP/G2435/A/11/2158154

APPELLANT: William Davis Ltd and Jelson Ltd

APPEAL IN RESPECT OF STEPHENSON GREEN, COALVILLE

**REBUTTAL
[AIR QUALITY]**

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1.0 Introduction

- 1.1 This rebuttal document provides additional clarification and responses to the Proof of Evidence provided by Dr Bethan Tuckett-Jones (BTJ) on behalf of North West Leicestershire District Council (NWLDC). For simplicity, I refer to the chapters, headings and paragraph numbers in her proof.

2.0 Responses

- 2.1.1 BTJChapter 1 - Introduction

No response

- 2.2.1 BTJChapter 2 – Legislation, Policy and Regulation

This chapter relates to National and Local Policies, all of which is appropriate and with which I agree with.

- 2.3.1 BTJChapter 3 – Air Quality in Coalville

BTJ3.2.1 – BTJ3.2.6

These sections relate to history and details all of which I agree with.

- 2.3.2 BTJ3.2.7

Whilst I would agree that the 'exceedence' periods do generally coincide with periods of calm weather conditions, I do not believe that generation of high levels of short term NO_x concentrations is quite as straightforward. For example, there were many periods of no wind during the monitoring from September 2010 – October 2011 where there were no exceedences, including the whole 9 month period from 21 January 2011 to the current latest record on 13 October 2011. Similarly, of the 29 exceedences from 15th September to December 2010, 21 of them were during the 5 day period 17th – 22nd of September of which 11 were on the 17th September, a Saturday. In 2011, the exceedences are again limited to a very short period with 19 of the 20 exceedences from January 2011 to October 2011 occurring in the 4 day period between 18th and 21st January. These periods of high numbers of exceedences over a very short timescale indicate that there were localised factors at play which were likely to have contributed to the high NO₂ readings obtained. The North West Leicestershire District Council 2011 Air Quality Review and Assessment has not offered any investigation or explanation for the reasons for these unusual results and they appear to have

been taken at face value as being representative of typical conditions at the monitoring location. Statutory guidance issued by DEFRA to support local authorities in their review and assessments (TG(09)) states in paragraphs 2.30 to 2.35 that nationally there have been very few incidents where the hourly average objective for nitrogen dioxide has been exceeded where the annual average nitrogen dioxide result is below $60 \mu\text{g}\text{m}^{-3}$. Where this had been observed it had been attributed to a regional pollution event and the guidance describes observing exceedences of the hourly objective in locations where the annual mean is below $60 \mu\text{g}/\text{m}^3$ as 'extremely limited'. In my opinion the cause of the high number of exceedences of the hourly mean of $200 \mu\text{g}\text{m}^{-3}$ requires further investigation before it can be concluded that the hourly mean AQO is being exceeded at the junction. I understand that the findings of this assessment have not yet been approved by DEFRA and therefore the findings and conclusions have not been subject to third party review.

2.3.3 More importantly, it should be noted that these 'exceedences' are at the monitoring station NOT a representative exposure location. It is unlikely that members of the public will stay on the pavement at this junction for over an hour and as such the exposure location where the standard would apply is most likely to be the façade of the nearest property (21 Broom Leys Road). There are many factors that will affect the reduction in NO_2 levels across this distance of some 5-8m but the modelling work suggests that a reduction in hourly average levels of at least $40 \mu\text{g}\text{m}^{-3}$ would be a conservative estimate. If this reduction was applied to the monitoring data there would only have been 17 exceedences during the calendar year and therefore the objective would be met.

2.3.4 Therefore, whilst I agree with Ms Tuckett-Jones's statement that the extension of the scope of the Coalville AQMA is justified, this is only based on the risk of not meeting the air quality objective for 1 hr mean NO_2 rather than the objective having demonstrably not being met.

2.3.5 BTJ3.2.9 – 3.3.3 Site Specific Monitoring Program and Summary

I agree with these statements.

2.4.1 BTJ4.1.1-4.4.2 & 4.5.1-4.5.2

These sections report the WYG methodology and results appropriately.

2.4.2 BTJ4.4.2

Ms Tuckett-Jones states that the appellant has not considered it necessary to propose any mitigation measures for the operational impacts of the proposed development, however, this is not the case, as shown in section 5 of my proof.

2.4.3 BTJ4.5.3 – 4.5.8 Verification against short term monitoring data.

I acknowledge that there are uncertainties associated with verification against the short term monitoring data that may have underestimated concentrations. As such I have revised the results using a new verification factor which ignores the 9 short term locations and uses only the 2 long term monitoring locations at the Broom Leys Road junction to verify the model. This factor changes from 1.4694 to 2.0057 and the comparison with the monitoring locations is shown in table NMR1 below.

Table NMR1: Comparison of Modelling & Monitoring results for NO₂ (µg/m³)

Receptor	NO ₂ µg/m ³		
	Total Monitored NO ₂	Total Modelled NO ₂	Difference
NWLDC 23	39.60	40.54	-2.37%
NWLDC 29	39.20	38.24	2.44%

Tables NMR2 and NMR3 below show the revised results with the 2.0057 verification factor. Whilst there is an increase from the previous results (compare table 18 of November 2010 WYG AQA). There remain no predicted exceedences of the annual objective and when comparing the do-minimum with the do something scenarios the magnitude and significance remain within the same criteria as in the November 2010 report.

Table NMR2: Predicted 2022 Concentrations of NO₂ at each existing Receptor Location (based on verification factor of 2.0057 and worst case 2008 background concentrations)

Receptor		Nitrogen Dioxide µg/m ³			
		DM 2022	DS 2022	Difference	% Change
REC 1	21 Broom Leys Road	33.72	34.96	1.24	3.68
REC 2	26, Stimson Road	24.79	25.55	0.76	3.07
REC 3	262 Hermitage Road	29.73	32.28	2.55	8.58
REC 4	112 Silver Street	20.83	21.12	0.29	1.39
REC 5	68 Green Lane	16.17	16.55	0.38	2.35
REC 6	215 Hall Lane	19.16	19.71	0.55	2.87
REC 7	1 Sharpley Avenue	17.12	17.28	0.16	0.94
REC 8	8 Meadow Lane	15.71	15.75	0.04	0.25
REC 9	67 Broom Leys Road (East)	26.88	27.02	0.14	0.52
REC 10	318 Hall Lane	17.59	17.90	0.31	1.76
REC 11	115 Hermitage Road	22.24	22.45	0.21	0.95
REC 12	Meadow Lane School	17.35	17.40	0.05	0.29
REC 13	Coalville Community Hospital (Front Façade)	17.43	17.49	0.06	0.34
REC 14	Coalville Community Hospital (Front Façade)	16.17	16.24	0.07	0.43
REC 15	Broom Leys Farm	21.02	21.21	0.19	0.90
REC 16	44 Broom Leys Road West	36.17	36.53	0.36	1.00
REC 17	34 Broom Leys Road East	26.07	26.36	0.29	1.11

Table NMR3: Significance Effects at key Receptors (Based on verification factor of 2.0057)

	Receptor	Magnitude	Significance
REC 1	21 Broom Leys Road*	Small	Negligible
REC 2	26, Stimson Road	Small	Negligible
REC 3	262 Hermitage Road	Medium	Negligible
REC 4	112 Silver Street	Small	Negligible
REC 5	68 Green Lane	Small	Negligible
REC 6	215 Hall Lane	Small	Negligible
REC 7	1 Sharpley Avenue	Imperceptible	Negligible
REC 8	8 Meadow Lane	Imperceptible	Negligible
REC 9	67 Broom Leys Road (East)	Imperceptible	Negligible
REC 10	318 Hall Lane	Small	Negligible
REC 11	115 Hermitage Road	Imperceptible	Negligible
REC 12	Meadow Lane School	Imperceptible	Negligible
REC 13	Coalville Community Hospital (Front Façade)	Imperceptible	Negligible
REC 14	Coalville Community Hospital (Front Façade)	Imperceptible	Negligible
REC 15	Broom Leys Farm	Imperceptible	Negligible
REC 16	44 Broom Leys Road West *	Small	Slight Adverse
REC 17	34 Broom Leys Road East *	Small	Negligible

2.4.4 BTJ 4.5.9 Hourly Mean Verification

Whilst it is agreed that formal verification of the hourly predictions is not possible, I have run a further sensitivity test to show the effects of the following assumptions and show that these results are robust. I have run the model with 2010 meteorological data (instead of 2008), 2010 background data and 2010 emissions data to calculate the air quality at the position of the automatic monitoring station. This predicted 23 exceedences of the hourly mean objective at the monitoring station for the period of 15 September - 31 December 2010 compared with the results of the monitoring station which measured 29 exceedences. This correlation is considered to be good and therefore demonstrates that the model was able to account for congestion and low wind speeds. The underestimation of exceedences may be attributable to unknown local factors I discussed in my rebuttal to paragraph BJT3.2.7.

2.4.5 BTJ 4.5.10 – 4.5.11 Hourly Mean NO_x to NO₂ Conversion Factors

There is limited guidance on the suitable methodology for NO_x to NO₂ conversion for hourly mean NO₂. However, an analysis of the results shows that the conversion ratio used in the model is on average 0.33. This compares with the ratio obtained from the automatic monitoring data during the September 2010 exceedences of 0.34. The conversion ratio of NO_x to NO₂ is therefore considered to be suitably representative.

2.4.6 BTJ 4.5.12 – 4.5.13 Hourly Mean Background

Again, there is no formal guidance on how to treat hourly mean background levels within traffic dispersion models. The 'common' approach described by Ms Tuckett-Jones is only appropriate for modelling the impacts of point sources such as emissions from chimneys. Paragraph A3.186 of TG(09) states that *"Where a local authority is undertaking dispersion modelling of road traffic sources and does not include a diurnal pattern of traffic emissions, an annual average background should be used"*. Time varied emission factors were used within the modelling work undertaken to replicate diurnal conditions and therefore in accordance with statutory guidance it was entirely appropriate to use DEFRA mapped data.

2.4.7 Nevertheless I have revised the model results to adopt the approach suggested in paragraph 4.5.13 of Ms Tuckett-Jones' Proof. The table below shows the results if the background concentrations were doubled (and with the revised verification factor). This shows that although using this worst case assumption there would be exceedences of the hourly mean at the 4 Broom Leys Road receptors, this is the case both with (Do Something) and without (Do Minimum) the development and the relative change as a result of the development remains the same. The 2022 baseline predicted 99.79th percentile level at the automatic monitoring station, at 304.64 $\mu\text{g}/\text{m}^3$, is some 68 $\mu\text{g}/\text{m}^3$ higher than the measured 99.79th percentile (Sep 2010 – Oct 2011) at 236 $\mu\text{g}/\text{m}^3$ confirming that this 'doubling the background' assumption is not appropriate for this location as it is not expected that there should be an increase in baseline levels by 2022.

Table NMR4: Predicted 99.79th Percentile Exposure ($\mu\text{g}/\text{m}^3$) [Doubled background]

Receptor		2022 Do Minimum		2022 Do Something	
Ref	Name	Traffic Contribution	Total	Traffic Contribution	Total
R1	21 Broom Leys Road	185.21	220.18	198.26	233.24
R2	34 Broom Leys Road	193.12	224.36	196.60	227.85
R3	27 Broom Leys Road	181.12	216.09	194.60	229.58
R4	44 Broom Leys Road	219.42	250.68	225.61	256.88
R5	NWLDC Continuous Monitor	269.60	304.64	276.80	311.85

2.4.8 BTJ4.5.15 – 4.5.17 Staged Development

As the completed development is predicted to result in effects of 'small' magnitude and 'negligible' significance it is expected that the incremental effects of the stages of the development are likely to result in even 'smaller' and more 'negligible' effects and thus would not need to be considered. However, the potential worst case effects of 'non-reducing'

baseline levels during the period up to 2022 are considered in conjunction with the following response to Vehicle Emissions.

2.4.9 BTJ4.5.18 – 4.5.23

It is acknowledged that ambient NO_x levels are not expected to reduce as much as predicted in the 2022 emissions factors. No revised national projections have been published and therefore the following tables NMR5 and NMR6 show the resultant predicted levels in 2022 using 2012 emissions factors together with the revised (2.0057) verification factor and using worst case 2008 background.

Table NMR5: Predicted 2022 Concentrations of NO₂ at each existing Receptor Location (based on verification factor of 2.0057, 2008 background concentrations and 2012 EFT Emission Factors)

Receptor		Nitrogen Dioxide µg/m ³			
		DM 2022	DS 2022	Difference	% Change
REC 1	21 Broom Leys Road	35.93	37.50	1.57	4.36
REC 2	26, Stimson Road	25.39	26.19	0.80	3.14
REC 3	262 Hermitage Road	34.10	34.84	0.75	2.20
REC 4	112 Silver Street	21.49	21.78	0.29	1.36
REC 5	68 Green Lane	16.32	16.67	0.35	2.14
REC 6	215 Hall Lane	19.51	20.03	0.53	2.69
REC 7	1 Sharpley Avenue	17.29	17.46	0.17	0.96
REC 8	8 Meadow Lane	15.83	15.87	0.05	0.31
REC 9	67 Broom Leys Road (East)	27.85	28.06	0.21	0.77
REC 10	318 Hall Lane	17.81	18.11	0.30	1.69
REC 11	115 Hermitage Road	23.25	23.38	0.13	0.54
REC 12	Meadow Lane School	17.64	17.70	0.06	0.33
REC 13	Coalville Community Hospital (Front Façade)	17.73	17.80	0.07	0.38
REC 14	Coalville Community Hospital (Front Façade)	16.34	16.42	0.08	0.48
REC 15	Broom Leys Farm	21.54	21.81	0.27	1.26
REC 16	44 Broom Leys Road West	40.76	43.05	2.29	5.61
REC 17	34 Broom Leys Road East	28.49	29.68	1.19	4.16
NWLDC 23		38.26	39.67	1.41	3.69
MWLDC 29		41.28	43.88	2.60	6.29
AURN Automatic Monitoring Station		44.81	47.66	2.85	6.36

Table NMR6: Significance Effects at key Receptors (Based on above factors)

Receptor		Magnitude	Significance
REC 1	21 Broom Leys Road*	Small	Slight
REC 2	26, Stimson Road	Small	Negligible
REC 3	262 Hermitage Road	Small	Negligible
REC 4	112 Silver Street	Small	Negligible
REC 5	68 Green Lane	Small	Negligible
REC 6	215 Hall Lane	Small	Negligible
REC 7	1 Sharpley Avenue	Imperceptible	Negligible
REC 8	8 Meadow Lane	Imperceptible	Negligible
REC 9	67 Broom Leys Road (East)	Imperceptible	Negligible
REC 10	318 Hall Lane	Small	Negligible
REC 11	115 Hermitage Road	Imperceptible	Negligible
REC 12	Meadow Lane School	Imperceptible	Negligible
REC 13	Coalville Community Hospital (Front Façade)	Imperceptible	Negligible
REC 14	Coalville Community Hospital (Front Façade)	Imperceptible	Negligible
REC 15	Broom Leys Farm	Small	Negligible
REC 16	44 Broom Leys Road West	Medium	Moderate
REC 17	34 Broom Leys Road East	Small	Negligible
NWLDC 23		Small	Slight
MWLDC 29		Medium	Moderate
AURN Automatic Monitoring Station		Medium	Moderate

2.4.10 BTJ4.5.18 – 4.5.23

Tables NMR5 shows the combined effects of these worst case assumptions. There is predicted to be an exceedence of the annual mean objective at receptor 16. However, the predicted annual average level (without the development) in 2022 at the diffusion tube locations [41.2 $\mu\text{g}/\text{m}^3$] is higher than measured in 2010 [39.2 $\mu\text{g}/\text{m}^3$] and at the automatic monitoring station [44.8 $\mu\text{g}/\text{m}^3$] is significantly higher than measured at the automatic monitoring station in 2011 (Jan – October) [36.1 $\mu\text{g}/\text{m}^3$]. Whilst predicting pollutant levels for 2022 is clearly subjective, I find it difficult to believe that the pollutant levels would rise and thus I suggest that the combination of these worst case assumptions are unrealistic. Furthermore, with regard to the hourly averages and as I demonstrated in paragraph xxx of this rebuttal, statutory guidance from monitoring stations across the country demonstrates that *"authorities may assume that exceedences of the 1-hour mean objective for NO₂ are only likely to occur where annual mean concentrations are 60 $\mu\text{g}/\text{m}^3$ or above"* (paragraph 2.34 TG(09)). Therefore even based on these worst case assumptions it is still highly probable that the one hour objective will be met at all of the modelled locations using this scenario.

2.4.11 BTJ4.5.18 – 4.5.23

Table NMR6 Shows that, despite the worst case assumptions, the conclusions in terms of the magnitude and significance of the effects of the scheme remain the same as the November 2010 report.

2.4.12 TJ 5.4.24 – 4.5.25

The slow down links in the model at the Broom Leys Junction are 110m in length on Stephenson's Way and 65m in length along Broom Leys Road. These are comparable to the current average peak queue lengths of 24 – 28 vehicles on Stephenson's Way (both directions) and 17 – 19 vehicles on Broom Leys Road (both directions) [NB the model applies the slow down links to all times, not just the peak]. Furthermore, as described in section 5 of my proof the development included improvements to the junction that will ensure that congestion will not worsen.

2.4.13 TJ 5.4.26 – 4.5.28

It is acknowledged that the results at REC3 are incongruent with the rest of the data. A detailed review of the model inputs discovered that the roundabout flows close to this receptor were wrong. This error has been rectified for the results shown in table NMR5. It is not considered that this error had a significant effect on the overall interpretation of the report by NWLDC in their reason for refusal.

2.4.14 BTJ 5.4.29 Mitigation

Section 5 of my Proof deals with mitigation. Furthermore, it is understood that a section 106 agreement will include provision for continued air quality monitoring at the Broom Leys Road junction.

2.5.1 BTJ 4.6.1 – 5.4.1 Summary and Policies

PPS23 provides the national planning guidance on planning and air quality. Paragraph 1G.2 of Annex 1 to the Statement states that *"It is not the case that all planning applications for developments inside or adjacent to AQMAs should be refused if the developments would result in a deterioration of local air quality. Such an approach could sterilise development"*. The guidance advises local planning authorities to explore ways of mitigating air quality impacts that "would allow the proposal to proceed". It is clear from the local authorities monitoring results and from the modelling results that concerns about air quality are localised to a very small spatial area around the Stephenson Green / Broom Leys Road junction and that the potential improvements in junction flow associated with the development has the

potential to offer air quality benefits. The local planning authority has not sought to explore alternative mitigation methods beyond those proposed by the applicant or proposed any of its own mitigations and it has therefore failed in my opinion to meet the guidance in PPS23 Annex 1.

3.0 Conclusions

- 3.1.1 My rebuttal has also demonstrated that, with a revised model verification based solely on monitoring data from within the AQMA, there are no exceedences of the annual air quality objective with the development and that it is of 'negligible' significance in this respect in air quality terms.
- 3.1.2 Similarly I have demonstrated that the modelling of the hourly mean concentrations are robust and representative of a worst case scenario. The assumption from the local planning authorities' assessment of the automatic monitoring station data that there is an existing exceedence of the hourly average objective, has not been fully investigated and potential local influences have not been considered. I have therefore demonstrated that I do not consider that the conclusions of the local authorities' assessment to be robust.
- 3.1.3 That staging of the development will not effect the outcomes of the assessment.
- 3.1.4 I have demonstrated that, assuming a worst case sensitivity scenario of no improvements in traffic emissions factors and no future year reductions presents an unrealistic future year representation. Even with this unrealistically pessimistic assessment scenario the development is predicted to increase an exceedence of the annual mean objective at one receptor and not to result in any new exceedences.
- 3.1.5 Based on the guidance within PPS23 it is my opinion that given the small risk of adverse air quality effects from the proposed development refusal of the application on air quality grounds is disproportionate.
- 3.1.6 I would respectfully request the Inspector to grant planning permission for the proposed development.

End