



Review of Local Plan: Blaby District Council

September 2017



Experts in air quality
management & assessment

Document Control

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1 Introduction

- 1.1 In 2012, Air Quality Consultants Ltd (AQC) was commissioned by Blaby District Council to undertake a review of the Core Strategy. Specifically, AQC was tasked with reviewing the air quality evidence base for the different distribution strategies, evaluating the projected changes to air quality set out in the Transport Assessment taking into account the phasing of developments, and identifying the implications of the planned developments on the Air Quality Management Areas. A report was submitted to the Council in August 2012 (J1520/1/F1).
- 1.2 Since this time, Blaby District Council has been considering a wide range of options for the preferred locations for housing and employment growth in the emerging Local Plan. It is anticipated that the development originally planned at Lubbethorpe may fall short of the target to deliver 4.250 dwellings by 2029, by around 750 dwellings. In order to make up this shortfall, the preferred option is to provide 750 dwellings on land North of the A47. In addition, it is also proposed to add additional employment land (c30 ha) to a site at St Johns, Enderby.
- 1.3 This report considers changes to air quality conditions since the 2012 Assessment was completed, and considers whether the conclusions of that report remain robust. It also considers the air quality impact of the preferred options.

2 Current Air Quality Conditions

- 2.1 Blaby District Council currently has four Air Quality Management Areas (AQMA), associated with exceedances of the annual mean objective for nitrogen dioxide. These are:
- AQMA1: An area extending along the corridor of the A5460 Narborough Road South, extending to the junction with the A563 and encompassing the Fosse Park Shopping Centre;
 - AQMA2: An area extending along the M1 corridor from the B582 down to the railway line south of the B4114;
 - AQMA3: An area extending along the M1 corridor from just south of Leicester East service station up to Kirby Muxloe, and including small sections of the A47 at Kirby Fields; and
 - AQMA4B: An area encompassing a small section of the B4114 St Johns Road, north of the junction with the B582 Blaby Road.
- 2.2 Two previously declared AQMAs, AQMA4A (a section of Blaby Road to the east of Blaby Bypass in Whetstone) and AQMA5 (Branting Hill, south of the A46/Groby Road junction), were revoked in 2012 and 2016, respectively.

- 2.3 In addition, the 2017 Annual Status Report (ASR) identifies exceedances of the annual mean objective at Hall Walk in Enderby. The Council has proposed that a new AQMA (AQMA6 – Mill Hill, Enderby) be declared. This is to be considered by the Council's Cabinet executive towards the end of 2017.
- 2.4 Within this report, particular consideration has been given to AQMA3 (as it is close to the land North of the A47), AQMA1 (as the southern boundary of the AQMA is close to the preferred employment site at Enderby) and AQMA2 as it encompasses the M1 corridor south of Enderby. Consideration is also given to the proposed AQMA6.

Air Quality Monitoring Data

- 2.5 Blaby DC operates four continuous monitoring sites that measure nitrogen dioxide. The Council also operates an extensive network of diffusion tube monitoring sites across the district. A summary of results for the past five years, at monitoring locations within AQMA1, AQMA2, AQMA3, and the proposed AQMA6, are shown in Table 1.
- 2.6 The 2017 ASR draws the following conclusions from the monitoring data:
- AQMA1: There have been no recorded exceedances since 2012. In 2016, all concentrations were below 30 $\mu\text{g}/\text{m}^3$. The Council proposes to amend the AQMA boundary so that only the northernmost extent remains;
 - AQMA2: Levels over the period 2014 – 2016 have remained low and well below the objective. The Council proposes to continue monitoring to confirm whether an amendment or revocation of the AQMA is appropriate;
 - AQMA3: There was an elevated concentration recorded at CM4 in 2015, but levels in 2016 were all below the objective. The Council proposes to continue monitoring to confirm whether an amendment or revocation of the AQMA is appropriate;
 - Mill Hill, Enderby: There have been exceedances of the objective recorded at Site DT4 in all years since monitoring commenced in 2013. There was also a recorded exceedance at the continuous monitoring site (CM5) in 2016.

Table 1: Summary of Nitrogen Dioxide (NO₂) Monitoring (µg/m³) (2012-2016)

Site No.	Site Type	Location	2012	2013	2014	2015	2016
AQMA1 Narborough Road South							
DT1	R	23 Kingsway	-	35	27	25	25
DT2	R	34a Narborough Road	41	32	25	24	26
DT3	R	1 Cleveleys Avenue	29	28	22	20	26
DT25	R	7 Narborough Road	38	33	21	22	29
DT34	R	7 Braunstone Lane East	-	-	-	17	24
DT35	R	2 Narborough Road South	-	-	-	21	30
DT36	R	2 Braunstone Lane	-	-	-	24	26
AQMA2 M1 Corridor Enderby and Narborough							
CM1	R	Packhorse Drive	31	26	26	38	23
DT8	R	King Edward Avenue	55	43	32	29	30
DT11	Other	Packhorse Drive	35	27	22	19	20
DT12	Other	Packhorse Drive	35	29	23	20	20
DT13	Other	Packhorse Drive	35	29	23	19	24
DT14	Other	Cumberwell Drive	39	30	25	21	25
DT19	R	St Johns	42	30	25	23	23
DT29	R	258 Blaby Road	-	-	21	16	22
AQMA 3 M1 Corridor Thorpe Astley and LFE							
CM3	R	Hinckley Road LFE	-	-	32	29	25
CM4	R	Hinckley Road LFE	-	-	32	50	25
DT6	R	Hinckley Road LFE	50	42	35	31	29
DT16	R	The Cottage, Ratby Lane	51	39	31	29	36
DT17	R	St Andrews Church, Hinckley Rd	35	29	22	20	26
DT18	Other	64 Packer Avenue	49	40	29	28	34
Mill Hill, Enderby (Proposed AQMA6)							
CM5	R	Moores Lane/Hall Walk	-	-	-	-	44
DT4	R	Groom Lodge, Hall Walk	-	49	47	44	53
DT40	R	9 Mill Hill	-	-	-	23	33
DT41	R	Mill Hill Rd/Conery Lane	-	-	-	24	37
DT42	R	17 Blaby Road	-	-	-	24	32
DT43	R	2 Blaby Road	-	-	-	24	33
DT44	R	1 Mill Hill Road	-	-	-	24	32

Sites denoted "R" are roadside. Sites denoted "CM" are continuous monitors; "DT" are diffusion tubes. Exceedances of the objective are shown in bold.

Exceedances of EU Limit Value

- 2.7 In addition to the UK air quality objectives, against which local authorities carry out their LAQM work, the European Union has also set limit values for nitrogen dioxide, PM₁₀ and PM_{2.5}. The limit values for nitrogen dioxide are the same numerical concentrations as the UK objectives, but achievement of these values is a national obligation rather than a local one. In the UK, only monitoring and modelling carried out by UK Central Government meets the specification required to assess compliance with the limit values. Central Government does not recognise local authority monitoring or local modelling studies when determining the likelihood of the limit values being exceeded.
- 2.8 Exceedances of the annual mean EU limit value for nitrogen dioxide in the study area have been identified using the maps of roadside concentrations published by Defra as part of its 2017 Air Quality Plan, for the baseline year 2015, and for the future years 2017 to 2030. These are the maps used by the UK Government to report exceedances of the limit value to the EU. The national maps of roadside PM₁₀ and PM_{2.5} concentrations (Defra, 2017e), which are available for the years 2009 to 2015 show no exceedances of the limit values anywhere in the UK in 2015.
- 2.9 The modelling undertaken by Defra shows all local authorities with road links above the limit value for nitrogen dioxide, and the projected levels in future years, assuming no further action is taken. The national modelling identifies exceedances in Blaby District Council in 2017 and 2018, but in no years thereafter. On this basis, the Council is not required to conduct a feasibility study. It may be concluded that the Local Plan will not affect future compliance with the limit value.

3 Future Air Quality Conditions

- 3.1 The data presented in Section 2 describes existing air quality conditions. As the housing and employment land allocations will occur in the future, and will be phased over a number of years, it is also useful to consider how concentrations might change over this time period. Projections of roadside nitrogen dioxide concentrations have been made based on the approach described in LAQM TG16¹. The results are shown in Table 2, and are derived from the highest measured value in 2016, within each AQMA. Concentrations are provided for 2019, 2025 and 2029; these reflect the earliest year for any aspect of the developments to come forwards (2019), the year by which the full developments will be delivered (2029), and an interim year (2025).

¹ <https://laqm.defra.gov.uk/tools-monitoring-data/roadside-no2-projection-factor.html>

Table 2: Projected Annual Mean Roadside Nitrogen Dioxide Concentrations for 2019, 2025 and 2029 ($\mu\text{g}/\text{m}^3$)

Site No.	AQMA	Location	2016	2019	2025	2029
DT35	AQMA1	2 Narborough Road South	30	25	19	17
DT8	AQMA2	King Edward Avenue	30	25	19	17
DT16	AQMA3	The Cottage, Ratby Lane	36	30	22	21
DT4	AQMA6	Groom Lodge, Hall Walk	53	44	33	31

- 3.2 In line with the expected improvement in NO_x emissions per vehicle, nitrogen dioxide concentrations are forecast to decline in the future, and are well below the objective by 2025². There is predicted to be an exceedance of the objective in Enderby (within the proposed AQMA) in 2019³.

4 Forecast Traffic Growth

- 4.1 An assessment of the Highways and Transportation impacts of the proposed housing and employment sites has been undertaken⁴ to support the emerging Local Plan. For each option, the net change in traffic levels on the road network has been modelled⁵.

Housing Options

- 4.2 For the purpose of this report, only the preferred option (750 dwellings North of the A47) is considered. Data from the Site Allocation Option (SAO) report have been extracted for the critical road links (i.e. those within an existing or proposed AQMA).
- 4.3 The data in the SAO report are provided for the “am peak hour” only. In air quality terms, it is more usual to give consideration to the 24-hr Annual Average Daily Traffic flow. For the purpose of this study the am peak flows have been adjusted to AADT flows using the following formula:

$$\text{AADT} = [(\text{am peak flow}) / 2.85] \times 24$$

² The Defra tool is based on COPERT4v11. COPERT5 has now been published and which incorporates higher NO_x emissions for some diesel LGVs. Nitrogen dioxide concentrations may not decline as rapidly as shown in Table 2, particularly in the period 2016 – 2021.

³ Further projections show that the objective would be met ($39 \mu\text{g}/\text{m}^3$) in 2021.

⁴ Site Allocation Option, Stage 1: Strategic Assessment. Edwards & Edwards Consultancy Ltd.

⁵ This takes account of the reduction in provision at Lubbesthorpe up to 2029.

- 4.4 AADT flows have been calculated for specific critical links within the existing and proposed AQMAs, and are summarised in Table 3.

Table 3: Forecast Net Change to AADT on Key Links

Link No.	AQMA	Link	AM Peak	AADT
21	AQMA1	A5460/M1	-69	-581
19	AQMA1	Lubbesthorpe Way South	-54	-455
2	AQMA3	A47 East	157	1322
26	AQMA3	M1 North	-30	-253
25	AQMA3	MI (LFE)	-29	-244
30	AQMA6	B582 Enderby	16	135

- 4.5 A further consideration is the phasing of new housing on land North of the A47. Blaby District Council has provided an indication of the expected phasing; this was based on the provision of 510 dwellings, and has been factored up to 750 dwellings. A summary of the net change to AADT flows in each year, based on this phasing, is provided in Table 4.

Table 4: Estimated Cumulative Net Change to AADT Flows on Key Links - Housing

Link	2021	2022	2023	2024	2025	2026	2027	2028	2029
A5460/M1	-31	-101	-170	-240	-310	-380	-449	-519	-581
Lubbesthorpe Way South	-24	-79	-133	-188	-243	-297	-352	-406	-455
A47 East	71	229	388	546	705	864	1022	1181	1322
M1 North	-13	-44	-74	-104	-135	-165	-195	-226	-253
MI (LFE)	-13	-42	-72	-101	-130	-160	-189	-218	-244
B582 Enderby	7	23	40	56	72	88	104	120	135

Employment Options

- 4.6 For the purpose of this report, only the preferred option (EMP 1 Enderby Scenario 2) is considered. Data from the Site Allocation Option (SAO) report have been extracted for the critical road links (i.e. those within an existing or proposed AQMA).
- 4.7 AADT flows have been calculated from the “am peak flows” (using the approach described above) for specific critical links within the existing and proposed AQMAs, and are summarised in Table 5.

Table 5: Forecast Net Change to AADT on Key Links - Employment

Link No.	AQMA	Link	AM Peak	AADT
21	AQMA1	A5460/M1	193	1625
19	AQMA1	Lubbesthorpe Way South	0	0
2	AQMA3	A47 East	0	0
26	AQMA3	M1 North	60	505
25	AQMA3	MI (LFE)	98	825
30	AQMA6	B582 Enderby	39	328

- 4.8 A further consideration is the phasing of the new employment space. Although detailed trajectories have not been provided, Blaby District Council has advised that an even distribution be assumed over the period 2019 to 2029. A summary of the cumulative net change in each year, based on this phasing, is provided in Table 6.

Table 6: Estimated Cumulative Net Change to AADT Flows on Key Links - Employment

Link	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
A5460/M1	148	296	444	592	740	888	1036	1184	1332	1480	1625
Lubbesthorpe Way South	0	0	0	0	0	0	0	0	0	0	0
A47 East	0	0	0	0	0	0	0	0	0	0	0
M1 North	46	92	138	184	230	276	322	368	414	460	505
MI (LFE)	75	150	225	300	375	450	525	600	675	750	825
B582 Enderby	30	60	90	120	150	180	210	240	270	300	328

Cumulative Impacts

- 4.9 Whilst the SOA report shows that the transport distribution for the housing and employment allocations largely takes different routes, there are some road links where cumulative impacts are forecast. This assessment therefore focuses on the combined impacts of traffic generated by the housing and employment allocations.
- 4.10 The forecast cumulative net change in each year is provided in Table 7.

Table 7: Estimated Cumulative Net Change to AADT Flows on Key Links – Housing and Employment

Link	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
A5460/M1	148	296	413	491	570	648	726	804	883	961	1047
Lubbesthorpe Way South	0	0	-24	-79	-133	-188	-243	-297	-352	-406	-455
A47 East	0	0	71	229	388	546	705	864	1022	1181	1322
M1 North	46	92	125	140	156	172	187	203	219	234	253
M1 (LFE)	75	150	212	258	303	349	395	440	486	532	581
B582 Enderby	30	60	97	143	190	236	282	328	374	420	463

5 Conclusions

5.1 Taking into account the current and projected roadside nitrogen dioxide concentrations, and the net changes to AADT flows on the selected links, the following conclusions can be drawn:

- The redistribution from housing at Lubbesthorpe to a site North of the A47 generates a corresponding reduction in traffic on a number of links. Even taking account of the cumulative flows, there is an overall net reduction on Lubbesthorpe Way South (within AQMA1), and any adverse impacts can be discounted;
- The A5460/M1 link also lies within AQMA1. Nitrogen dioxide concentrations have been steadily falling and were all below 30 $\mu\text{g}/\text{m}^3$ in 2016. The Council is intending to amend the AQMA so that only the northern section is retained. Given the projected changes to net AADT, and the corresponding reductions in nitrogen dioxide concentrations, any constraints to the Local plan proposals are considered highly unlikely;
- The A47, M1 North and M1 LFE links are within AQMA3. Annual mean nitrogen dioxide levels have been declining, other than an unusually high concentration recorded at Hinckley Road in 2015. Given the forecast reduction in nitrogen dioxide concentrations by the mid-2020s, it is considered that any air quality constraints to the Local Plan proposals are unlikely, as increases in pollution associated with the increased traffic are expected to be offset by a reduction in pollutant emissions per vehicle. The Council should continue monitoring at all sites within this AQMA;
- The B582 link is within the proposed AQMA6 in Enderby, where concentrations well above the objective were recorded in 2016. Projections indicate that the objective might not be achieved until post-2021 (and this may be further delayed depending on the on-road performance of new Euro6 diesel cars). However, the net change to AADT flows in the years up until 2021 is small.

Whilst constraints to the Local Plan proposals are not likely, a more detailed assessment (beyond the scope of this study) would be justified.

- 5.2 The preferred options for housing and employment do not invalidate the conclusions in the August 2012 report.