

Blaby District Council

Air Quality Report

Local Plan 2024 to 2042

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Quality information

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1. Executive Summary

- 1.1 Blaby District Council (BDC) has commissioned AECOM Limited (AECOM) to prepare an air quality assessment to inform the preparation and evidence base for their emerging Local Plan.
- 1.2 This report includes the following:
 - Review of air quality in BDC and in the vicinity of the Air Quality Management Areas (AQMAs);
 - Review of relevant legislation and air quality planning policy;
 - Screening assessment of road traffic emissions from 2019 baseline traffic data, 2041 traffic data with cumulative schemes (without the Local Plan in place) and 2041 traffic data with cumulative schemes and implementation of the Local Plan to visualise where changes to emissions are predicted to be highest within Blaby District;
 - Review of sensitive receptor locations in the Lubbethorpe Road and Mill Hill AQMAs;
 - Detailed dispersion modelling assessment of nitrogen dioxide (NO₂) and particulate matter (PM₁₀ and PM_{2.5}) concentrations within and close to the AQMAs with comparison against UK Air Quality Strategy (AQS) objectives to determine the magnitude of change in annual mean pollutant concentrations attributable to planned development within the Local Plan.
 - Assessment of traffic-related carbon dioxide (CO₂) emissions, expressed in tonnes of CO₂ equivalent (CO₂e), to quantify emissions in recognition of national net zero targets and relevant local climate policies.
- 1.3 The assessment indicates that air quality across Blaby District is generally good and continues to improve. At both active AQMAs (AQMA 6 – Mill Hill and AQMA 7 – Lubbethorpe Road), all modelled NO₂, PM₁₀ and PM_{2.5} concentrations for the 2019 baseline and 2041 future scenarios were below the relevant Air Quality Strategy (AQS) objectives. Monitoring data for 2020-2024 show a sustained downward trend in NO₂, with no exceedances of the annual mean objective observed since 2022.
- 1.4 A screening assessment of road traffic emissions, based on predicted traffic data for 2019 and the 2041 “without” and “with Local Plan” scenarios, identified four locations in the District where changes in future road-NO_x emissions are expected to be most pronounced. These were along the A426 Lutterworth Road, the B582 northwest of the M69 junction, the B582 Enderby Road corridor and the approaches to the B582/B4114 Foxhunter Roundabout. While detailed dispersion modelling of these areas falls outside the scope of this report, they are highlighted as priority locations for any future assessment work relating to the Local Plan Review.
- 1.5 Implementation of the emerging Local Plan is predicted to have negligible impacts on local air quality within the two AQMAs. Changes in annual mean pollutant concentrations at representative receptors are minimal ($\leq 0.3 \mu\text{g}/\text{m}^3$ for NO₂), and no new exceedances or significant deterioration in air quality are anticipated. The modelled areas are expected to remain in compliance with all national air quality objectives throughout the Plan period, supported by ongoing improvements in vehicle technology and background air quality.
- 1.6 Traffic-related CO₂ emissions are forecast to decrease substantially from approx. 269,700 tonnes/year in 2019 to approx. 161,000 tonnes/year in 2041 (without the Local Plan), primarily due to improvements in vehicle fleet emissions through the projected vehicle fleet electrification and tighter emission standards. With the Local Plan in place, emissions are predicted to increase by 9,403 tonnes/year (~5.8%) relative to the “without plan” scenario, remaining far below 2019 levels. As the end year of the Plan, 2041 marks the year with the greatest absolute and relative change in CO₂ emissions with the plan in place, with preceding years and the years following having lower absolute and relative changes, due to the general background decrease in emissions. The Local Plan is therefore not expected to generate a significant retardation of the reduction in CO₂ emissions that would otherwise occur without the Plan.
- 1.7 It is recommended that BDC continues local air quality monitoring within AQMAs 6 and 7 to track post-2025 trends and verify continued compliance. Air quality and carbon considerations should remain integrated within planning and transport decision-making, particularly along

congested corridors such as Mill Hill and Lubbesthorpe Road. Alignment between the Local Plan, new Air Quality Action Plan (2025-2029) and Climate Change Strategy (2020-2030) should be maintained to ensure that air quality, public health, and carbon-reduction objectives are delivered in a coordinated and complementary manner. Suggested measures to improve air quality and CO₂ emissions are outlined in the report.

- 1.8 Four further areas of concern have been identified where predicted increases in traffic emissions are of note. The Council should keep under review the need to model these additional sites.

2. Introduction

- 2.1 Blaby District Council (BDC) has commissioned AECOM Limited (AECOM) to prepare an air quality assessment to inform the preparation and evidence base for their Local Plan.
- 2.2 This report has been prepared to provide an overview of air quality in Blaby District, drawing on recent trends in monitoring data and an overview of current legislation and relevant policy. The report provides the methodology used, and the results of the modelled pollutant (NO₂, PM₁₀, PM_{2.5}) concentrations at selected sensitive human health receptors.
- 2.3 In addition, traffic data and emissions for the entire district with and without the Local Plan's proposed level of growth have also been considered as part of a screening assessment to consider the impacts of the Local Plan on air quality across the district.

Blaby District

- 2.4 Blaby District covers an area of approximately 130 square kilometres (50 square miles) in south-west Leicestershire. It is one of seven districts within the county and lies within the East Midlands Region. According to the 2021 Census, the district has a population of 102,926 (Office for National Statistics, 2021) residing in approximately 40,953 households (Office for National Statistics, 2021). The development proposals in the Local Plan forecasts population growth to 127,000 by 2041 (Blaby District Council, 2024a; Blaby District Council, 2022).
- 2.5 The northernmost part of the District is predominantly urban in character and has six settlements which adjoin and have a strong functional relationship with the Principal Urban Area and administrative area of Leicester City. These settlements (Glenfield, Braunstone Town, Kirby Muxloe, Leicester Forest East, New Lubbethorpe and Glen Parva) form part of the 'Principal Urban Area' of Leicester. A number of larger villages (with populations greater than 5,000) exist south of the City boundary which have a good functional relationship with the City and offer a wide range of services and facilities. These include the villages of Narborough, Enderby, Blaby, Countesthorpe and Whetstone. The south of the District is more rural comprising a number of villages which have stronger links with Hinckley.
- 2.6 Around 80% of the population lives in urban or suburban areas, with the remaining 20% residing in rural settlements (Blaby District Council, 2025c). Agriculture and greenfield areas continue to account for much of the rural land use within the district.
- 2.7 The M1 motorway (Junction 21A and 21) and M69 motorway run through the district, supported by key A-roads including the A426 and A50 as well as B-roads such as the B4114. Rail services are provided via Narborough railway station, linking the district to Leicester and the wider East Midlands region (Blaby District Council, 2024b; Blaby District Council, 2024a).

Air Quality Management Areas

- 2.8 The requirements of Local Air Quality Management (LAQM) as set out in Part IV of the Environment Act 1995 (HM Government, 1995) places an obligation on all local authorities to regularly review and assess air quality in their areas, and to determine whether the air quality objectives are likely to be achieved. Where an exceedance is considered likely through monitoring or modelling, the local authority must declare an AQMA and prepare an Air Quality Action Plan (AQAP) setting out the measures it intends to put in place in pursuit of the objectives.
- 2.9 BDC declared its first AQMAs in January 2001 due to exceedances of the UK annual mean objective (see Table 3-1) for nitrogen dioxide (NO₂), with AQMA 1 (Narborough Road South / Fosse Park), AQMA 2 (M1 corridor at Enderby and Narborough), and AQMA 3 (M1 corridor at Thorpe Astley and Leicester Forest East). Further AQMAs were declared in subsequent years, including AQMA 4B (Enderby Road, Whetstone) in 2005 (amended in 2020), AQMA 5 (A46/A50 Groby Road junction) in 2005 (amended in 2016), and AQMA 6 (Mill Hill, Enderby) in 2018 (amended in March 2025). In November 2024, following sustained improvements in air quality, AQMAs 1, 2, 3 and 4B were revoked. However, a new AQMA 7 was declared in November

2024 at Lubbethorpe Road, Braunstone Town, in response to exceedances identified in 2022 (Blaby District Council, 2024a; Blaby District Council, 2024b).

2.10 Figure 2-1 and Figure 2-2 show the Blaby District map and the broad locations of the two current AQMAs.

Figure 2-1 Blaby District map

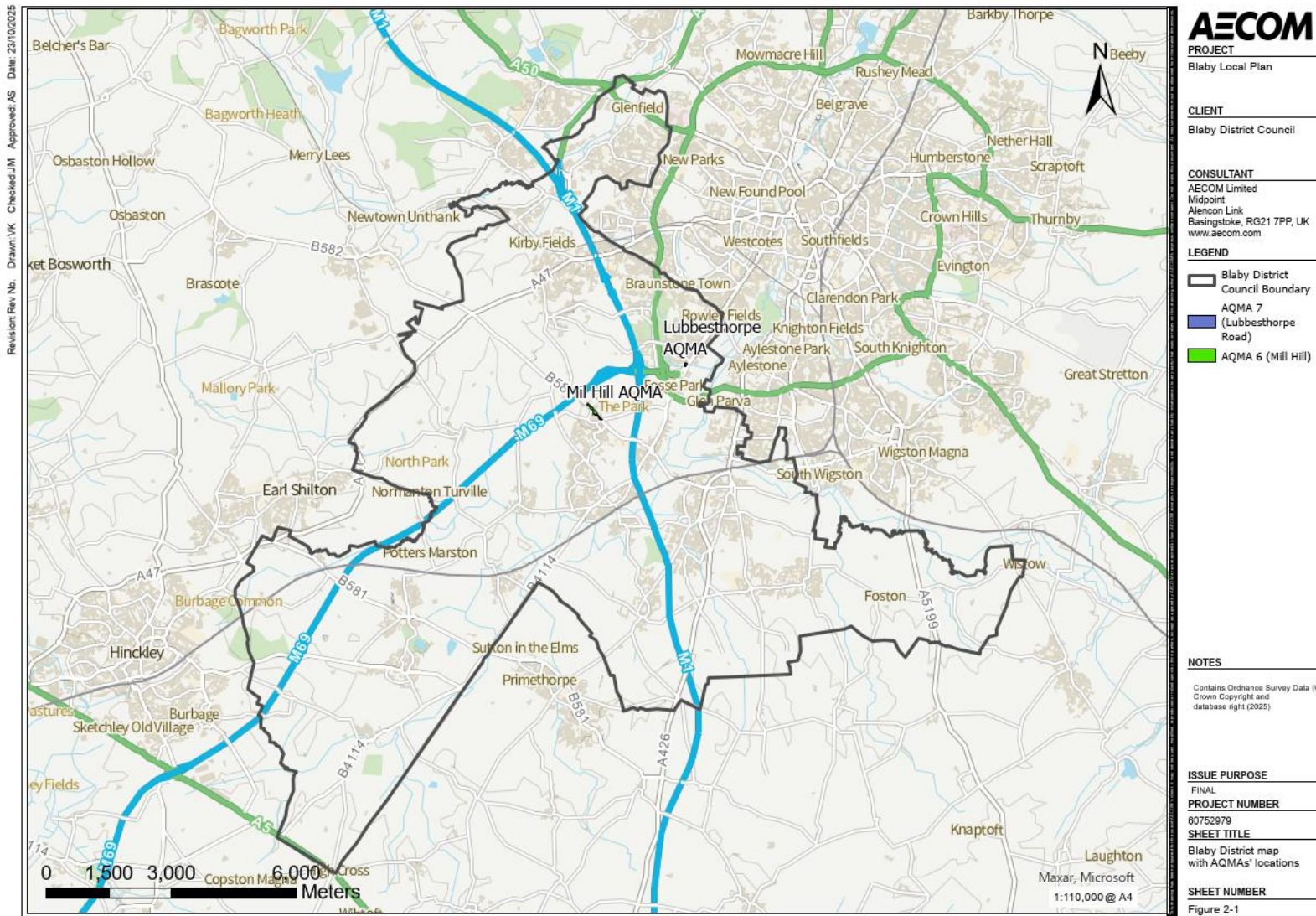
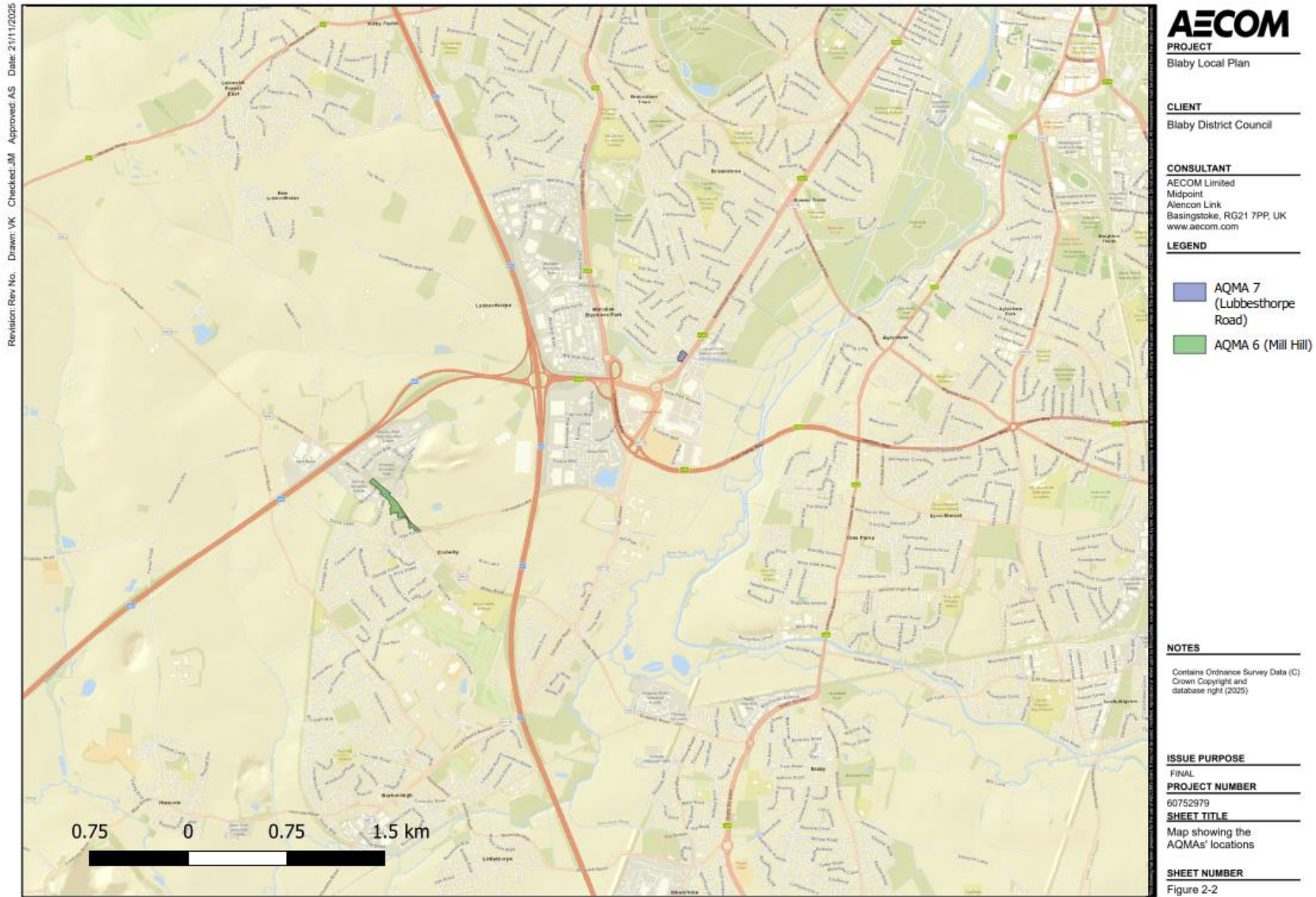


Figure 2-2: Map with the locations of the AQMAs



3. Policy Context

Air Quality Standards Regulations (as amended) (2016)

- 3.1 The principal air quality legislation within the United Kingdom is the Air Quality Standards Regulations (as amended 2016) (HM Government, 2016) including amendments 'The Environment (Miscellaneous Amendments) (EU Exit) Regulations 2020 (UK Statutory Instruments, 2020).
- 3.2 The UK is no longer a member of the European Union, however, EU legislation as it applied to the UK on 31st December 2020 (UK Statutory Instruments, 2020) is now a part of UK domestic legislation, under the control of the UK's Parliaments and Assemblies. The Clean Air for Europe (CAFE) programme consolidated and replaced (with the exception of the 4th Daughter Directive) preceding EU directives with a single legal act, the Ambient Air Quality and Cleaner Air for Europe Directive 2008/50/EC ('EU Air Quality Framework Directive') (Council of European Union, 2008). This directive is transcribed into UK legislation by the Air Quality Standards Regulations 2010 which came into force on 11th June 2010 (HM Government, 2010). The 2010 Regulations were amended by the Air Quality Standards Regulations 2016, which came into force on 31st December 2016 (HM Government, 2016). The limit values defined therein are legally binding and are considered to apply everywhere (with the exception of the carriageway and central reservation of roads and any locations where the public do not have access).

Clean Air Strategy

- 3.3 In 2019, the UK government released its Clean Air Strategy 2019 (Defra, 2019) as part of its 25-year Environment Plan.
- 3.4 Local air quality management focus in recent years has primarily related to nitrogen dioxide (NO₂), and its principal source in the UK, road traffic. However, the 2019 Strategy broadens the focus to other areas, including domestic emissions from wood burning stoves and from agriculture. This shift in emphasis is part of a goal to reduce the levels of fine particulate matter (PM_{2.5}) in the air to below the World Health Organisation (WHO) guideline level; lower than the current UK objective (WHO, 2021).
- 3.5 The Environment Act 2021 (HM Government, 2021) amends the Environment Act 1995. On 9th November 2021, the Act received Royal Assent after being first introduced to Parliament in January 2020 to address environmental protection and the delivery of the Government's 25-year Environment Plan following Brexit. It includes provisions to establish a post-Brexit set of statutory environmental principles and ensure environmental governance through an environmental watchdog, the Office for Environmental Protection (OEP).
- 3.6 The Secretary of State must publish a report reviewing the AQS every five years (as a minimum) and yearly updates to Parliament.

Environmental Improvement Plan 2023

- 3.7 The 25 Year Environment Plan, originally published in January 2018, and updated in 2019, sets out the actions the UK Government will take to help the natural world regain and retain good health (H.M. Government, 2018).
- 3.8 The Environment Plan was revised in February 2023 (H.M. Government, 2023) with the publication of the Environmental Improvement Plan 2023. The plan outlines several actions that are being taken to improve air quality, most notably by supporting local authorities, facilitating the rollout of Clean Air Zones, supporting the transition away from petrol and diesel cars, regulating domestic burners, and regulating agricultural emissions.
- 3.9 Interim targets (deadline 2028) for PM_{2.5} were also announced to demonstrate the trajectory against the long-term legal targets (deadline 2040) set out in The Environmental Targets (Fine Particulate Matter) Regulations 2023 (H.M. Government, 2023).

UK Air Quality Strategy

- 3.10 A new AQS was published in April 2023 (Defra, 2023). It sets out the actions the government expects local authorities to take in support of achieving the new national PM_{2.5} targets, by reducing emissions from sources within their control.
- 3.11 The Air Quality Objectives set out in the AQS (Defra, 2007) (Defra, 2023) have been outlined in legislation solely for the purposes of LAQM. The objectives for the pollutants of relevance to this assessment are displayed in Table 3-1 including the new national targets for PM_{2.5} concentrations stated within the Environment Act 2021 (H.M. Government, 2021), the Environmental Improvement Plan 2023 (H.M. Government, 2023) and the Air Quality Strategy 2023 (Defra, 2023).
- 3.12 The 2023 Air Quality Strategy and the Environmental Improvement Plan (2023) collectively signal a shift from compliance-based management towards proactive emission reduction and exposure minimisation. In the coming years, local authorities are expected to play a more active role in delivering these outcomes by integrating air quality, climate, and health objectives within spatial planning. The introduction of legally binding PM_{2.5} targets—together with interim exposure-reduction goals, places stronger emphasis on tackling diffuse sources such as domestic combustion, construction activity, and non-exhaust vehicle emissions. For Blaby District, this evolving policy direction is likely to strengthen the case for Local Plan policies that go beyond minimum statutory requirements, for example through the promotion of low-emission development, active travel, electrification of transport, and integration with the Council's Climate Change Strategy (2020-2030). Embedding these principles will help future-proof the Local Plan against forthcoming national air-quality and net-zero obligations.

Table 3-1 UK AQS Objectives

Pollutant	Averaging Period	Value	Maximum Permitted Exceedances/Target
NO ₂	Annual Mean	40 µg/m ³	None
	Hourly Mean	200 µg/m ³	18 times per year
NO _x	Annual Mean	30 µg/m ³	None
PM ₁₀	Annual Mean	40 µg/m ³	None
	24-Hour Mean	50 µg/m ³	35 times per year
PM _{2.5}	Annual Mean	20 µg/m ³	None
		10 µg/m ³	By 2040
		12 µg/m ³	Interim target, (by end of January 2028)
		35%	By 2040
	Exposure reduction compared to 2018	22%	Interim target, (by end of January 2028)

WHO guideline Values

- 3.13 The WHO guideline values (WHO, 2021) are shown in Table 3-2. These are not legally binding standards, but identify the levels of air quality necessary to protect public health worldwide. Interim targets are also provided by the WHO to guide reductions towards achieving levels.

Table 3-2 WHO Guidelines

Pollutant	Averaging Period	WHO Guideline ($\mu\text{g}/\text{m}^3$)	Not to be Exceeded More Than
NO ₂	Annual	10	N/A
	Daily	25	3 days
PM ₁₀	Annual	15	N/A
	Daily	45	3 days
PM _{2.5}	Annual	5	N/A
	Daily	15	3 days

3.14 Further review of WHO guidelines is ongoing internationally, but no additional changes have been adopted in UK domestic policy at this stage (WHO, 2021).

National Planning Policy Framework

- 3.15 The National Planning Policy Framework (NPPF) sets out the Government's environmental, economic and social principles for land use planning in England and the expectations for how these are to be applied. The current version of the NPPF was published in December 2024 by the Ministry of Housing, Communities and Local Government (MHCLG) and is referred to as the 2024 revision (MHCLG, 2024) despite minor corrections being applied in early 2025. It replaces all previous versions, including the original 2012 Framework and subsequent revisions in July 2018, February 2019, July 2021, and updates in September and December 2023. The adopted 2024 version does not introduce any new policies specifically relating to air quality.
- 3.16 The most relevant provisions on air quality are found in paragraphs 110, 187, 198, 199 and 201 of the 2024 NPPF. These paragraphs advise that planning policies and decisions should contribute to, and enhance, the natural and local environment by preventing or avoiding unacceptable risks from pollution, including air pollution. In particular, they emphasise the importance of considering the cumulative impacts of development on air quality, especially in Air Quality Management Areas (AQMAs) and Clean Air Zones (CAZs). They also highlight the need to ensure consistency with relevant Air Quality Action Plans. The key NPPF paragraphs most relevant to an air quality assessment are provided in Table 3-3.

Table 3-3 Relevant NPPF requirements relevant to the air quality assessment

Relevant NPPF paragraph reference	Requirement of the NPPF
Paragraph 187	<p>Planning policies and decisions should contribute to and enhance the natural and local environment by:</p> <ol style="list-style-type: none"> protecting and enhancing valued landscapes, sites of biodiversity or geological value and soils (in a manner commensurate with their statutory status or identified quality in the development plan); preventing new and existing development from contributing to, being put at unacceptable risk from, or being adversely affected by, unacceptable levels of soil, air, water or noise pollution or land instability. Development should, wherever possible, help to improve local environmental conditions such as air and water quality, taking into account relevant information such as river basin management plans; and remediating and mitigating despoiled, degraded, derelict, contaminated and unstable land, where appropriate.
Paragraph 199	<p>Planning policies and decisions should sustain and contribute towards compliance with relevant limit values or national objectives for pollutants, taking into account the presence of Air Quality Management Areas and Clean Air Zones, and the cumulative impacts from individual sites in local areas. Opportunities to improve air quality or mitigate impacts should be identified, such as through traffic and travel</p>

Relevant NPPF paragraph reference Requirement of the NPPF

management, and green infrastructure provision and enhancement. So far as possible these opportunities should be considered at the plan-making stage, to ensure a strategic approach and limit the need for issues to be reconsidered when determining individual applications. Planning decisions should ensure that any new development in Air Quality Management Areas and Clean Air Zones is consistent with the local air quality action plan.

Source: NPPF (MHCLG, 2024)

Planning Guidance

- 3.17 The National Planning Practice Guidance (NPPG) for Air Quality was published on March 2014 by the Department for Levelling Up, Housing and Communities (DLUHC) and updated as of November 2019 to provide more in-depth guidance to the NPPF (DLUHC, 2019).
- 3.18 The NPPG notes that air quality assessments should include the following information (paragraph 5):
- The existing air quality in the study area (existing baseline);
 - The future air quality without the Proposed Development in place (future baseline); and
 - The future air quality with the Proposed Development in place (with mitigation).
- 3.19 Paragraph 7 states that assessments need to be proportionate to the nature and scale of development proposed and the potential impacts (taking into account existing air quality conditions), and because of this, assessments are likely to be location specific.

Local Planning Policy

Leicestershire County Council Strategic Plan 2024 – 2026

- 3.20 The Leicestershire County Council Strategic Plan 2024 – 2026 (Leicestershire County Council, 2024) covers the Leicester City area as well as its surrounding boroughs, Blaby, Charnwood, Harborough, Hinckley & Bosworth, Melton, Northwest Leicestershire and Oadby & Wigston. It is a revised version of the 2022 – 2026 Strategic Plan and sets out the goals and priorities to improve safety, wellbeing and the environment within the County.
- 3.21 Air pollution is considered under section 8.3 ‘*People enjoy long lives in good health*’ where PM_{2.5} in particular is considered a significant health hazard as the third leading cause of preventable deaths in Leicestershire. Levels of air pollution have also been noted as a measure of success for improving health throughout the county.

Leicestershire Local Transport Plan 4

- 3.22 Leicestershire County Council adopted the Local Transport Plan 4 (LTP4) in November 2024, covering the period 2025–2040 (Leicestershire County Council, 2024). LTP4 sets out a strategic vision for a safe, connected, and integrated transport network that supports economic growth, improves health and wellbeing, and helps protect the environment. It replaces LTP3 (Leicestershire County Council, 2011), which no longer aligned with national planning and environmental priorities.
- 3.23 The LTP4 identifies the protection of the environment and the health of residents as key transport priorities. It sets out a long-term vision for a “*clean, efficient and connected transport system that enables people to live healthy and fulfilling lives in thriving communities, supports a productive economy and protects our environment*” (Leicestershire County Council, 2024). Among its five strategic outcomes is the aim to “reduce greenhouse gas emissions, improve air quality and protect the natural environment”. To achieve this, the Plan supports shifting journeys to lower-emission modes, reducing the need to travel, and embedding sustainability into planning and investment decisions. The strategy also outlines a move toward multi-modal area plans and focused strategies (e.g. decarbonising transport, freight, and behaviour change) that will support air quality improvements and help meet Leicestershire’s net zero commitments.

Blaby Local Plan 2011 – 2029

- 3.24 The Blaby District Local Plan (Delivery Development Plan Document) was adopted in February 2019 (Blaby District Council, 2024a). It forms the second part of the Local Plan and sits alongside the adopted 2013 Core Strategy. It includes site allocations and development management policies for housing, employment, infrastructure, and environmental protection. The Plan is currently being reviewed, with a new Local Plan proposed and scheduled for adoption in 2026 (Blaby District Council, 2024a). Further details are set out below.

Emerging Blaby District Local Plan

- 3.25 A new Local Plan for Blaby District is being prepared to guide development to 2042. It will replace the current Local Plan. A Regulation 18 consultation on the emerging Local Plan was undertaken in 2021, and technical evidence work is ongoing during 2024–2025, of which this assessment forms a part. The updated Plan will include revised policies on climate change, active travel, health, and environmental protection, including a new Policy on Air Quality. This policy is expected to strengthen the requirements for air quality assessment in and near AQMAs and promote strategic mitigation in coordination with infrastructure and public health partners (Blaby District Council, Emerging Blaby District Local Plan – Plan Making and Evidence Base, 2024a).

Air Quality Action Plan (AQAP) 2021–2025

- 3.26 BDC adopted a revised AQAP (Blaby District Council, 2021) in March 2021, covering all declared AQMAs at the time, including:
- AQMA 6 Mill Hill, Enderby (declared in 2018); and
 - Four AQMAs subsequently revoked in 2024 (Narborough Road South, M1 Enderby/Narborough, M1 Thorpe Astley, and Enderby Road, Whetstone).
- 3.27 The AQAP includes actions such as traffic and signal optimisation, travel planning, modal shift promotion, additional monitoring, and integration with development management (Blaby District Council, 2021).
- 3.28 In 2024, four AQMAs (AQMA 1, 2, 3, and 4b) were revoked following five years of sustained compliance. A new AQMA (AQMA 7) was declared in November 2024. A draft AQAP for 2025–2029 (Blaby District Council, 2025b) has since been prepared, which now includes both remaining AQMAs (AQMA 6: Mill Hill, Enderby and AQMA 7: Lubbethorpe Road, Braunstone Town).
- 3.29 The draft AQAP 2025–2029 (Blaby District Council, 2025b) outlines Blaby District Council's approach to achieving compliance with air quality objectives. It sets out six key priorities, including the promotion of low/zero-emission transport, enhanced air quality monitoring, regulatory enforcement, planning and development controls, behaviour change, and emissions reductions from domestic and industrial sources.

Climate Change Strategy 2020-2030

- 3.30 BDC's Climate Change Strategy 2020–2030 sets out a district-wide response to climate risks, encompassing both mitigation and adaptation. Key priorities include reducing emissions from transport, promoting active travel, improving green infrastructure, and encouraging zero-carbon development. The strategy directly supports air quality improvements by targeting traffic-related emissions, integrating environmental objectives into spatial planning, and promoting cross-sector collaboration. Specifically, it commits the Council to carbon neutrality in its own operations by 2030 and to supporting the wider district's transition by 2050, with co-benefits for health, biodiversity, and sustainable communities (Blaby District Council, 2020).

2030 Council Net Zero Action Plan

- 3.31 Building on the above, the 2030 Net Zero Council Action Plan outlines concrete projects to decarbonise the Council's own operations, including buildings, vehicle fleet, and business travel. Air quality is a key driver, with actions such as switching to electric refuse vehicles and installing workplace electric vehicle (EV) chargers supported by Defra air quality grants. The plan prioritises emission reductions across scope 1, 2, and selected scope 3 sources, while

also addressing indirect sources via procurement, commuting, and investment. The action plan embeds air quality and climate considerations into council governance and procurement decisions, reinforcing alignment with Local Plan objectives and the AQAP (Blaby District Council, 2023).

Active Travel Strategy 2024-2034

3.32 BDC's adopted its Active Travel Strategy in 2024 to support walking and cycling through improved infrastructure and behavioural change programmes. The strategy aligns with both the AQAP and the emerging Local Plan by targeting areas of congestion and known NO₂ exceedances, especially in AQMA zones (Blaby District Council, 2024).

Other Relevant Policy, Standards and Guidance

3.33 There is currently no statutory guidance on the method by which an air quality assessment should be undertaken. Environmental Protection UK (EPUK) and the Institute of Air Quality Management (IAQM) (Environmental Protection UK (EPUK) & IAQM, 2017) and the Department for Environment, Food and Rural Affairs (Defra) (Defra, 2022) have published their own guidance for carrying out air quality assessments for development control. These guidance documents have been followed in this air quality assessment.

4. Methodology

Traffic and Emissions Screening Assessment

- 4.1 Traffic data for 2041 were provided for two scenarios, a “Without Local Plan” (Do Minimum) case including cumulative committed developments, and a “With Local Plan” (Do Something) case incorporating additional growth proposed within the emerging Local Plan. These datasets were compared to identify where the largest percentage or absolute increases in annual average daily traffic (AADT) flows were predicted across the District.
- 4.2 Traffic data was also used to review the baseline NO_x emissions to visualise where the highest emissions are in comparison to where people live. Emissions for each link were calculated using the Emissions Factor Toolkit (EFT) (Defra, 2025) and the output visualised using GIS mapping.
- 4.3 Initial screening maps were prepared for all major routes within Blaby District, highlighting corridors and junctions exhibiting notable increases in traffic flows between the two 2041 scenarios.
- 4.4 Whilst this screening process has been used to identify areas with potentially large changes in traffic and/or emissions, professional judgement has also been utilised to identify the areas with the greatest likelihood of significant impacts. This takes into account existing conditions and population locations.

Detailed Modelling

Summary

- 4.5 This section presents the steps and methodology used to model the air quality in the two AQMAs which have been identified as the study area for each of the following traffic scenarios. It is noted that the years of assessment align with the outputs from the transport model:
 - 2019 baseline traffic data;
 - 2041 traffic data including cumulative developments; and
 - 2041 traffic data including cumulative developments and the Blaby Local Plan.
- 4.6 The following sources of information and data have been used to form the basis of the air quality assessment:
 - Defra’s current 2021-based Air Quality Background Concentration Maps (Defra, 2024);
 - Defra’s Vehicle Emission Factors within the EFT (Defra, 2025);
 - Air quality monitoring data from 2019 to 2023 (Blaby District Council, 2024b) and data for 2024 provide directly by BDC; and
 - Traffic count and speed data provided by AECOM Limited for 2019 and 2041 both with and without the Local Plan.
- 4.7 The modelling assessment was conducted following the methodology in Chapter 7 Section 4 “Dispersion Modelling of Emissions” within Defra’s LAQM.TG(22) Technical Guidance (Defra, 2022) and guidance contained within documents from Natural England (Natural England, 2018), the Institute of Air Quality Management (IAQM) (IAQM, 2020) and the Chartered Institute of Ecology and Environmental Management (CIEEM) (CIEEM, 2021).
- 4.8 A baseline year of 2019 was assessed in line with available traffic data. This provides a conservative assessment of air quality, as concentrations have declined since this time. Discussion on this is provided in the baseline and results sections. The following input datasets were used for the baseline modelling:

- Traffic flows: 2019 (from AECOM transport model)
- Meteorological data: 2019 (hourly sequential data from Church Lawford station)
- Emission rates: from EFT v13.1, based on 2021 emission factors¹
- Background pollutant maps and NO_x to NO₂ calculator: 2021 data² (Defra 1×1 km mapped dataset and corresponding conversion tool)

Traffic Data

- 4.9 Traffic data for roads were provided by AECOM's Transport Consultants, as part of their work with Leicestershire County Council, for a series of road links. Modelled links are shown in Figure 4-1 and Figure 4-2.
- 4.10 Traffic data was provided for each of these links in the form of 24-hour AADT flows split by basic vehicle types, i.e. cars, Light Duty Vehicles (LDVs), Heavy Duty Vehicles (HDVs) and average speeds for each given vehicle type.

Receptors

- 4.11 A desktop review using aerial mapping cross-checked with address base OS mapping was conducted to select representative locations where people are likely to be present, such as residential properties or medical centres.
- 4.12 The locations of the chosen sensitive receptors relevant to human health are included in Figure 4-1 to Figure 4-2 and Table 4-1 to Table 4-2. Receptors were chosen within and close to the AQMAs in Lubbethorpe and Mill Hill.
- 4.13 Receptors were modelled at the lowest point where there is residential exposure, at ground floor level, at a height of 1.5 metres above ground.

Table 4-1 Human Receptor Locations in Mill Hill AQMA 6

Receptor ID	Receptor Type	Within AQMA	X co-ordinate (m)	Y co-ordinate (m)	Height (m)
R1	Residential area (Hall Walk)	Y	453590	299584	1.5
R2	Residential area (Mill Hill)	Y	453538	299643	1.5
R3	Residential area (Mill Hill)	Y	453383	299802	1.5
R4	Residential area (Mill Hill)	Y	453428	299771	1.5
R5	Residential area (Mill Hill)	Y	453434	299742	1.5
R6	Residential area (Mill Hill)	Y	453411	299780	1.5
R7	Residential area (High Street)	N	453681	299446	1.5
R8	Residential area (High Street)	N	453662	299429	1.5
R9	Residential area (High Street)	N	453599	299411	1.5
R10	Residential area (High Street)	N	453637	299433	1.5

¹ This is the earliest year for which emissions factors are available and is a worst case approach for verifying the model

² This is the earliest year for which background maps are available

Receptor ID	Receptor Type	Within AQMA	X co-ordinate (m)	Y co-ordinate (m)	Height (m)
R11	Nursery (Warren Park Way)	N	453327	299925	1.5
R12	Residential area (High Street)	N	453564	299410	1.5

Figure 4-1 Air Quality Study Area Mill Hill AQMA 6

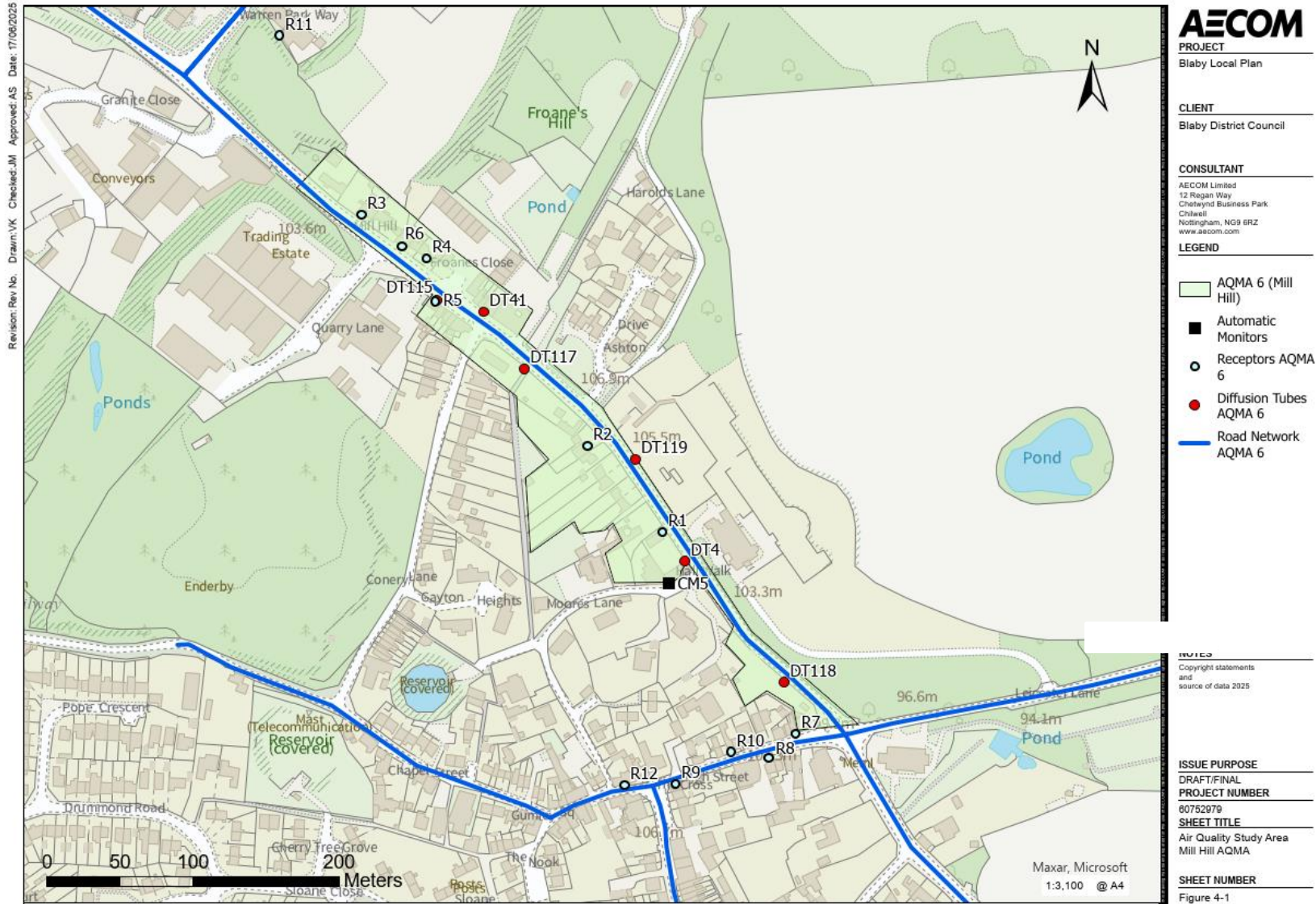


Table 4-2 Human Receptor Locations in and close to Lubbesthorpe Road AQMA 7

Receptor ID	Receptor Type	Within AQMA	X co-ordinate (m)	Y co-ordinate (m)	Height (m)
R1	Residential Area (Narb. Road South)	Y	455722	300755	1.5
R2	Residential Area (Lubb. Road)	Y	455691	300769	1.5
R3	Residential Area (Lubb. Road)	N	455646	300768	1.5
R4	Residential Area (Lubb. Road)	N	455656	300797	1.5
R5	Residential Area (Lubb. Road)	Y	455712	300792	1.5
R6	Residential Area (Lubb. Road)	Y	455731	300782	1.5
R7	Residential Area (Narb. Road South)	Y	455737	300793	1.5
R8	Residential Area (Narb. Road South)	Y	455730	300813	1.5

Figure 4-2 Air Quality Study Area Lubbesthorpe Road AQMA 7



Model Setup

- 4.14 Road traffic emissions of nitrogen oxides (NO_x) were derived using the latest version of Defra's EFT (v13.1) at the time of assessment and associated guidance and tools³.
- 4.15 The EFT provides fleet projections and emission rates for 2021 through to 2050 for England (not London), London, Northern Ireland, Scotland and Wales. Specifically, the EFT can be used to provide the following information:
- Emission rates for NO_x, PM₁₀, PM_{2.5} and CO₂ in g/km/s, g/km, or kg/yr (or tonnes/yr);
 - Non-exhaust PM (from brake, tyre, and road wear), including its contribution to total PM; and
 - CO₂e from plug-in vehicle charging based on average UK grid intensity.
- 4.16 Detailed dispersion modelling was undertaken using the current version of ADMS-Roads (v5.0.1.3) to model concentrations of NO_x and particulates using the parameters in Table 4-3. For the 2019 Baseline scenario, 2019 traffic data was used in conjunction with 2021 emission factors and 2021 background concentrations. This is due to the current emissions data and backgrounds only being published for 2021 onwards and traffic data only being available for 2019. Due to the effect of model verification, this approach is likely to lead to a worst case assessment. For the 2041 scenarios, 2041 traffic data was used, 2041 emission factors and 2040 background concentrations were applied as this is the furthest projection year for background maps.
- 4.17 Street canyon geometry was incorporated into the dispersion model where relevant to represent restricted dispersion conditions in narrow road corridors. This included High Street within the Mill Hill AQMA, where buildings closely line both sides of the road, and the adjacent section to the west, including parts of Mill Hill and George Street, where similar canyon-like characteristics are present.

Table 4-3 General ADMS-Roads Model Conditions

Variables	ADMS-Roads Model Input
Surface roughness at source	0.3m
Surface roughness at Meteorological Site	0.2m
Minimum Monin-Obukhov length for stable conditions	10m
Terrain types, Canyon	Flat, with street canyon for High Street, Mill Hill AQMA
Receptor location	x, y coordinates determined by GIS, z = 1.5m for human receptors.
Emissions	NO _x , PM ₁₀ and PM _{2.5} – Defra's EFT v13.1
Meteorological data	1 year (2019) hourly sequential data from Church Lawford meteorological station.
Receptors	Selected receptors
Model output	Long-term (annual) mean NO _x , PM ₁₀ and PM _{2.5} concentrations.

Meteorological Data

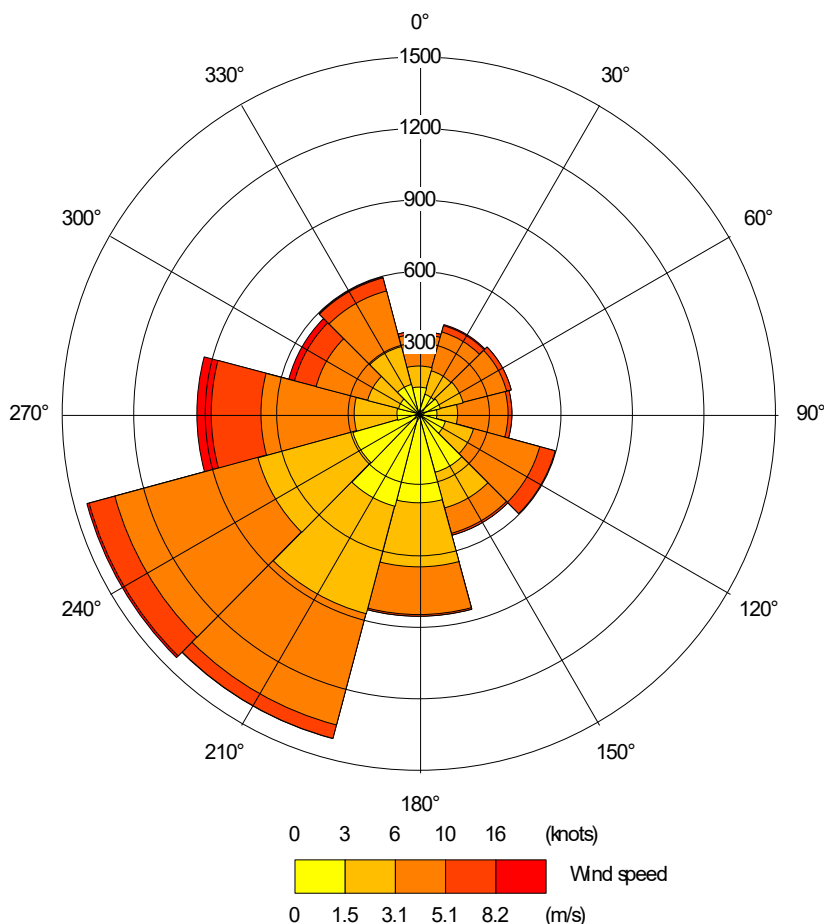
- 4.18 One year (2019) of hourly sequential observation data from Church Lawford meteorological station was used in this assessment to correspond with the baseline traffic data and monitoring data used for model verification. The station is the nearest to the study areas and is located approximately;
- 18km South-West of the Mill Hill AQMA;
 - 22km South-West of the Lubbesthorpe Road AQMA;

³ <https://laqm.defra.gov.uk/>

4.19 Church Lawford experiences meteorological conditions that are representative of those experienced within the air quality study area.

4.20 Figure 4-3 shows that the dominant direction of wind was from the south-west, as is typical for the UK.

Figure 4-3 Wind Rose, Church Lawford Meteorological Data, 2019



Background Data

4.21 Background concentrations of nitrogen oxides (NO_x), PM₁₀ and PM_{2.5} for 2021 and 2040 were sourced from Defra’s 2021-based 1x1km background maps (Defra, 2024).

4.22 Contributions from explicitly modelled source sectors were removed from the background concentrations reported in Table 4-4 to Table 4-5, in accordance with Defra guidance (Defra, 2022). This is to avoid the double counting of modelled process contributions as outlined in point 7.538 of LAQM.TG22.

4.23 The 2040 Mapped Background NO₂ concentrations for the entirety of Blaby can be viewed in Figure 4-4, which shows that predicted NO₂ concentrations for 2040 are quite low within the district, being well below the NO₂ air quality objective (40 µg/m³). It is noted that NO₂ concentrations are higher towards Leicester and along the M1.

Table 4-4 Defra Mapped Background Pollutant Concentrations, Mill Hill AQMA 6

Receptor ID	Grid Square (X, Y)	2021 Annual Mean Concentrations (µg/m ³)			2040 Annual Mean Concentrations (µg/m ³)		
		NO _x	PM ₁₀	PM _{2.5}	NO _x	PM ₁₀	PM _{2.5}
R1-R12	453500_299500	14.5	13.6	7.7	8.7	12.3	6.4

Table 4-5 Defra Mapped Background Pollutant Concentrations, Lubbesthorpe Road AQMA 7

Receptor ID	Grid Square (X, Y)	2021 Annual Mean Concentrations ($\mu\text{g}/\text{m}^3$)			2040 Annual Mean Concentrations ($\mu\text{g}/\text{m}^3$)		
		NO _x	PM ₁₀	PM _{2.5}	NO _x	PM ₁₀	PM _{2.5}
R1-R8	455500_300500	16.4	14.5	7.9	9.3	13.3	6.7

Figure 4-4 2021 Defra Mapped Background NO₂ Concentrations for Blaby

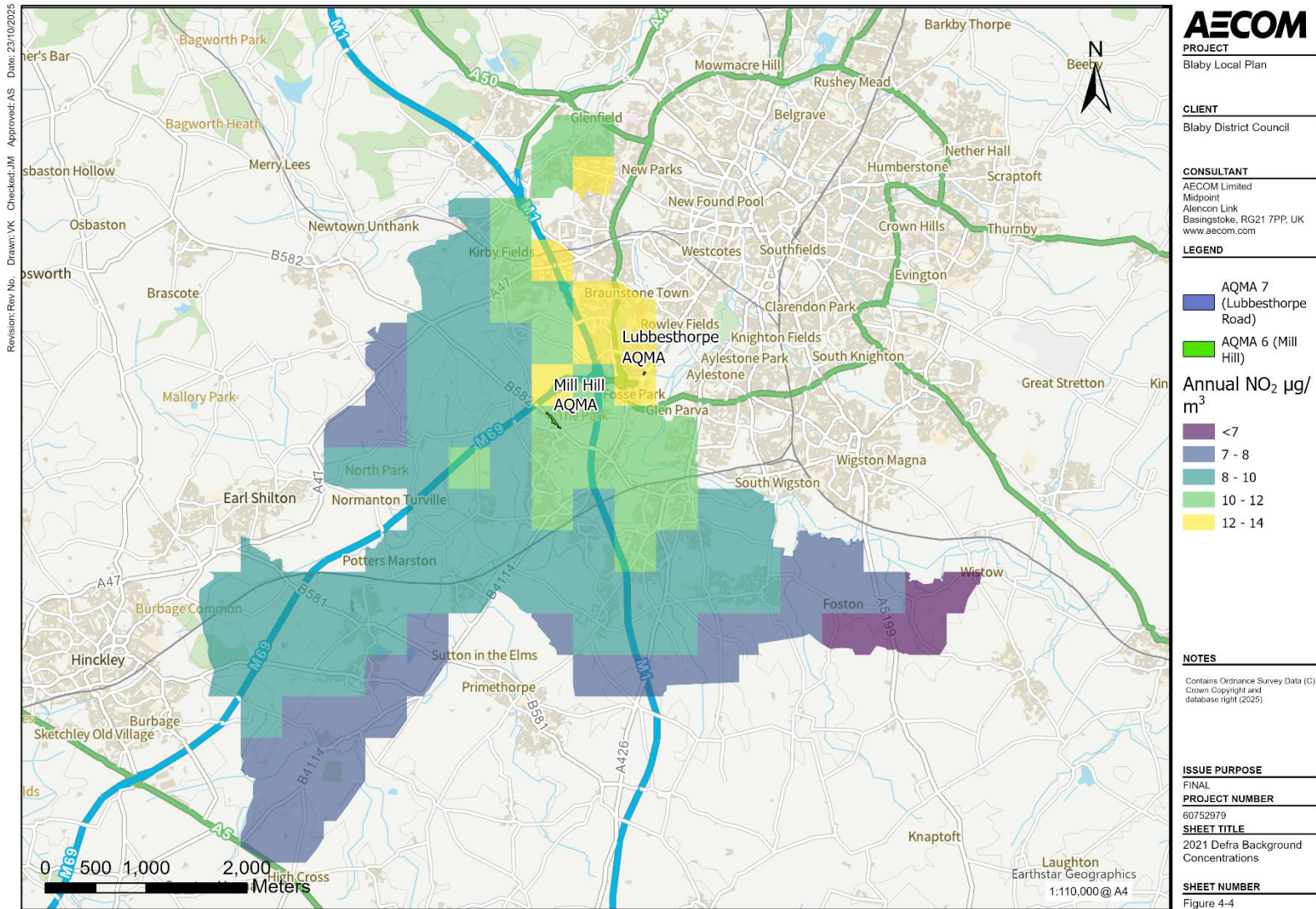
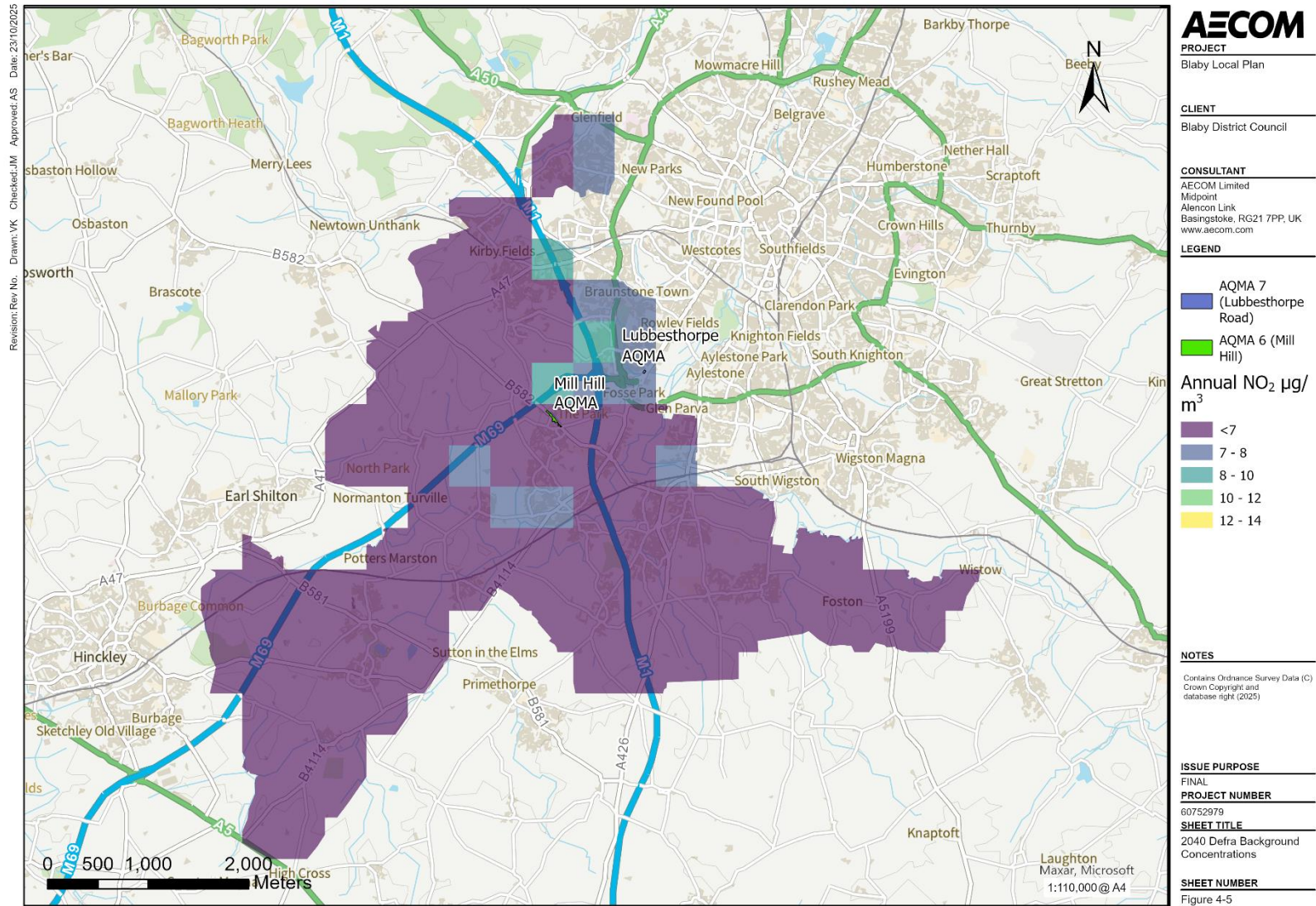


Figure 4-5 2040 Defra Mapped Background NO₂ Concentrations for Blaby



Verification

- 4.24 Model verification is the process by which the performance of the model is assessed to identify any discrepancies between modelled and measured concentrations at air quality monitoring sites within the study area. It is necessary to perform a comparison of the modelled results versus monitoring results at relevant locations as model validation studies undertaken by model developers are unlikely to have been undertaken in the study area being considered.
- 4.25 As noted in LAQM.TG(22), “the predicted results from a dispersion model may differ from measured concentrations for a large number of reasons:
- Estimates of background concentrations;
 - Meteorological data uncertainties;
 - Uncertainties in source activity data such as traffic flows and emissions factors;
 - Model input parameters such as roughness length, minimum Monin-Obukhov; and overall model limitations; and
 - Uncertainties associated with monitoring data, including locations.”
- 4.26 Model verification is the process by which these and other uncertainties are investigated and, where possible, minimised.
- 4.27 Modelled predictions were made for annual mean NO₂ concentrations at local authority monitoring sites for each AQMA in order to compare monitored and modelled NO₂ concentrations. The comparison of model outputs was made to 2019 monitoring data in order to correspond with the baseline year of assessment, traffic data and meteorological data.
- 4.28 From these sites, only those representative of modelled sensitive receptor locations and with sufficient data capture for 2019 were considered suitable for the purposes of model verification.
- 4.29 Some diffusion tube sites were excluded from the model verification process due to their installation dates or lack of 2019 data. In AQMA 6 (Mill Hill, Enderby), three diffusion tubes with 2019 measurements (DT4, DT41 and DT44) were used for verification alongside automatic monitor CM5 (Table 4-6). Although DT44 has since been decommissioned, its 2019 data were valid for baseline verification. In AQMA 7 (Lubbesthorpe Road), all diffusion tubes within the AQMA boundary were installed after the 2019 baseline year and were therefore excluded. As a result, only one site, DT1, located approximately 350-400 m northeast of the AQMA boundary, was available for verification (Table 4-7).

Table 4-6 Local Authority Monitoring Sites used in Model Verification Mill Hill AQMA 6.

Site ID	Site Type	Site Name	Grid reference (X, Y)
DT4	Roadside	Hall Walk, Enderby	453605, 299564
DT41	Roadside	9 Mill Hill Road, Enderby	453467, 299735
DT44	Roadside	1 Mill Hill Road, Enderby	453698, 299450
CM5	Roadside	Mill Hill Road, Enderby	453594, 299549

Table 4-7 Local Authority Monitoring Sites used in Model Verification Lubbesthorpe Road AQMA 7.

Site ID	Site Type	Site Name	Grid reference (X, Y)
DT1	Roadside	Kingsway	455978, 301132

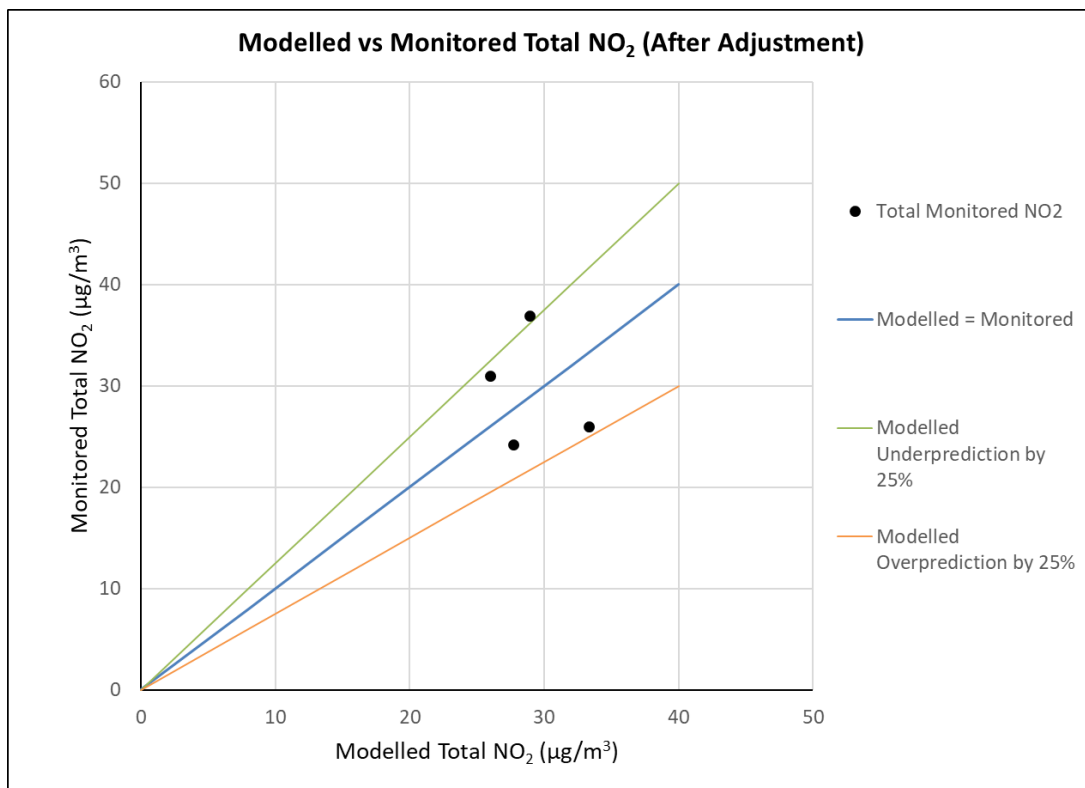
- 4.30 Following Defra's Technical Guidance LAQM.TG(22), model performance was analysed at these monitoring sites. An adjustment factor of 4.53 was applied in the Mill Hill AQMA 6 (Table 4-8). With adjustment the root mean square error (RMSE) was 6.2 µg/m³. Although this is more than 10% of the objective which is not ideal, a value of less than 10.0 µg/m³ is acceptable

according to the guidance. For Lubbethorpe Road AQMA 7, an adjustment factor of 2.40 was applied using a single monitoring site (DT1). Due to the availability of only one verification site for AQMA 7, it was not possible to calculate RMSE or other verification statistics for this area.

Table 4-8 Verification details Mill Hill AQMA 6.

Number of Sites	Number of Monitoring Sites within $\pm 25\%$ of the Monitored Concentration Pre-Adjustment	RMSE pre-adjustment ($\mu\text{g}/\text{m}^3$)	Model Adjustment Factor Applied	Number of Sites within $\pm 25\%$ of the Monitored Concentration Post Adjustment	RMSE post adjustment ($\mu\text{g}/\text{m}^3$)	Fractional Bias post adjustment
4	0	15.0	4.53	3	6.2	0.0

Figure 4-6 Modelled vs Monitored Total NO₂ (after adjustment)



Carbon Assessment

- 4.31 The EFT v13.1 tool was used to estimate road traffic related CO₂ emissions across Blaby District for the same scenarios as for the detailed modelling of NO_x, PM₁₀ and PM_{2.5}; namely the Baseline 2019, “Without Plan” 2041 and “With Plan” 2041.
- 4.32 The assessment was undertaken for all road links for which data were provided that fall within Blaby District. Traffic flows on road links were summed over both flow directions for two-way roads, and link lengths were applied using GIS software in order to calculate annual road link emissions. Annual link emissions of CO₂ were aggregated to obtain total annual CO₂ emissions for Blaby District for each scenario.
- 4.33 As the EFT v13.1 does not include the latest DfT decarbonisation projections for the national vehicle fleet and does not forecast an almost fully zero-emission vehicle fleet by 2050, the default EFT vehicle fleet projections for 2041 and associated CO₂ emissions are considered to lead to a conservative assessment of 2041 annual CO₂ emissions.

5. Baseline

- 5.1 Under the requirements of Part IV of the Environment Act (HM Government, 1995), BDC has carried out a review and assessment of local air quality.
- 5.2 BDC undertakes automatic monitoring at two locations within declared AQMAs using static reference monitors: CM5 at Mill Hill AQMA 6 and CM6 at Lubbesthorpe Road AQMA 7. There is an additional indicative Zephyr sensor Z1484 operating at AQMA 6. The CM5 and CM6 monitors both record NO₂, and Z1484 measures NO₂ and PM_{2.5}. Additionally, six diffusion tube sites (DT4, DT41, DT115, DT117, DT118 and DT119) operate within the Mill Hill AQMA 6, while two diffusion tube sites, DT89 and DT121, are located within the Lubbesthorpe Road AQMA 7. Table 5-1 and Table 5-2 present the measured NO₂ concentrations at these sites. In 2024, NO₂ concentrations across all sites remained below the annual mean air quality objective of 40 µg/m³, with the highest recorded concentration being 35.3 µg/m³ at DT4. No exceedances of the objective were observed during 2024. For PM_{2.5}, Z1484 showed annual mean concentrations of 5.6 µg/m³ for both 2023 and 2024, way below the AQS objective and slightly above the WHO guidelines.
- 5.3 NO₂ concentrations across BDC's monitoring sites have generally declined since 2020. Concentrations were notably lower in 2020, likely due to the COVID-19 pandemic and national lockdowns which temporarily reduced traffic volumes. A small increase in NO₂ was observed in 2021 at several locations, reflecting a partial rebound in emissions. However, concentrations declined again in 2022 and continued to decrease or stabilise in 2023 and 2024. At Mill Hill AQMA 6, for example, concentrations at DT118 dropped from 43.0 µg/m³ in 2022 to 32.8 µg/m³ in 2024, while DT115 declined from 33.5 µg/m³ in 2022 to 28.6 µg/m³ in 2023 and 27.3 µg/m³ in 2024.
- 5.4 The period from 2022 to 2024 provides the most complete dataset across AQMA monitoring sites and therefore forms the basis for trend assessment. At Mill Hill AQMA 6, notable reductions were observed at DT117, DT118, and DT119, where levels dropped by approximately 22% to 24% between 2022 and 2024. For example, DT117 declined from 34.6 µg/m³ in 2022 to 26.9 µg/m³ in 2024. At Lubbesthorpe Road AQMA 7, NO₂ concentrations declined at both sites with available data between 2022 and 2024. At the automatic monitor CM6, concentrations fell substantially from 47.8 µg/m³ in 2022 to 29.7 µg/m³ in 2024. Similarly, diffusion tube DT89 showed a reduction from 25.7 µg/m³ to 22.0 µg/m³ over the same period. Z1484 showed a modest increase from 27.4 µg/m³ in 2023 to 31.9 µg/m³ in 2024, though remaining below the objective.
- 5.5 The monitoring results from 2024 confirm continued compliance with national air quality objectives across all sites, although concentrations in the Mill Hill AQMA 6 remain relatively elevated and warrant ongoing mitigation and monitoring.

Table 5-1 BDC NO₂ (µg/m³) Monitoring Data for Mill Hill AQMA 6.

Site ID	Monitoring Type	In AQMA?	Site Type	2020	2021	2022	2023	2024
DT4	Diffusion Tube	Y	Roadside	29.4	29.3	40.3	35.6	35.3
DT41	Diffusion Tube	Y	Roadside	20.2	21	27.8	24.5	22.7
DT115	Diffusion Tube	Y	Roadside	-	-	33.5	28.6	27.3
DT117	Diffusion Tube	Y	Roadside	-	-	34.6	27.9	26.9
Dt118	Diffusion Tube	Y	Roadside	-	-	43	40.3	32.8
DT119	Diffusion Tube	Y	Roadside	-	-	33	27.2	25.6
CM5	Automatic	Y	Roadside	22.9	18.9	24.9	19.1	31.5

Site ID	Monitoring Type	In AQMA?	Site Type	2020	2021	2022	2023	2024
Z1484	Automatic (sensor)	Y	Roadside	-	-	-	27.4	31.9

Note: Values that exceed the annual AQS Objective for NO₂ (40 µg/m³) are shown in **bold**.

Table 5-2 BDC NO₂ (µg/m³) Monitoring Data for Lubbethorpe Road AQMA 7.

Site ID	Monitoring Type	In AQMA?	Site Type	2020	2021	2022	2023	2024
DT89	Diffusion Tube	Y	Suburban	-	19.9	25.7	22.2	22
DT12 1	Diffusion Tube	Y	Suburban	-	-	-	18.3	15.7
DT12 2	Diffusion Tube	Y	Roadside	-	-	-	17.9	17.6
CM6	Automatic	Y	Roadside	21	19.8	47.8	40.2	29.7

Note: Values that exceed the annual AQS Objective for NO₂ (40 µg/m³) are shown in **bold**.

6. Traffic and Emissions Screening Assessment

- 6.1 To provide context for the detailed emissions review, total road traffic flows across Blaby District were mapped for the 2041 scenarios with and without implementation of the Local Plan. Figure 6-1 and Figure 6-2 illustrate the spatial distribution of total AADT flows across the principal highway network, including the M1, M69, A426, B4114 and B582 corridors. The “Without Local Plan” scenario represents cumulative committed developments only and shows that the highest traffic volumes are concentrated along the strategic motorway and primary A-road network, particularly near Junction 21 of the M1 and the Leicester Southern Ring Road corridors. The “With Local Plan” scenario reflects additional growth from Local Plan allocations and indicates localised increases in total flow along key distributor routes linking new development areas to the motorway network, notably around Enderby, Narborough Road South, and Lubbethorpe Road.
- 6.2 Following the approach set out within the Traffic and Emissions Screening Methodology section, four locations were identified during the district-wide screening as having high AADT flows or increases between the “Without Local Plan” and “With Local Plan” 2041 scenarios. These areas correspond to key junctions and corridors where changes in demand could influence local air quality. To provide clarity on traffic characteristics and how these may change under the Local Plan, representative links with the highest flows at each location were selected for inclusion in Table 6-1.
- 6.3 The areas of concern are:
- A426 – Lutterworth Road (Figure 6-9). A strategic north–south route with high commuter flows, providing access between residential areas and the A563 outer ring road. The selected link represents the highest AADT on this corridor within the study extent;
 - B582 Northwest of M69 (Figure 6-10). The area near the key intersection where motorway traffic interacts with local roads. M69 mainline flows were selected because they represent the largest AADT flows within the area of concern;
 - B582 – Enderby Road Corridor (Figure 6-11). A key east–west distributor linking the Enderby Road Industrial Estate, residential areas and B4114. The selected link reflects one of the busiest sections of the corridor approaching major junctions; and
 - B4114 –Roundabout (Figure 6-12). A major multi-arm roundabout connecting Leicester Road, St Johns, Enderby Road (B582) and Blaby Road. For the table, only the links approaching the roundabout were selected, as these represent the highest vehicle flows and capture movement on all arms.
- 6.4 Across the four areas of concern, the 2041 “With Local Plan” scenario results in moderate increases in daily traffic flows, generally between 1,000 and 3,000 AADT on the selected links. The largest changes occur on the B4114 Foxhunter Roundabout, where increases of around 2,000–3,000 AADT are observed across the main arms. Along the B582 Enderby Road, flows rise by approximately 1,700 AADT, while the A426 Lutterworth Road shows an increase of about 2,400 AADT. At the M69/B582 junction, motorway mainline flows increase by roughly 1,000 AADT, which remains small relative to the very high baseline volumes on the M69. HDV percentages remain broadly similar between scenarios at all locations, indicating no material change in fleet composition.
- 6.5 The two existing AQMAs (Mill Hill and Lubbethorpe Road) were identified as priority locations due to their existing sensitivity, concentration of receptors, and proximity to the identified high-change road links. Table 6-2 demonstrates the changes in traffic within those areas in a similar way to those set out in Table 6-1 for these additional areas of concern.
- 6.6 Across the two AQMAs, changes in AADT between the 2041 “Without” and “With Local Plan” scenarios are very limited. At AQMA 6 (Mill Hill), traffic flows on the B582 decreases slightly by around 500 AADT, remaining at approximately 14,000 AADT in both scenarios. At AQMA 7 (Lubbethorpe Road), flows on the A5460 remain broadly stable, increasing by just 300 AADT from around 33,600 to 33,900 AADT. These results indicate that, unlike the screened areas of

concern where more notable increases were observed, the AQMAs experience only very small and localised variations in traffic demand, consistent with the negligible air-quality impacts identified in the modelling.

Table 6-1 AADT Traffic Flows and Changes with the Local Plan within the Areas of Concern

Area of concern	Roads	AADT (without LP)	HDV % (without LP)	AADT (with LP)	HDV % (with LP)	AADT change (with LP – without LP)
B4114 – Roundabout	B4114 – Leicester Road	23,679	3.7	25,957	3.7	2,278
	B4114 – St Johns	42,682	2.5	45,734	2.6	3,052
	B582 – Enderby Road	26,878	4.0	28,587	5.0	1,709
M69 – B582	M69 (B582)	74,050	10.6	75,079	10.7	1,029
B582 – Enderby Road	Enderby Road (B582)	26,772	4.2	28,475	4.8	1,702
A426 – Lutterworth Road	A426 (south of Blaby Bypass)	15,037	4.0	17,455	4.7	2,418

Table 6-2 AADT Traffic Flows and Changes with the Local Plan at main roads near the AQMAs

AQMA	Roads	AADT (without LP)	HDV % (without LP)	AADT (with LP)	HDV % (with LP)	AADT change (with LP – without LP)
AQMA 6 (Mill Hill)	B582 – Mill Hill	14,136	4.3	13,622	4.8	-514
AQMA 7 (Lubbesthorpe Road)	A5460 – Narborough Road South	33,598	3.3	33,920	3.3	322

Figure 6-1 Total AADT 'Without the Local Plan' across Blaby District

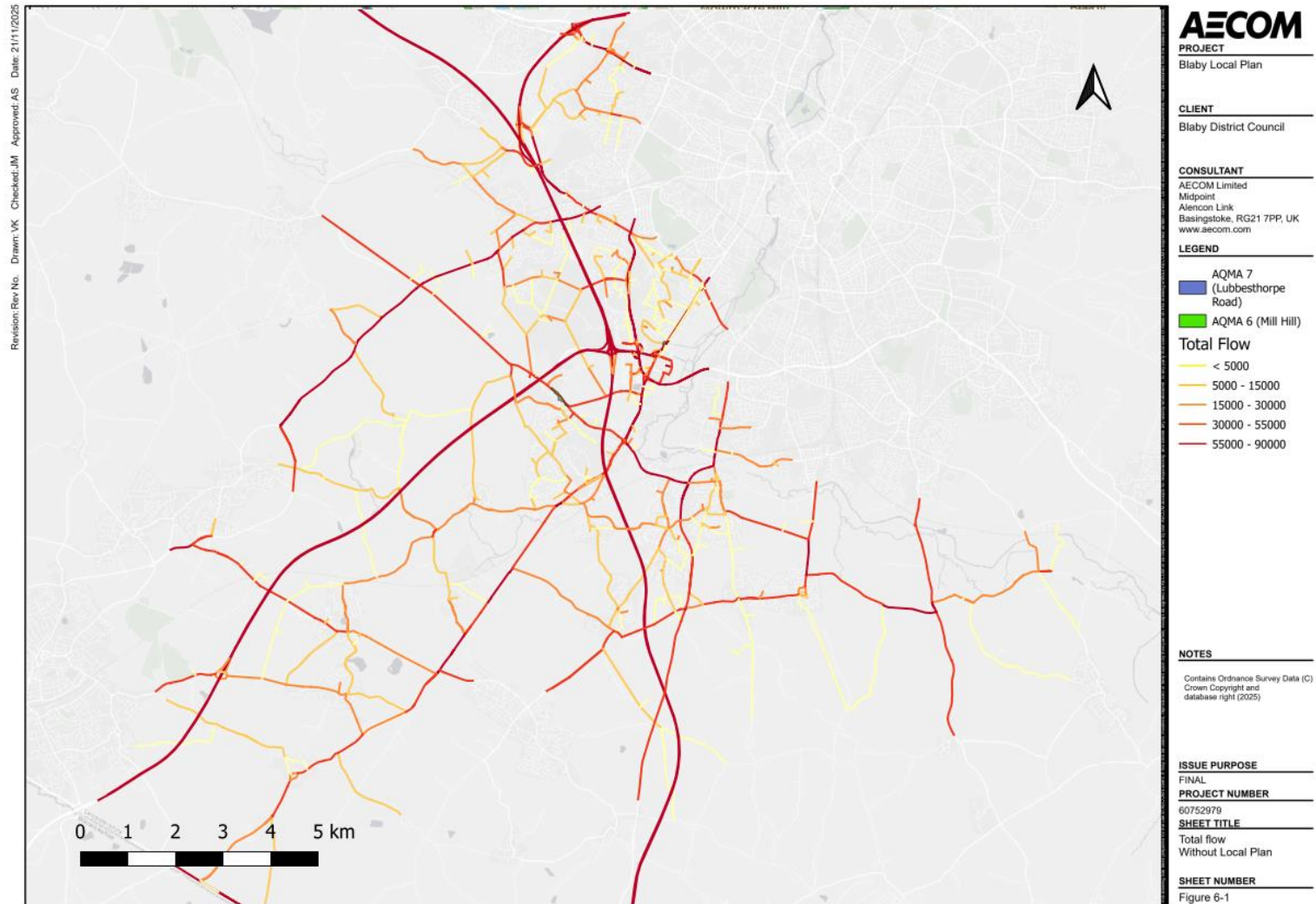
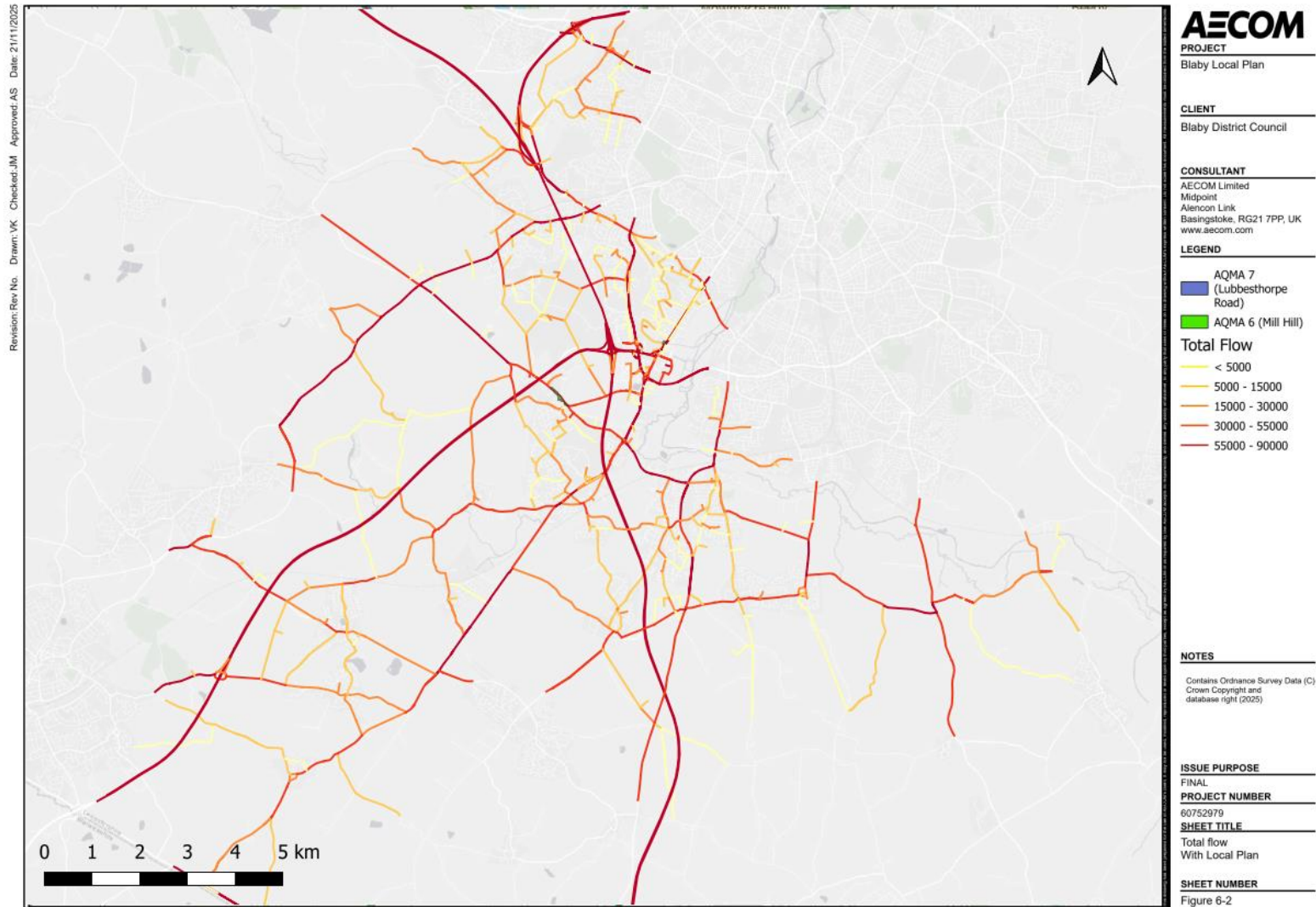


Figure 6-2 Total AADT 'With the Local Plan' across Blaby District



NO_x Emissions

- 6.7 A review of baseline road traffic-derived NO_x emissions across Blaby District has been undertaken using 2019 traffic data and Defra's EFT v13.1. Emission rates were calculated for modelled road links and mapped to identify key areas of concern. The spatial distribution of emissions is presented in Figure (entire district), Figure 6-4 (Mill Hill AQMA 6) and Figure 6-5 (Lubbesthorpe Road AQMA 7).
- 6.8 The maps show that high NO_x emissions are strongly associated with the M1 corridor, particularly where the motorway passes close to residential areas in Enderby (Mill Hill AQMA 6). Several motorway links exhibit the highest emission bands, especially north and south of Junction 21, reflecting the heavy traffic volumes and limited dispersion in those areas. Additional high emissions are observed along Leicester Lane, which forms part of the AQMA boundary and serves as a major distributor route through the settlement.
- 6.9 In the Lubbesthorpe Road AQMA 7, elevated NO_x emissions are clustered around the junction of Lubbesthorpe Road and Narborough Road South, including the approach roads to the Fosse Park and Soar Valley Way roundabouts. Emissions are moderate to high along these links due to congestion and high vehicle flows, particularly in peak hours. In contrast, emission levels decrease further away from these junctions and into the surrounding residential network. Lubbesthorpe Brook and adjacent green infrastructure are located nearby, though not directly impacted. These findings confirm that strategic roads, roundabouts, and major junctions act as dominant sources of NO_x within both AQMAs.
- 6.10 Maps of NO_x emissions for roads throughout the District in 2032 with and without the Local Plan are presented in Figure 6-6, Figure 6-7 and Figure 6-8. These figures consider locations where there were larger changes in emissions, in conjunction with the presence of sensitive receptors. This review identified the same areas set out in paragraph 6.2, to be of greatest concern. The emissions mapping produced through the screening stage provides valuable context and will support future consideration of these other areas if required, particularly where planned development or traffic growth may influence pollutant levels. These locations are presented in Figure 6-9, Figure 6-10, Figure 6-11 and Figure 6-12.
- 6.11 Whilst this screening assessment identified additional locations outside the AQMAs with elevated emissions or potential for change, detailed dispersion modelling was undertaken only for AQMA 6 (Mill Hill) and AQMA 7 (Lubbesthorpe Road). The Mill Hill (AQMA 6) and Lubbesthorpe Road (AQMA 7) study areas were selected not only because they currently record the highest measured concentrations within Blaby District, but also because they are located along the principal transport corridors most affected by Local Plan growth and background traffic redistribution. These locations therefore provide an appropriate starting point for assessing district-wide changes in air quality arising from the Local Plan. The screening assessment demonstrated that the majority of roads experiencing notable flow increases are connected to or influenced by the same network corridors represented by the AQMAs. As such, the modelled results at these sites are indicative of the scale and direction of change likely to occur elsewhere in the District under similar traffic and dispersion conditions, although further work to investigate the areas of concern identified from this screening assessment is nevertheless recommended and would be beneficial in order to rule out any potential impacts arising in these areas as a result of implementation of the Local Plan.

Figure 6-3 2019 Baseline Road NOx emissions across Blaby District

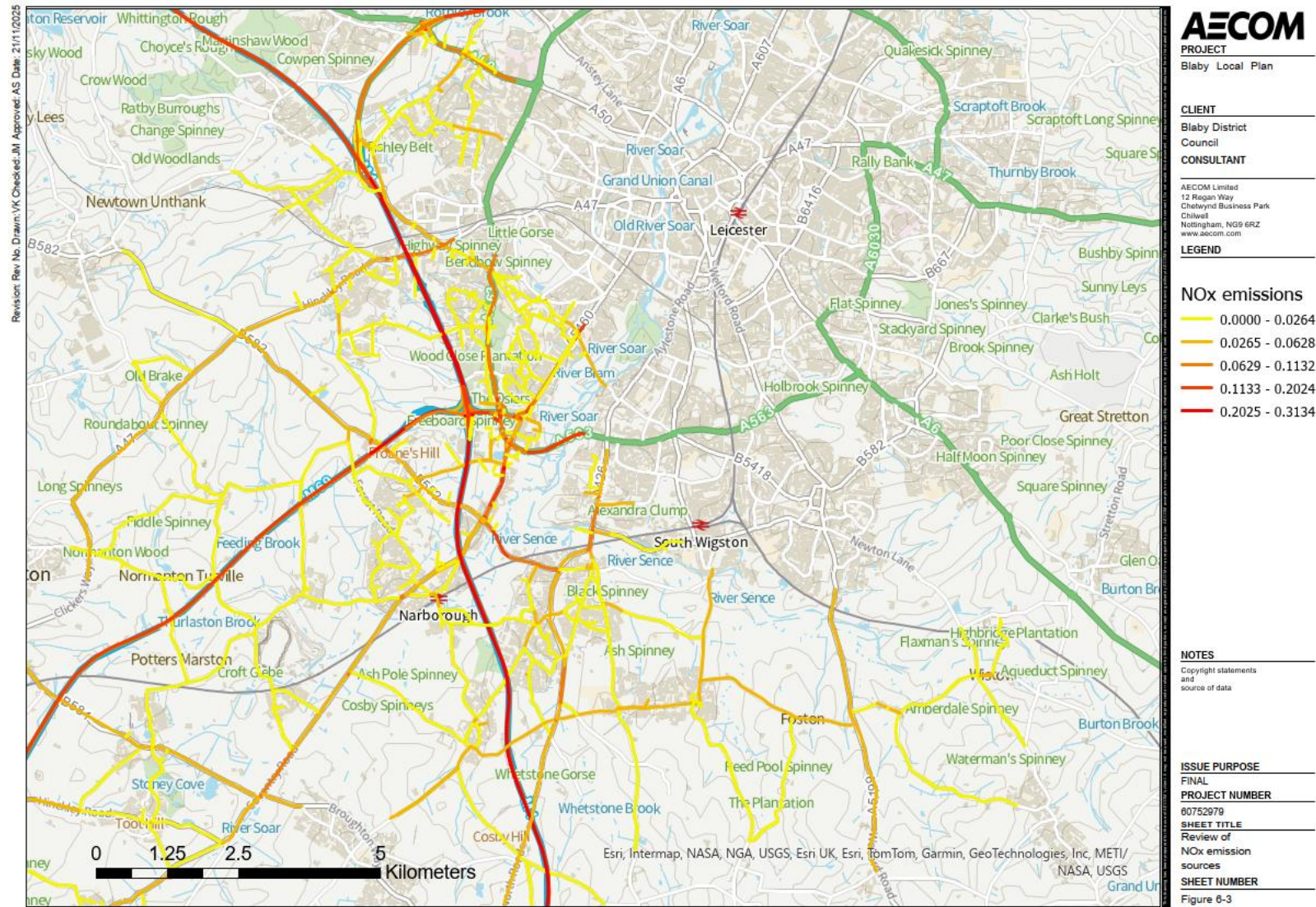


Figure 6-4 2019 Baseline NOx Road Emissions – AQMA 6 (Mill Hill)

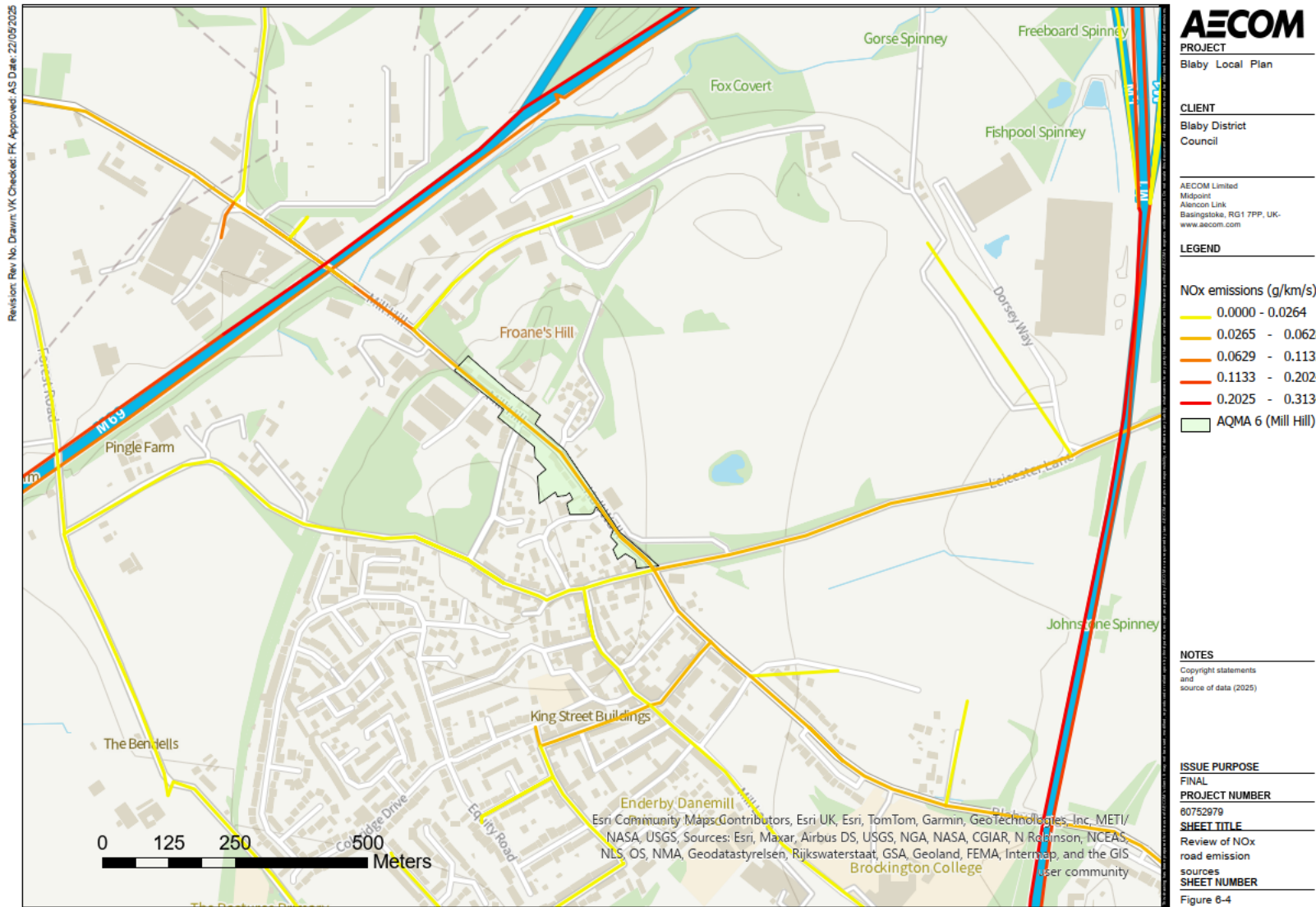


Figure 6-5 2019 Baseline NOx Road Emissions – AQMA 7 (Lubbesthorpe Road)

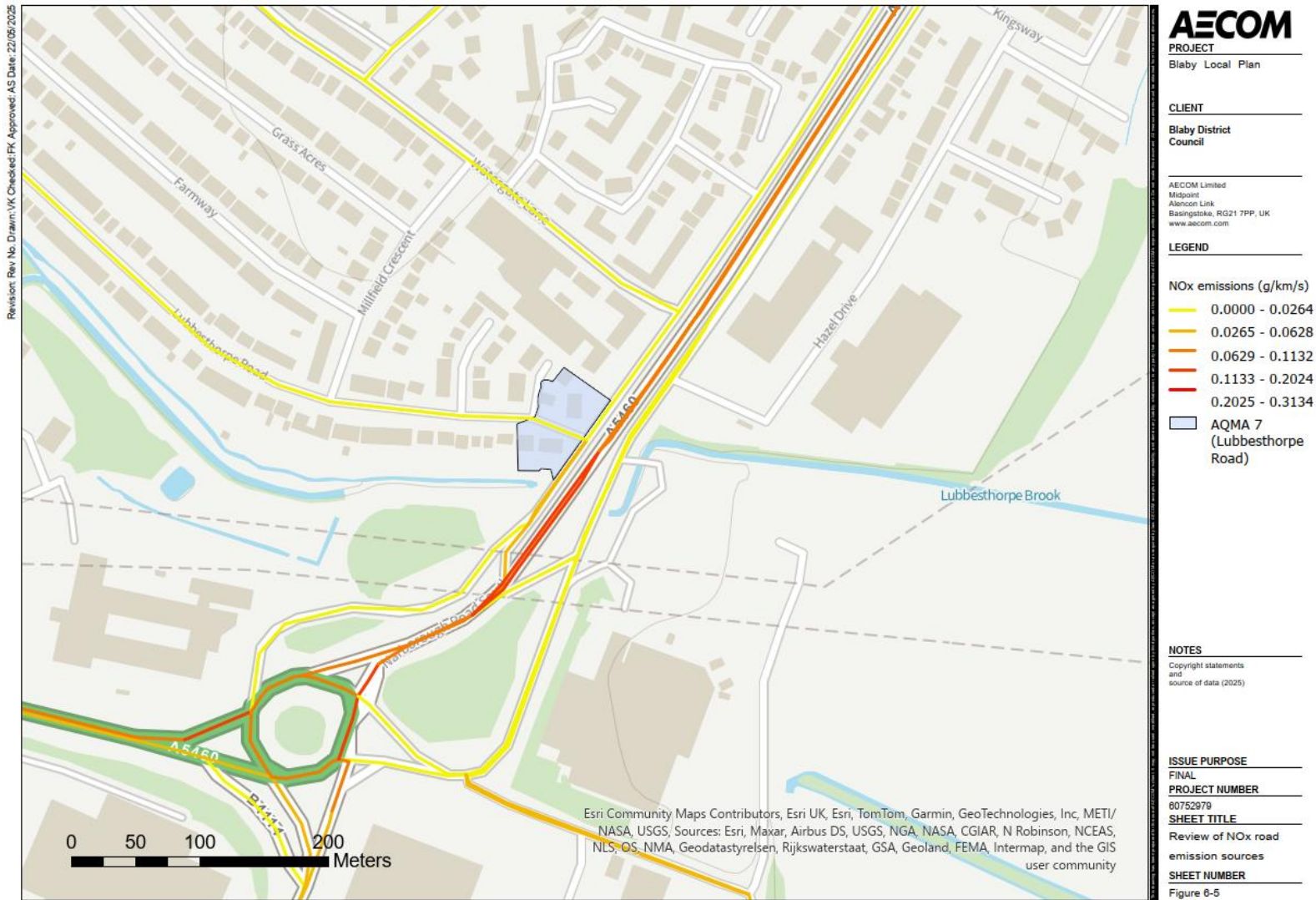


Figure 6-6 2041 Road NOx emissions 'Without the Local Plan' across Blaby District

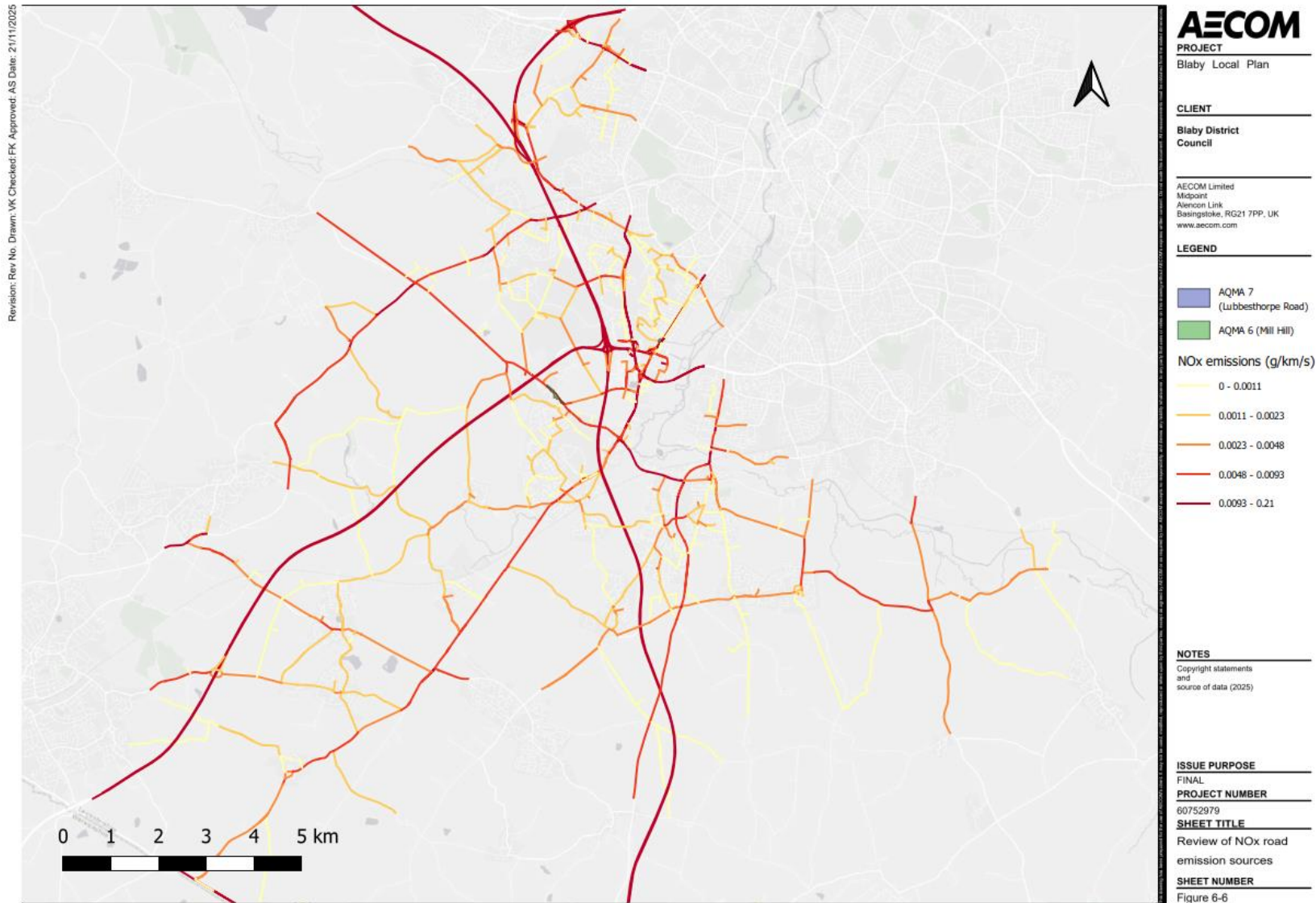


Figure 6-7 2041 Road NOx emissions 'With the Local Plan' across Blaby District

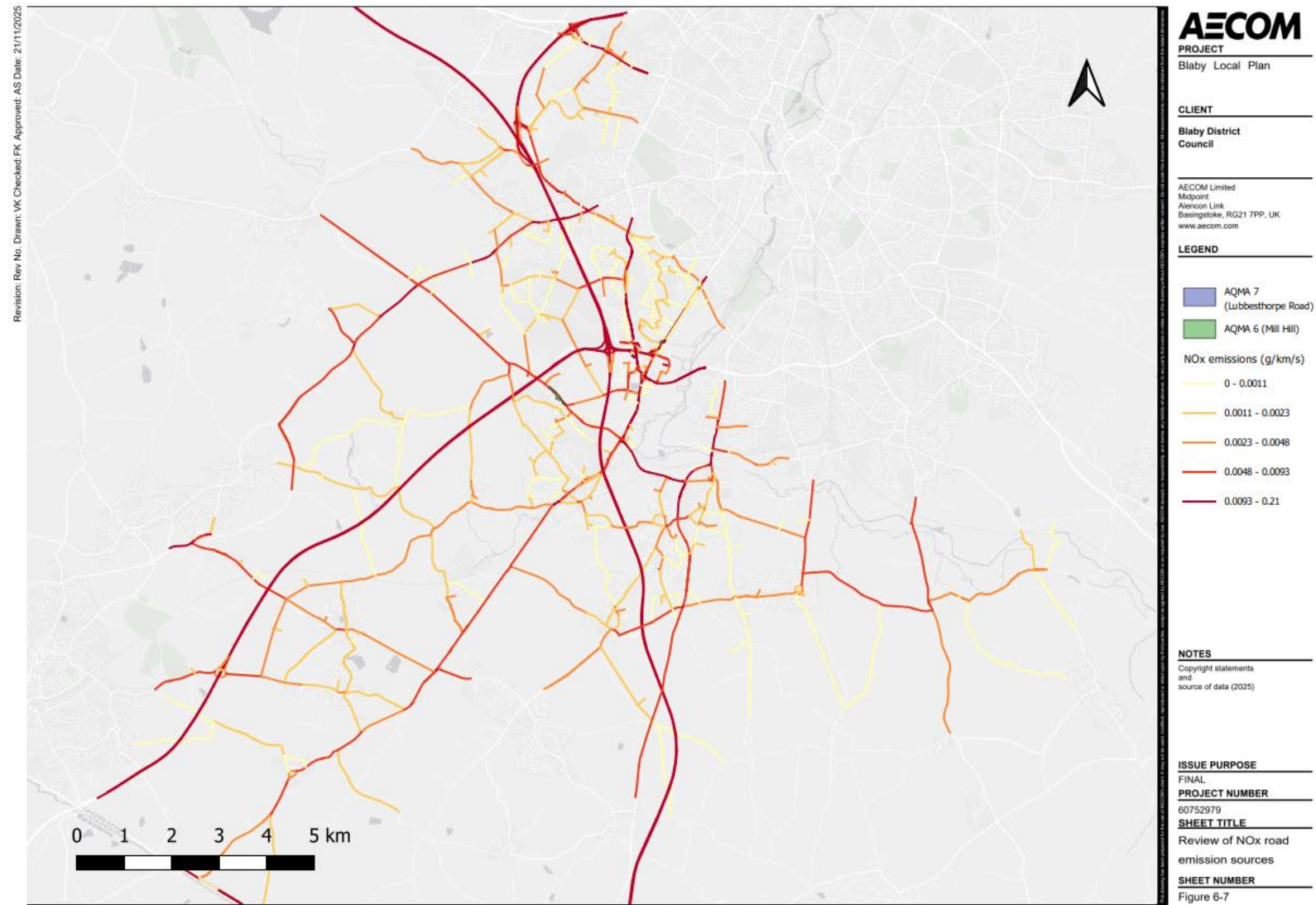


Figure 6-8 2041 Difference in Road NOx emissions (With the Local Plan – Without the Local Plan) across Blaby District

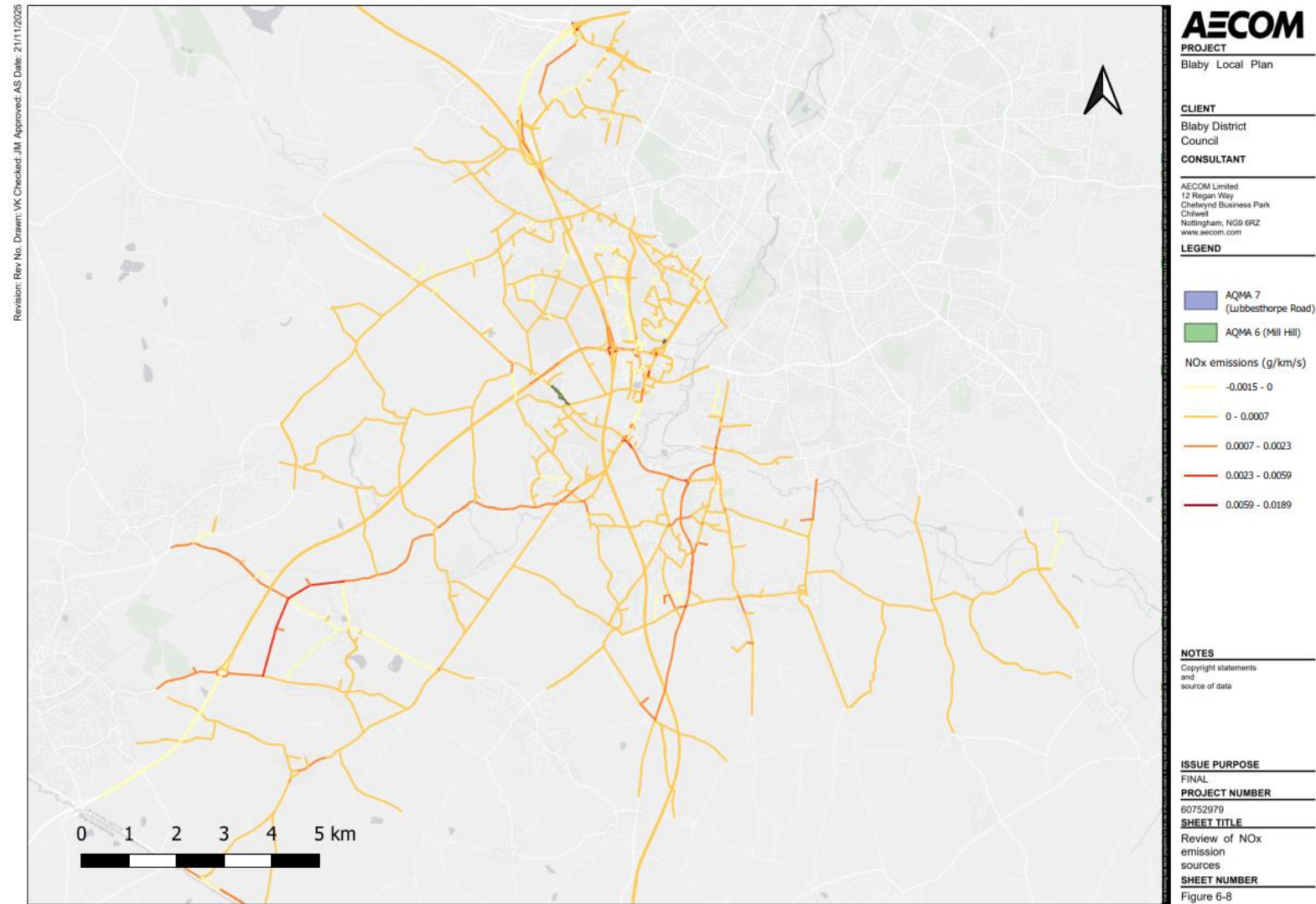


Figure 6-9 2041 Difference in NOx emissions (With Local Plan – Without Local Plan) on A426 – Lutterworth Road

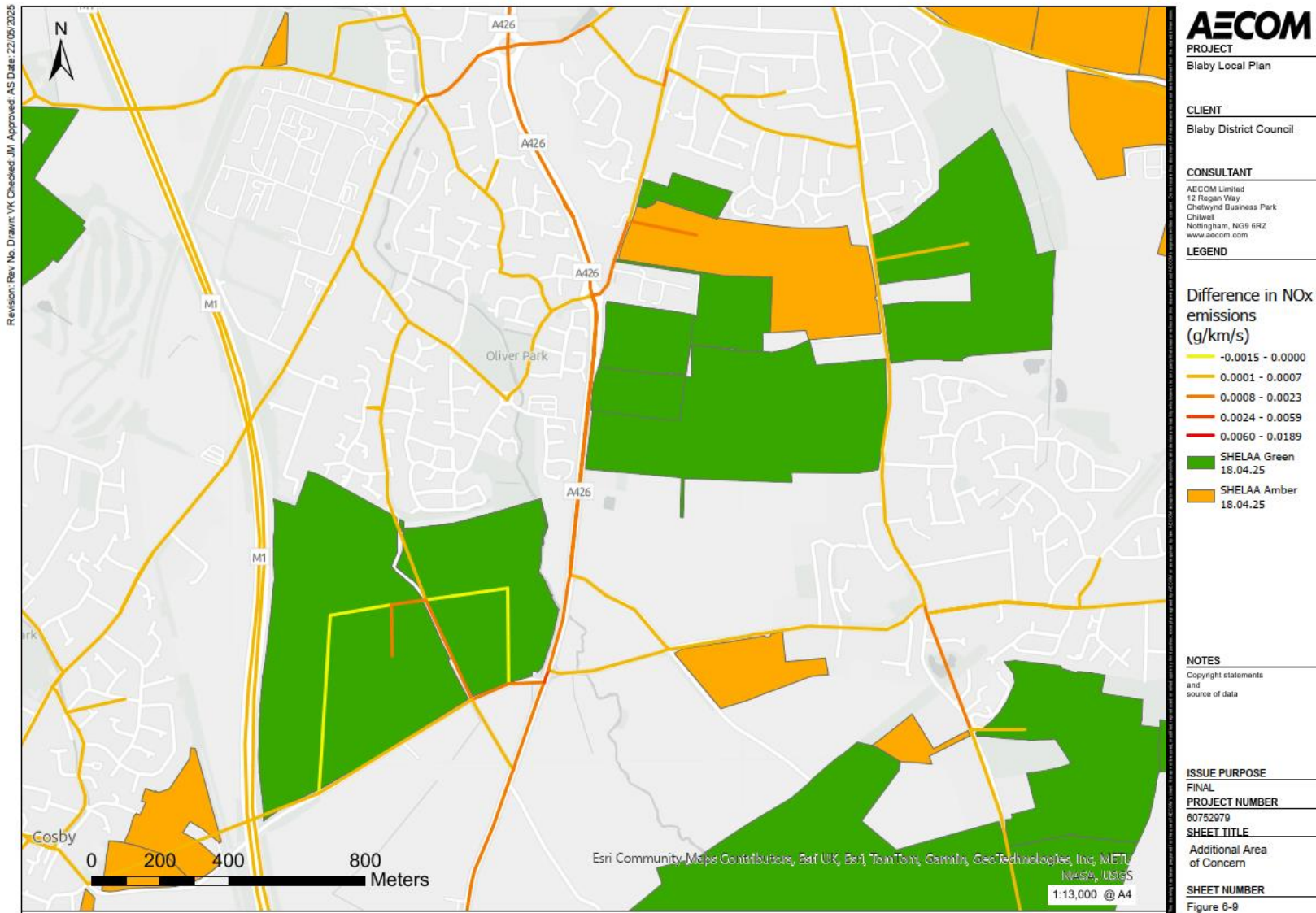


Figure 6-10 2041 Difference in NOx emissions (With Local Plan – Without Local Plan) on B582 – Northwest of M69

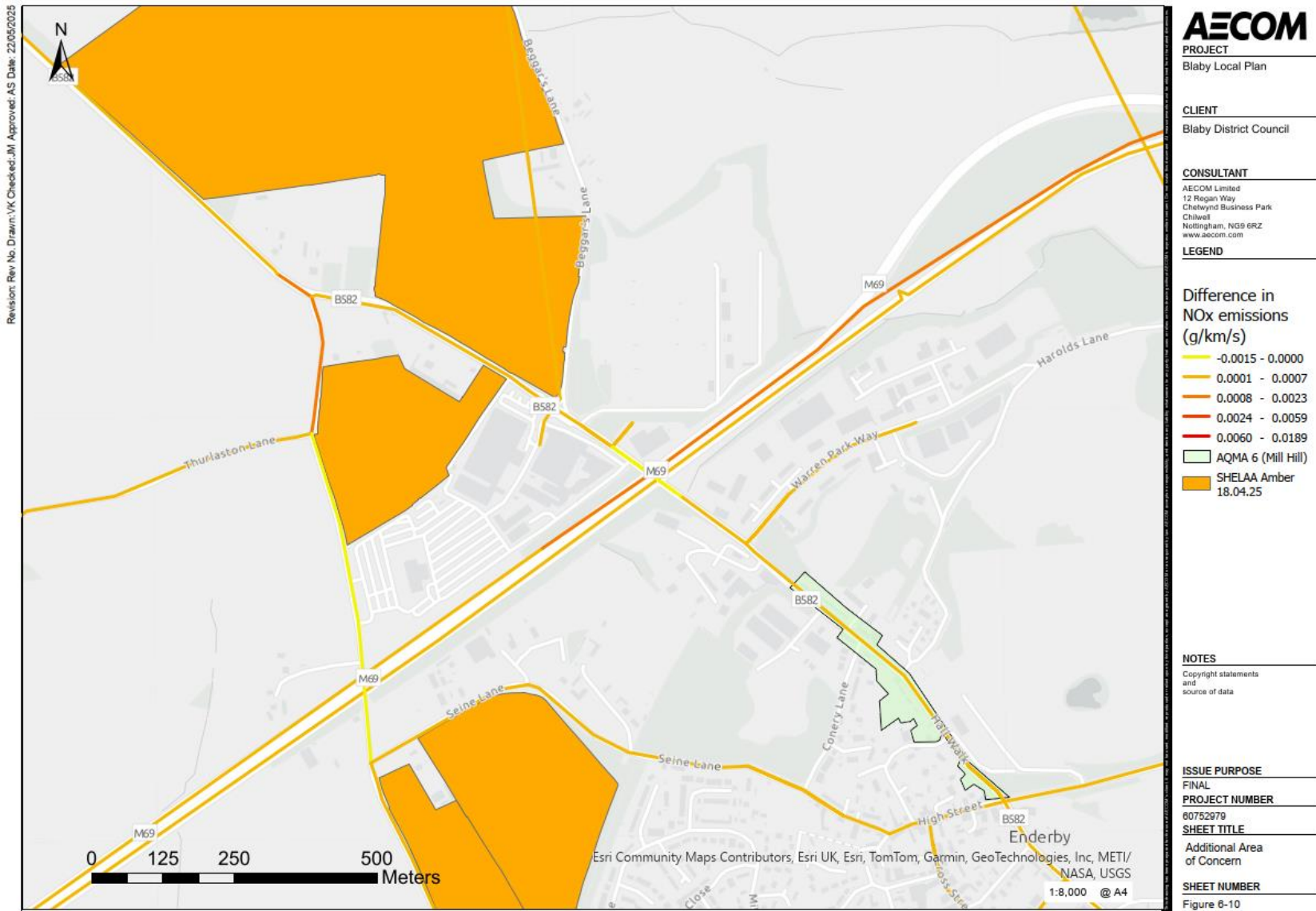


Figure 6-11 2041 Difference in NOx emissions (With Local Plan – Without Local Plan) on B582 – Enderby Road

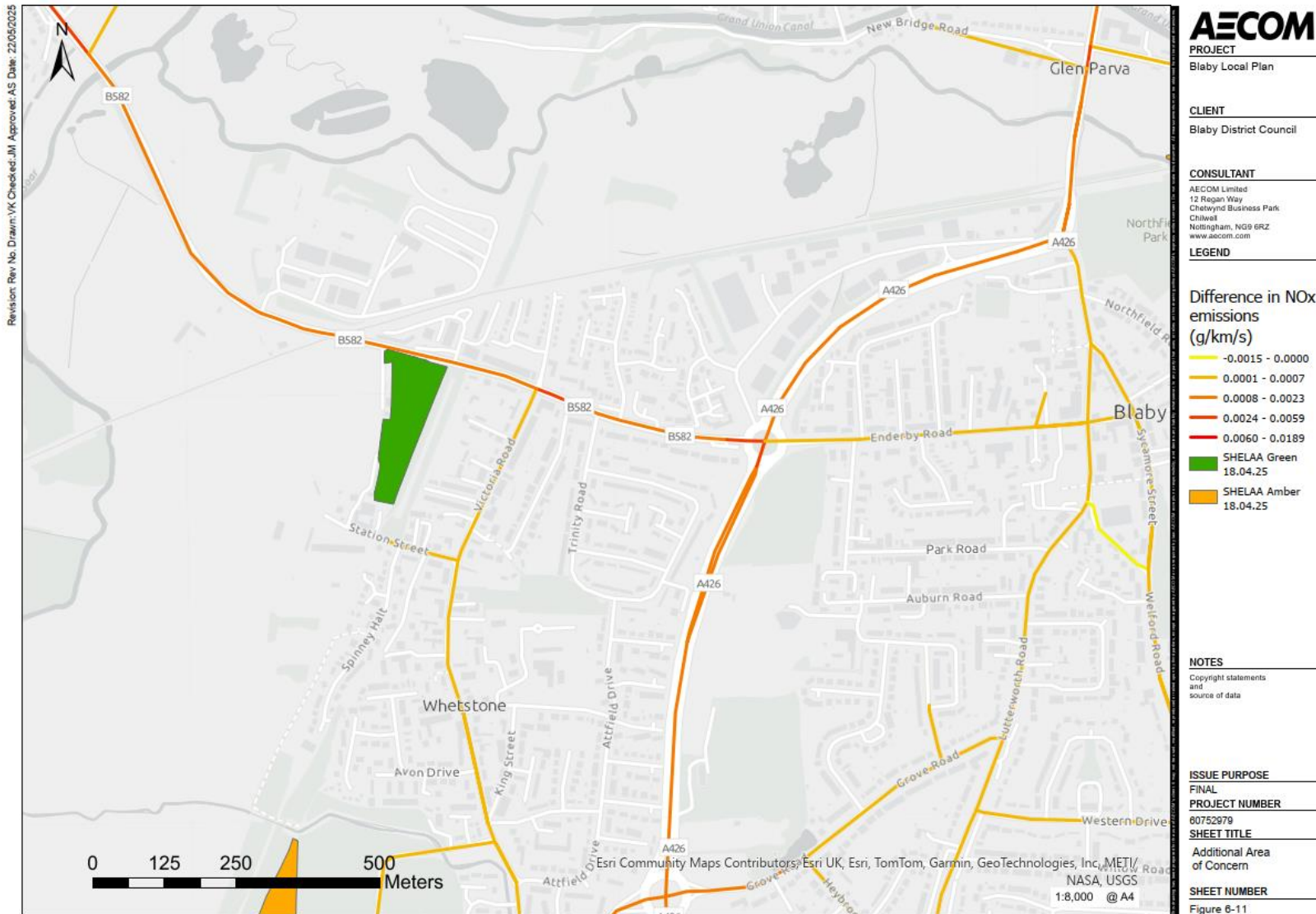
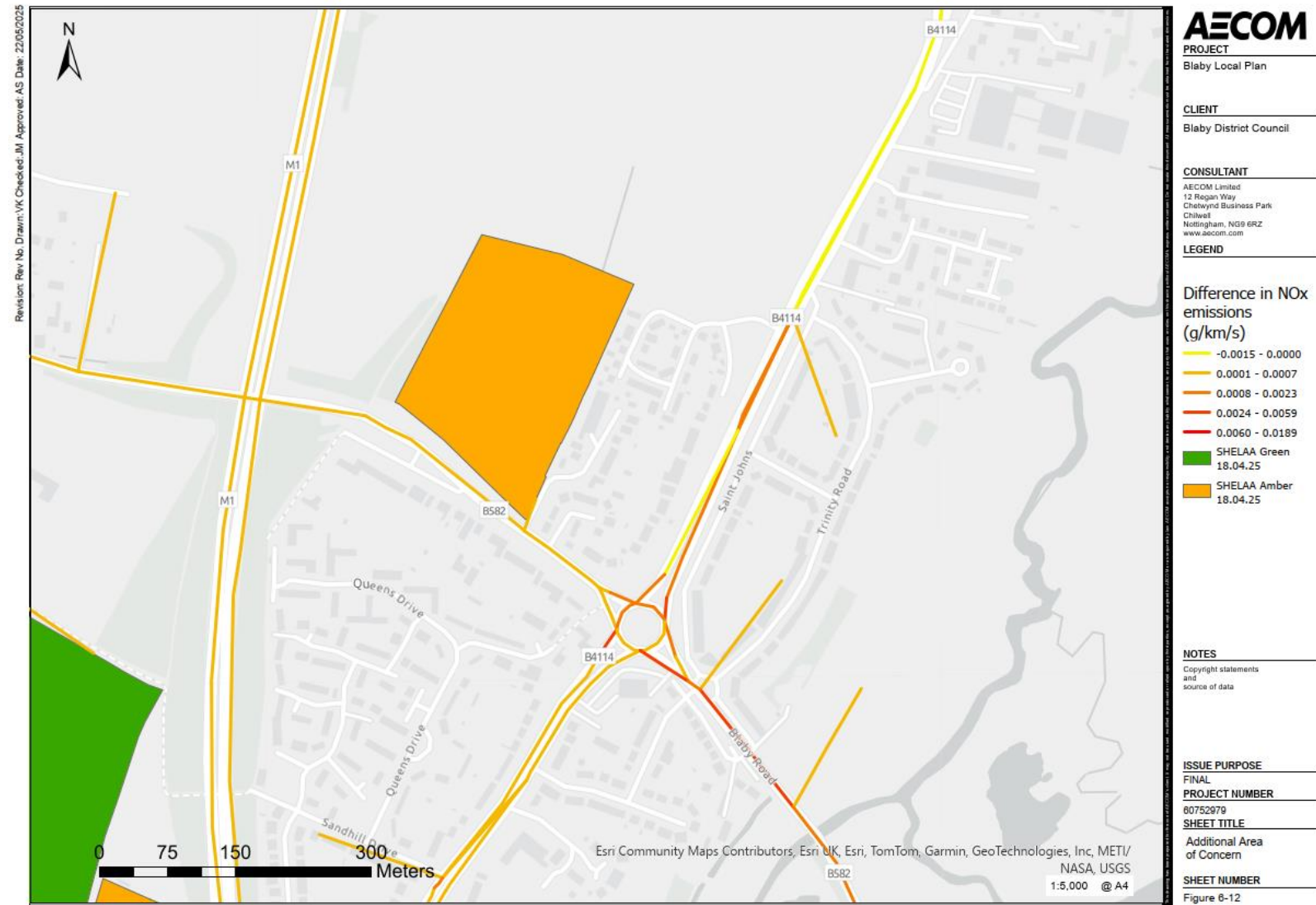


Figure 6-12 2041 Difference in NOx emissions (With Local Plan – Without Local Plan) on B4114 – Roundabout



7. Detailed Modelling Results

Modelled Concentrations

7.1 This section presents the results of the detailed dispersion modelling at sensitive receptors in the Mill Hill AQMA 6 and Lubbesthorpe Road AQMA 7.

2019 Baseline

7.2 Modelled results at locations within Mill Hill AQMA 6 and Lubbesthorpe Road AQMA 7 are presented in Table 7-1 and Table 7-2 and the resultant NO₂ concentrations can be visualised in Figure 7-1 and Figure 7-2.

7.3 These receptors have been chosen as they are representative of selected locations within each AQMA and provide the worst case annual mean concentration at relevant exposure within the AQMAs.

Table 7-1 Predicted Annual Mean Concentrations at Selected Receptors for 2019, Mill Hill AQMA 6.

Receptor ID	X co-ordinate	Y co-ordinate	Height (m)	Annual Mean (µg/m ³)		
				NO ₂	PM ₁₀	PM _{2.5}
R1	453590	299584	1.5	26.7	18.3	10.3
R2	453538	299643	1.5	20.7	16.9	10.6
R3	453383	299802	1.5	19.8	16.7	10.5
R4	453428	299771	1.5	30.4	19.7	11.0
R5	453434	299742	1.5	26.3	18.2	10.2
R6	453411	299780	1.5	19.5	16.7	10.4
R7	453681	299446	1.5	21.4	16.4	9.2
R8	453662	299429	1.5	18.5	15.6	8.8
R9	453599	299411	1.5	18.3	15.7	8.8
R10	453637	299433	1.5	17.0	15.2	8.6
R11	453327	299925	1.5	22.7	16.6	9.3
R12	453564	299410	1.5	26.1	18.4	10.3

Table 7-2 Predicted Annual Mean Concentrations at Selected Receptors for 2019, Lubbesthorpe Road AQMA 7.

Receptor ID	X co-ordinate	Y co-ordinate	Height (m)	Annual Mean (µg/m ³)		
				NO ₂	PM ₁₀	PM _{2.5}
R1	455722	300755	1.5	31.2	19.6	10.3
R2	455691	300769	1.5	22.5	17.0	9.4
R3	455646	300768	1.5	19.4	16.2	8.9
R4	455656	300797	1.5	20.5	16.4	9.0
R5	455712	300792	1.5	24.0	17.4	9.4
R6	455731	300782	1.5	28.3	18.7	9.8
R7	455737	300793	1.5	26.1	18.1	9.5

Receptor ID	X co-ordinate	Y co-ordinate	Height (m)	Annual Mean ($\mu\text{g}/\text{m}^3$)		
				NO ₂	PM ₁₀	PM _{2.5}
R8	455730	300813	1.5	22.0	17.0	9.1

- 7.4 Annual mean NO₂ concentrations were modelled at a set of sensitive receptors located within and adjacent to AQMA 6 (Mill Hill, Enderby) and AQMA 7 (Lubbesthorpe Road, Braunstone Town). The receptors represent ground-floor exposure locations such as residential façades.
- 7.5 No receptors exceeded the annual mean NO₂ AQS objective of 40 $\mu\text{g}/\text{m}^3$, and none were predicted to be within 10% of the objective (i.e. $\geq 36 \mu\text{g}/\text{m}^3$) in either AQMA in the 2019 baseline. The highest predicted concentration in AQMA 6 was 30.4 $\mu\text{g}/\text{m}^3$ at Receptor R4, located in the central section of the AQMA near the narrowest section of Mill Hill (see Figure 7-1). In AQMA 7, the highest modelled NO₂ level was 31.2 $\mu\text{g}/\text{m}^3$ at Receptor R1, located near the junction of Lubbesthorpe Road and Narborough Road South (Figure 7-2 2019).
- 7.6 Across AQMA 6, concentrations followed the main road corridor and were highest along the northern section between Receptors R3-R5, with values ranging from 19.8-30.4 $\mu\text{g}/\text{m}^3$. In AQMA 7, NO₂ levels were highest in the southeast, where Receptors R1 and R6 both exceeded 28 $\mu\text{g}/\text{m}^3$, reflecting their proximity to congested junctions and the high-emission road links identified in Figure 6-5 2019 Baseline.
- 7.7 Since 2019, measured NO₂ concentrations at both AQMAs have declined, as evidenced by BDC's annual monitoring reports. For example, CM6 in AQMA 7 showed a reduction from 47.8 $\mu\text{g}/\text{m}^3$ in 2021 to 29.7 $\mu\text{g}/\text{m}^3$ in 2024, and DT118 in AQMA 6 fell from 43.0 $\mu\text{g}/\text{m}^3$ in 2022 to 32.8 $\mu\text{g}/\text{m}^3$ in 2024. It is therefore likely that actual concentrations at modelled receptors in 2023 or 2024 would be lower than the 2019 baseline levels presented here.
- 7.8 Modelled PM₁₀ and PM_{2.5} concentrations at all receptors were below their respective AQS objectives (40 $\mu\text{g}/\text{m}^3$ and 20 $\mu\text{g}/\text{m}^3$ annual means). PM_{2.5} levels were highest at R4 in AQMA 6 (11.0 $\mu\text{g}/\text{m}^3$) and R7 in AQMA 7 (9.5 $\mu\text{g}/\text{m}^3$), remaining comfortably below the 2028 interim target of 12 $\mu\text{g}/\text{m}^3$, although the highest concentration in AQMA 6 is predicted to be slightly above the 2040 target of 10 $\mu\text{g}/\text{m}^3$. These results indicate that compliance with future PM_{2.5} limits is achievable if current air quality trends continue. Although the WHO Air Quality Guidelines set a more stringent long-term PM_{2.5} guideline of 5 $\mu\text{g}/\text{m}^3$, the majority of modelled concentrations remain below the WHO interim target of 10 $\mu\text{g}/\text{m}^3$. This indicates that while achieving the full WHO guideline remains challenging, concentrations in Blaby are already close to intermediate WHO health-based recommendations.

Figure 7-1 2019 Baseline NO2 Modelling Results Mill Hill AQMA 6

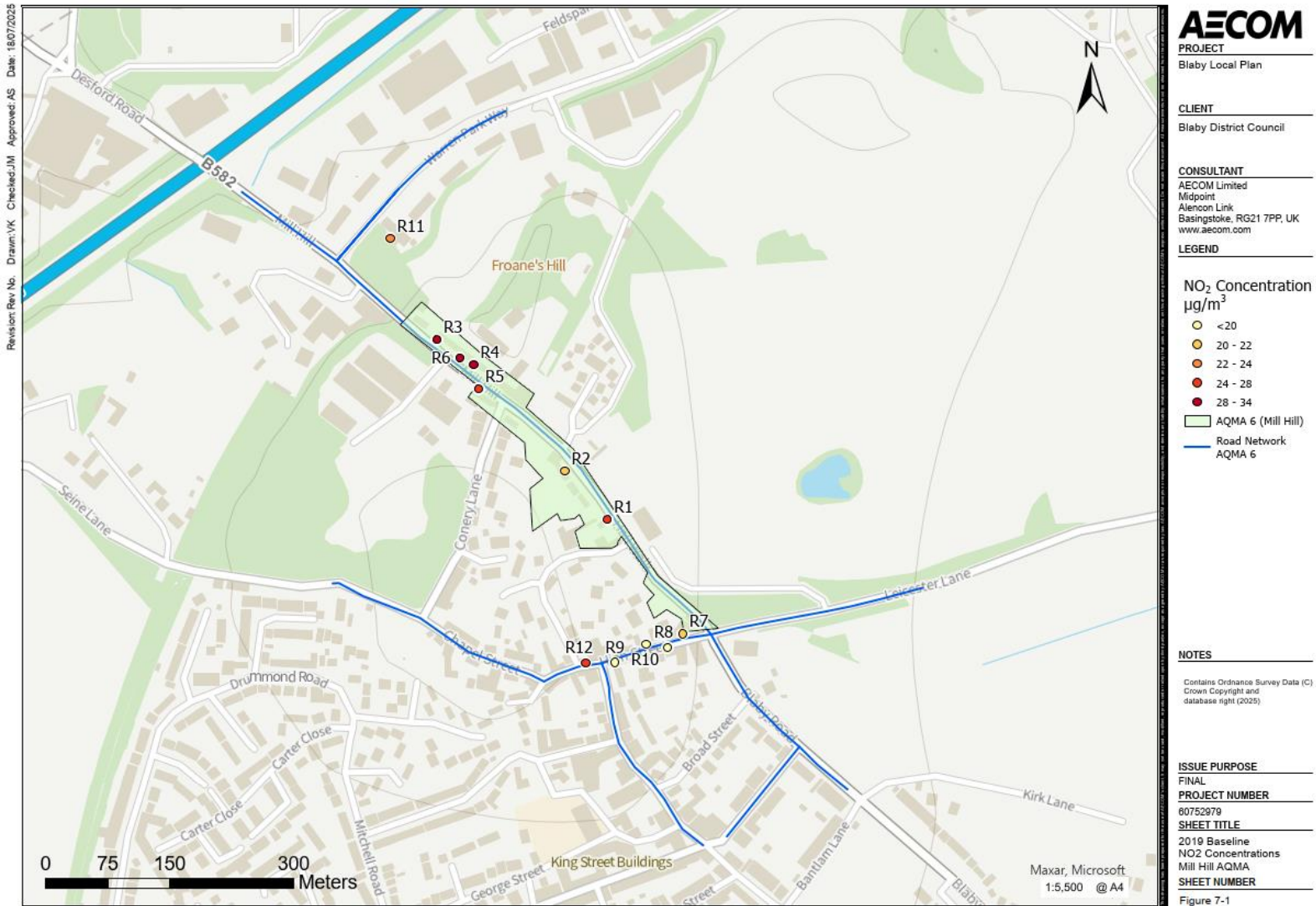
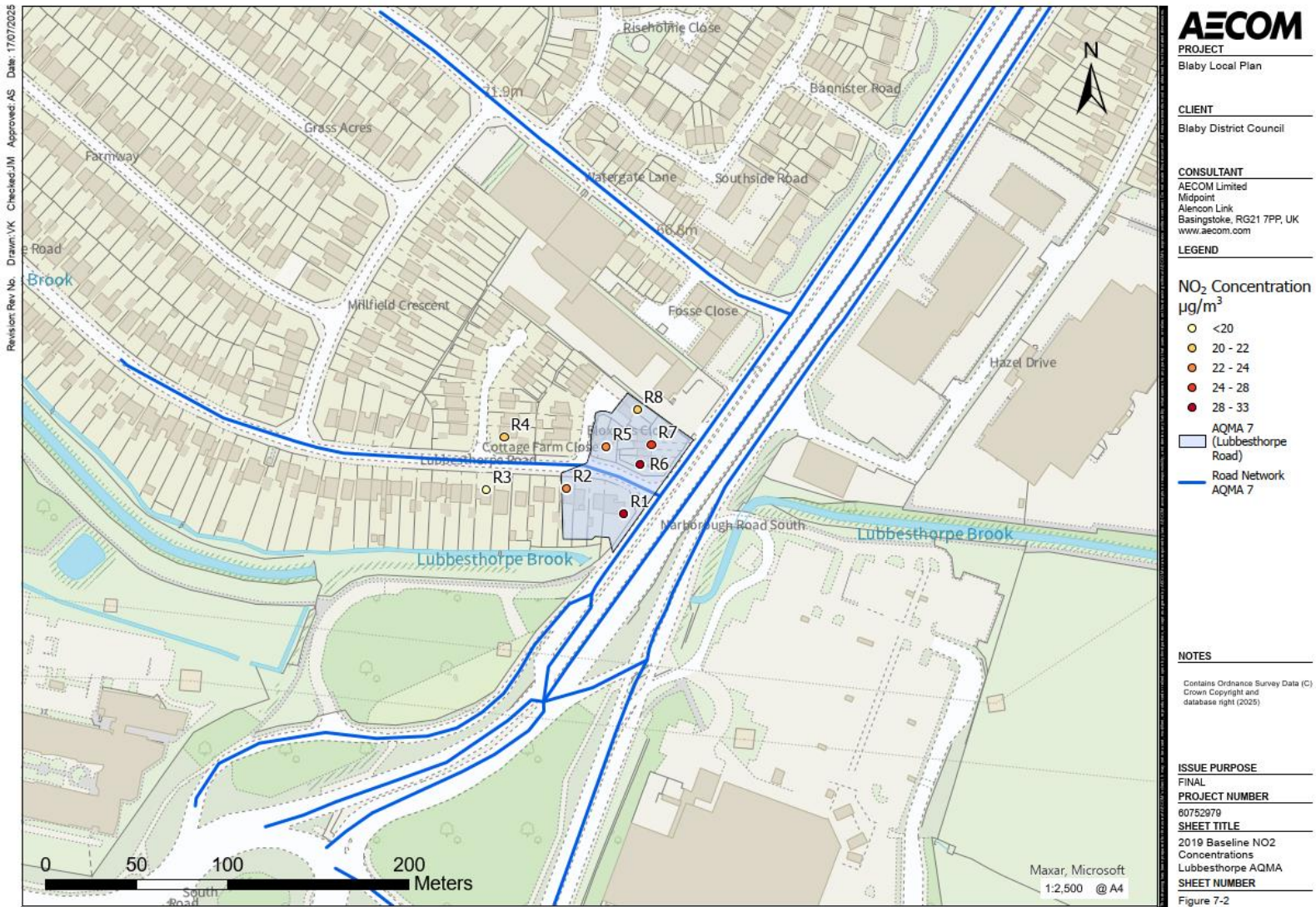


Figure 7-2 2019 Baseline NO₂ Modelling Results Lubbesthorpe Road AQMA 7



2041 Local Plan Impacts

7.9 Modelled results at all locations of relevance to Human Health are presented in Table 7-3 and Table 7-4, the significance of the impacts from the local plan are summarised in Table 7-5 and Table 7-6 and the resultant NO₂ concentrations can be visualised in Figure 7-3 to Figure 7-6. These receptors have been chosen as they provide the worst case annual mean concentration at relevant exposure.

7.10 The model results show that air quality within both Mill Hill (AQMA 6) and Lubbethorpe Road (AQMA 7) remains well within national air quality objectives in all scenarios. Even when the Local Plan growth is included, the predicted changes in NO₂, PM₁₀ and PM_{2.5} are extremely small, typically less than one microgram per cubic metre, and are therefore considered negligible in terms of potential effects on human health. In simple terms, this means that future development proposed in the Local Plan is not expected to cause any new exceedances of air quality standards or noticeable deterioration in air quality at these locations.

Table 7-3 Annual Mean Air Quality Results for 2041 traffic flows in µg/m³ – Mill Hill AQMA 6

Receptor	Without Local Plan			With Local Plan			Change		
	NO ₂	PM ₁₀	PM _{2.5}	NO ₂	PM ₁₀	PM _{2.5}	NO ₂	PM ₁₀	PM _{2.5}
R1	9.8	16.6	8.7	9.8	16.5	8.7	0.1	<0.1	<0.1
R2	8.8	15.1	7.9	8.8	15.1	7.9	<0.1	<0.1	<0.1
R3	11.1	18.5	9.7	11.2	18.3	9.7	0.1	<0.1	<0.1
R4	10.6	17.8	9.4	10.7	17.6	9.3	0.1	<0.1	<0.1
R5	9.7	16.4	8.7	9.8	16.4	8.6	0.1	<0.1	<0.1
R6	11.3	18.8	9.9	11.4	18.7	9.9	0.1	<0.1	<0.1
R7	8.5	15.0	7.9	8.6	15.1	7.9	0.1	<0.1	<0.1
R8	8.0	14.5	7.6	8.1	14.6	7.7	0.1	0.1	<0.1
R9	8.0	15.0	7.9	8.1	15.2	8.0	0.1	0.3	0.1
R10	7.8	14.1	7.4	7.8	14.2	7.4	0.1	0.1	<0.1
R11	8.6	14.8	7.8	8.6	14.8	7.8	<0.1	<0.1	<0.1
R12	9.2	18.7	9.9	9.5	19.5	10.3	0.3	0.8	0.4

Table 7-4 Annual Mean Air Quality Results for 2041 traffic flows in µg/m³ – Lubbethorpe Road AQMA 7

Receptor	Without Local Plan			With Local Plan			Change		
	NO ₂	PM ₁₀	PM _{2.5}	NO ₂	PM ₁₀	PM _{2.5}	NO ₂	PM ₁₀	PM _{2.5}
R1	10.5	17.9	8.9	10.5	18.0	9.0	0.1	0.1	<0.1
R2	8.9	15.5	8.0	8.9	15.6	8.0	<0.1	<0.1	<0.1
R3	8.4	14.8	7.6	8.4	14.8	7.6	<0.1	<0.1	<0.1
R4	8.5	15.0	7.7	8.5	15.0	7.7	<0.1	<0.1	<0.1
R5	9.1	15.9	8.1	9.1	15.9	8.1	<0.1	<0.1	<0.1
R6	9.9	17.1	8.5	9.9	17.2	8.5	<0.1	0.1	<0.1
R7	9.5	16.6	8.1	9.6	16.7	8.2	<0.1	0.1	<0.1
R8	8.8	15.5	7.8	8.8	15.6	7.8	<0.1	<0.1	<0.1

Table 7-5 Air Quality Significance – Mill Hill AQMA 6

Receptor	IAQM Significance		
	NO ₂	PM ₁₀	PM _{2.5}
R1	Negligible	Negligible	Negligible
R2	Negligible	Negligible	Negligible
R3	Negligible	Negligible	Negligible
R4	Negligible	Negligible	Negligible
R5	Negligible	Negligible	Negligible
R6	Negligible	Negligible	Negligible
R7	Negligible	Negligible	Negligible
R8	Negligible	Negligible	Negligible
R9	Negligible	Negligible	Negligible
R10	Negligible	Negligible	Negligible
R11	Negligible	Negligible	Negligible
R12	Negligible	Negligible	Negligible

Table 7-6 Air Quality Significance – Lubbethorpe Road AQMA 7

Receptor	IAQM Significance		
	NO ₂	PM ₁₀	PM _{2.5}
R1	Negligible	Negligible	Negligible
R2	Negligible	Negligible	Negligible
R3	Negligible	Negligible	Negligible
R4	Negligible	Negligible	Negligible
R5	Negligible	Negligible	Negligible
R6	Negligible	Negligible	Negligible
R7	Negligible	Negligible	Negligible
R8	Negligible	Negligible	Negligible

- 7.11 All modelled annual mean NO₂ concentrations at the selected receptors in both AQMA 6 (Mill Hill) and AQMA 7 (Lubbethorpe Road) are predicted to remain well below the annual mean air quality objective of 40 µg/m³ under both the “Without Local Plan” and “With Local Plan” 2041 scenarios. The highest NO₂ concentration observed is 11.4 µg/m³ at Receptor R6 in Mill Hill AQMA with the Local Plan in place, representing a very low level relative to the objective. The values are well below 60 µg/m³, above which the hourly NO₂ objective may be exceeded.
- 7.12 In Mill Hill AQMA 6, the highest modelled NO₂ concentrations in 2041 occur at R3 (11.2 µg/m³) and R6 (11.4 µg/m³) in the Local Plan scenario. Changes due to the Local Plan are minimal across all receptors, with most increases ≤ 0.1 µg/m³, and the maximum increase being 0.3 µg/m³ at R12. This indicates negligible impact from the Local Plan on NO₂ levels.
- 7.13 Particulate matter concentrations (PM₁₀ and PM_{2.5}) in Mill Hill AQMA also remain well below their respective air quality objectives of 40 µg/m³ and 20 µg/m³. The highest PM₁₀ and PM_{2.5} concentrations are 19.5 µg/m³ and 10.3 µg/m³ at receptor R12, respectively. Changes attributable to the Local Plan are small, with the maximum PM₁₀ increase of 0.8 µg/m³ and PM_{2.5} increase of 0.4 µg/m³.
- 7.14 In AQMA 7 Lubbethorpe Road, annual mean NO₂ concentrations remain consistently low, with all receptors showing values below 10.5 µg/m³ in 2041. The highest NO₂ concentration is again

- 10.5 $\mu\text{g}/\text{m}^3$ at Receptor R1, unchanged between scenarios. The Local Plan causes no increase or only 0.1 $\mu\text{g}/\text{m}^3$ change at all sites.
- 7.15 For PM_{10} and $\text{PM}_{2.5}$ in AQMA 7, concentrations are similar to those in Mill Hill, with PM_{10} ranging from 14.6–18.0 $\mu\text{g}/\text{m}^3$ and $\text{PM}_{2.5}$ from 7.6-9.5 $\mu\text{g}/\text{m}^3$. The Local Plan results in maximum increases of 0.3 $\mu\text{g}/\text{m}^3$ in PM_{10} and $\leq 0.1 \mu\text{g}/\text{m}^3$ in $\text{PM}_{2.5}$, indicating negligible change. As with NO_2 , R6 has the highest concentrations, but these remain well within air quality standards.
- 7.16 In both AQMAs, the predicted pollutant concentrations under the “With Local Plan” scenario are very similar to those under the “Without Local Plan” scenario. The changes in NO_2 , PM_{10} and $\text{PM}_{2.5}$ due to the Local Plan are classified as negligible at all receptors, according to IAQM/EPUK significance criteria.
- 7.17 These results suggest that, while the Local Plan does result in slight increases in traffic emissions at some locations in the AQMAs, these changes are minimal in air quality terms and do not pose any risk of new exceedances or significant deterioration in air quality at any sensitive receptor within the AQMAs.
- 7.18 The assessment indicates that pollutant concentrations at both Mill Hill (AQMA 6) and Lubbethorpe Road (AQMA 7) are well below current national air quality objectives, and that predicted changes associated with the Local Plan are negligible, typically less than one microgram per cubic metre for all pollutants assessed. These findings suggest no risk of new exceedances or notable deterioration in air quality at sensitive receptors within the AQMAs.
- 7.19 Looking ahead, however, national policy is moving towards more stringent air quality targets, particularly for fine particulate matter ($\text{PM}_{2.5}$), as set out in the Environmental Improvement Plan 2023 and the Air Quality Strategy 2023. WHO also proposes more ambitious health-based guideline values, which, although not statutory, provide useful context for long-term air quality ambitions. Local authorities are increasingly expected to go beyond minimum compliance by reducing exposure and integrating air quality improvements into climate and transport planning. The Local Plan’s emphasis on sustainable transport, low-emission development, and carbon reduction aligns well with these emerging policy directions, helping to ensure that Blaby District remains resilient to future tightening of air quality standards.

Figure 7-3 2041 NO₂ Modelling Results Without the Local Plan – Mill Hill AQMA 6

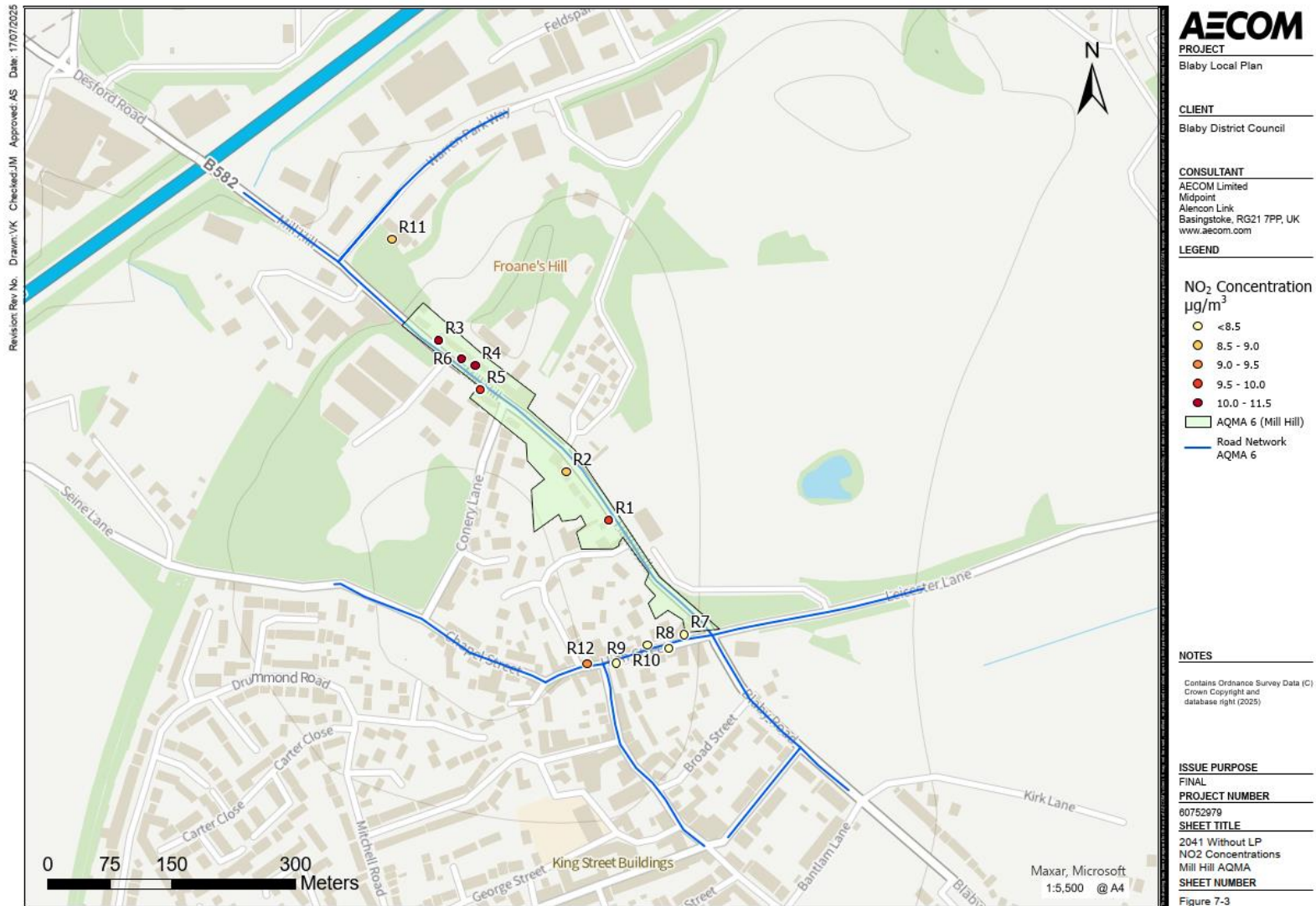


Figure 7-4 2041 NO₂ Modelling Results Without the Local Plan – Lubbesthorpe Road AQMA 7

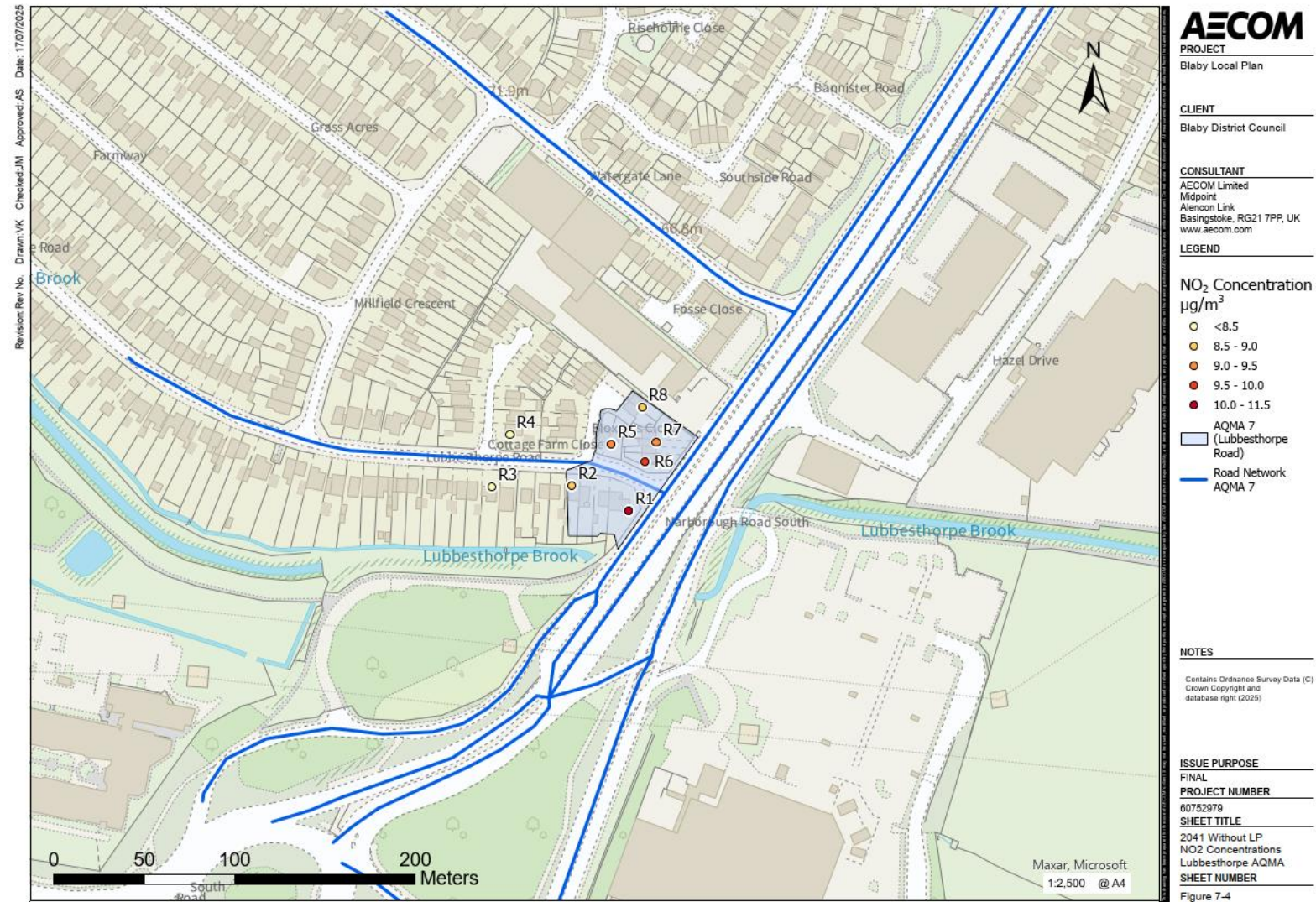


Figure 7-5 2041 NO₂ Modelling Results With the Local Plan – Mill Hill AQMA 6

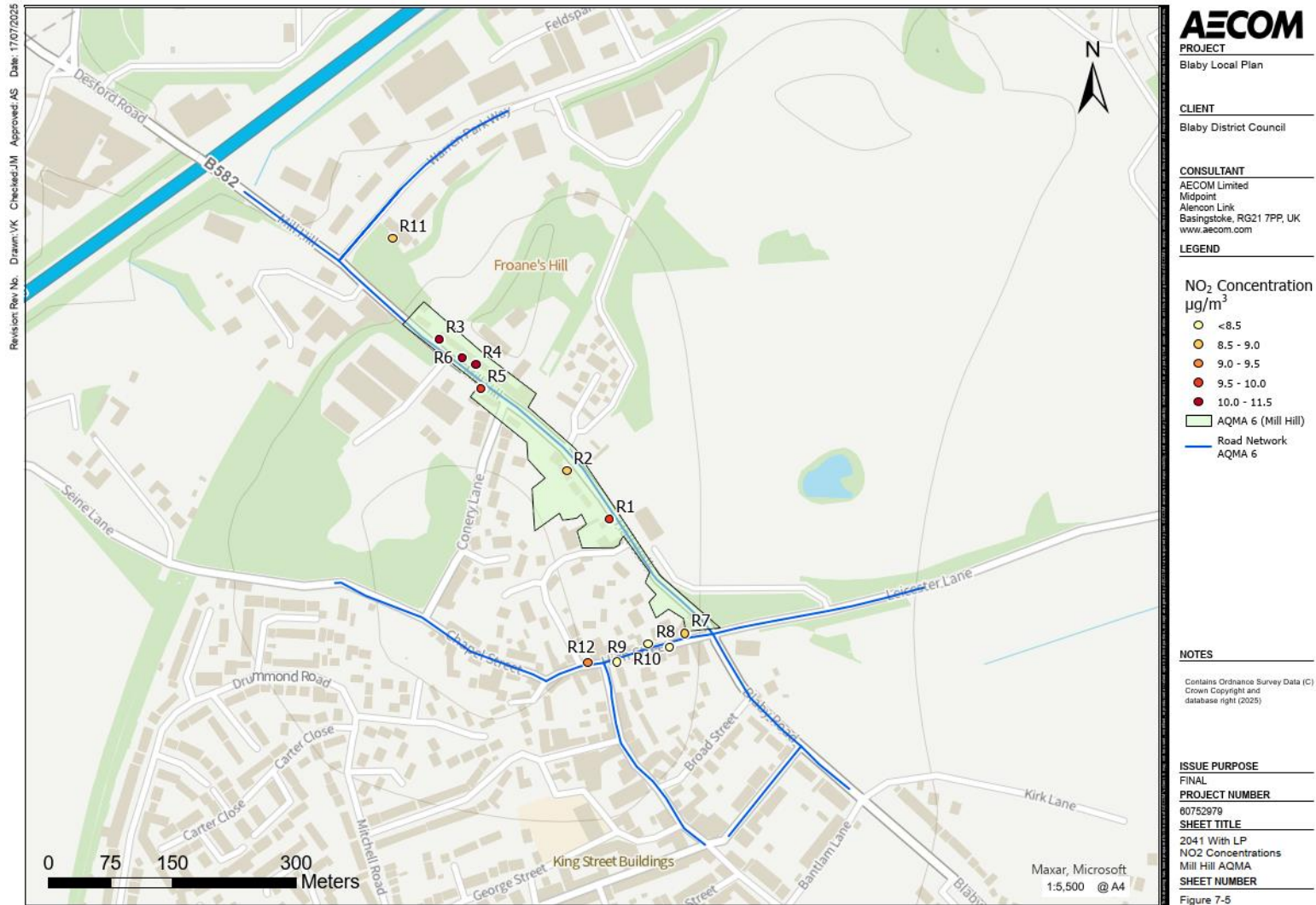
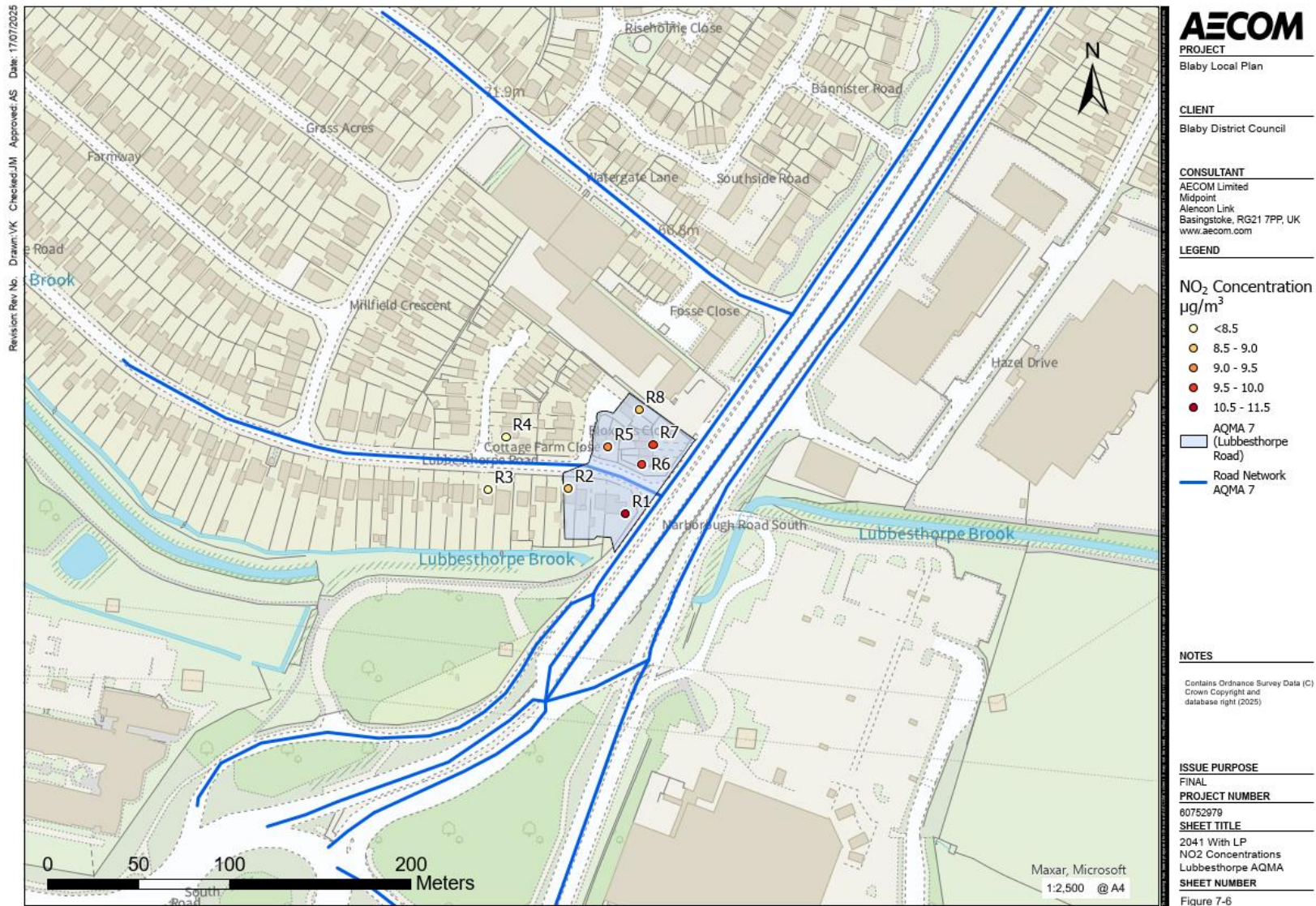


Figure 7-6 2041 NO₂ Modelling Results With the Local Plan – Lubbesthorpe Road AQMA 7



Carbon Assessment

7.20 Table 7-7 presents the forecasted annual carbon emissions associated with road traffic in the study area for the 2041 “With Local Plan” and “Without Local Plan” scenarios. These results quantify changes in operational (traffic-related) emissions attributable to planned development in the Local Plan and exclude construction-related emissions or embedded carbon.

Table 7-7 Carbon Emissions across model domain

Pollutant	Baseline 2019 (tonnes/year)	Without LP (tonnes/year)	With LP (tonnes/year)	Change (With LP – Without LP) (tonnes/year)
CO ₂	269,671	160,976	170,378	9,403

7.21 Carbon emissions from road traffic are forecast to reduce substantially from 269,671 tonnes/year in 2019 to 160,976 tonnes/year by 2041 Without the Local Plan, primarily due to ongoing fleet electrification and tighter vehicle emission standards. With the Local Plan in place, emissions are predicted to be 170,378 tonnes/year, representing an increase of 9,403 tonnes/year (approximately 5.8%) relative to the “Without LP” scenario.

7.22 While the “without Local Plan” and “with Local Plan” values represent the end of the plan period (2041) and complete build-out of allocated developments, in reality, developments will be completed in phases during the Plan period, and so there is likely to be a stepped increase in the “with Local Plan” scenario minus “without Local Plan” change in annual CO₂ emissions as the Plan progresses. Any change due to the Local Plan should be considered against a backdrop of decreasing overall CO₂ emissions.

7.23 The change (both in relative and absolute terms) in 2041 represents the greatest annual change throughout the Local Plan, and thereafter, as overall CO₂ emissions continue to decrease following national decarbonisation policy, the absolute change in CO₂ emissions as a result of the Plan will decrease.

8. Conclusions

2019 Baseline

- 8.1 This report presents the baseline results of an air quality assessment for Blaby District Council (BDC), focused on two active Air Quality Management Areas (AQMAs): Mill Hill (AQMA 6) and Lubbethorpe Road (AQMA 7). The baseline year is 2019, and the assessment includes dispersion modelling of NO₂, PM₁₀, and PM_{2.5} at sensitive receptors within and around these areas.
- 8.2 In the 2019 baseline, all modelled receptor locations were predicted to comply with the annual mean air quality objectives for NO₂, PM₁₀, and PM_{2.5}. The highest NO₂ concentration was modelled at Receptor R4 in AQMA 6 (30.4 µg/m³) and at Receptor R1 in AQMA 7 (31.2 µg/m³), both below the 40 µg/m³ air quality objective.
- 8.3 Measured data from 2020–2024 indicate a continuing decline in NO₂ concentrations across both AQMAs. At Lubbethorpe Road AQMA, concentrations at CM6 decreased from 47.8 µg/m³ in 2022 to 29.7 µg/m³ in 2024. In Mill Hill AQMA, DT118 decreased from 43.0 µg/m³ in 2022 to 32.8 µg/m³ in 2024. PM_{2.5} concentrations at all monitoring sites remain comfortably below both UK objectives and WHO guideline values.

Traffic and Emissions Screening Assessment

- 8.4 A screening assessment of road traffic emissions throughout Blaby District was carried out, based on predicted traffic data for the baseline 2019 and future year 2041 without and with implementation of the Local Plan and calculated future year emissions. Four further areas of concern were identified within the District, outside of the current two AQMAs, with large predicted changes in future year road NO_x emissions as a result of implementation of the Local Plan. These areas are highlighted as potential areas to investigate further with detailed dispersion modelling. The four identified areas of concern earmarked for potential future modelling are as follows:
- i. A426 Lutterworth Road
 - ii. B582 Northwest of M69
 - iii. B582 Enderby Road
 - iv. B582 & B4114 Roundabout
- 8.5 The comparison between the 2041 “Without Local Plan” and “With Local Plan” scenarios showed that, across most of the District, changes in traffic flows are relatively limited, with only localised increases observed on a small number of strategic links. These more pronounced changes were concentrated on corridors that already carry high traffic volumes, indicating that any future detailed assessment would be most effectively targeted at these specific locations rather than applied more broadly across the wider network.

2041 Local Plan Detailed Modelling

- 8.6 Future year modelling for 2041 in the two AQMAs shows that NO₂, PM₁₀, and PM_{2.5} concentrations will remain well below their respective objectives at all assessed receptors, both with and without implementation of the Blaby Local Plan. There are no anticipated exceedances of the air quality objectives for any pollutant.
- 8.7 The Local Plan is predicted to result in small increases in NO₂ concentrations, generally between 0.1 and 0.3 µg/m³, with the largest increase of 0.3 µg/m³ at Receptor R12 in Mill Hill AQMA 6. These changes are considered negligible in accordance with IAQM/EPUK guidance and do not indicate a risk of new exceedances or significant deterioration in air quality.
- 8.8 For particulate matter, PM₁₀ and PM_{2.5} concentrations remain well within the air quality objectives, and within or close to the future target thresholds. The highest modelled PM_{2.5}

concentration was 10.3 µg/m³ at R12, which remains below the 12 µg/m³ 2028 interim target, but slightly greater than the 10 µg/m³ 2040 long-term target.

- 8.9 Overall, the assessment concludes that implementation of the Blaby Local Plan will not result in exceedances of air quality objectives for NO₂, PM₁₀ or PM_{2.5} within the two AQMAs. Predicted changes in pollutant concentrations are small and not considered to represent a significant air quality risk to human health.
- 8.10 Given current monitoring trends and the projected improvements in vehicle emissions and background concentrations, the district is expected to remain in compliance with national air quality targets. Continued monitoring and integration with planning and transport policy will be important to support long-term air quality improvements.
- 8.11 The carbon assessment indicates that road traffic-related emissions of CO₂ are forecast to reduce significantly from 269,671 tonnes/year in 2019 to 160,976 tonnes/year by 2041 in the “Without Local Plan” scenario, which is likely to be driven by fleet decarbonisation and background improvements. With the Local Plan in place, emissions are predicted to be 170,378 tonnes/year, representing an increase of 9,403 tonnes/year (~5.8%) relative to the “Without Local Plan” scenario which is smaller than the overall reduction from 2019 to 2041 levels.

Local Plan Policies

- 8.12 The emerging Blaby District Local Plan (2019–2041) includes objectives to support sustainable development and mitigate environmental impacts, aligning with the Council’s Climate Change Strategy (2020–2030) and the 2030 Net Zero Council Action Plan. These strategies commit the Council to achieving net zero emissions from its operations by 2030 and supporting district-wide decarbonisation by 2050, through measures such as low-carbon development, sustainable transport, renewable energy, and improved air quality management.

Recommendations

- 8.13 The assessment has been carried out based on the information regarding proposed plan sites that were current at the time that the traffic modelling was carried out. Should changes in allocations of traffic be required in the future, this assessment or elements of it may require updating.
- 8.14 Future work should include a more detailed assessment of the four areas of concern identified through the screening exercise, particularly if updated traffic forecasts or modifications to Local Plan allocations indicate changes in vehicle flows. Targeted dispersion modelling at these locations would provide a clearer understanding of any potential impacts on air quality and help confirm whether additional localised mitigation may be required as the Plan progresses.
- 8.15 It is also recommended that future iterations of the Local Plan continue to integrate air quality considerations at the earliest stages of site planning and design. This may include reviewing site layouts to minimise exposure, ensuring sustainable transport connections are embedded from the outset and identifying opportunities for green and active-travel infrastructure within new development. Such measures will help maintain compliance with air quality objectives and support the District’s wider climate and wellbeing ambitions as growth comes forward.
- 8.16 The measures presented below in Table 8-1 offer practical opportunities to minimise transport-related emissions and support healthier, more sustainable patterns of movement across Blaby District. They also provide a clear set of interventions that can be integrated into new development, ensuring that air quality and carbon considerations are addressed from the earliest stages of site planning, design and masterplanning. These recommendations align with national and local policy directions, including the Council’s wider Climate Change and Net Zero commitments, and illustrate how sustainable transport, active travel and high-quality green infrastructure can be embedded within future growth areas to support long-term environmental and wellbeing objectives.

Table 8-1 Recommended mitigation measures to improve air quality and reduce carbon emissions

Mitigation Measure	Category	Purpose / Expected Benefit
Improved pedestrian infrastructure	Mode Shift	Encourage walking for short local trips, reducing car dependency and associated emissions.
Improved cycling infrastructure	Mode Shift	Provide safe, continuous cycling routes that support active travel and reduce private car use.
(e-)Mobility hire schemes	Mode Shift	Offer affordable low-carbon mobility options for residents without access to a private vehicle.
Area-wide travel planning and mobility management	Mode Shift & Improvement	Promote behavioural change across multiple trip purposes and reduce unnecessary car travel.
EV car clubs	Mode Shift	Enable shared access to low-emission vehicles, reducing the need for private car ownership.
Incentive-based travel apps	Mode Shift	Encourage and reward sustainable travel choices across the District.
Support for car sharing	Increase Car Occupancy	Reduce single-occupancy car travel for commuting, business and leisure trips.
School travel planning	Education / Mode Shift	Encourage walking, cycling and public transport use for school journeys, improving safety and local air quality.
20-minute neighbourhood principles	Reallocate Trips / Mode Shift	Enable more daily activities to occur locally by active modes, reducing travel demand and emissions.
High-density development near services	Reallocate Trips / Mode Shift	Support compact development that shortens trip distances and makes active modes more viable.
Mobility hubs	Mode Shift	Integrate public transport, shared mobility and cycle infrastructure in accessible locations.
Improved bus frequency	Mode Shift	Increase the reliability and attractiveness of public transport, supporting a shift away from car use.

8.17 Integrating these measures within future development proposals and through the Local Plan Review provides an opportunity to strengthen air-quality outcomes across the District. This can

be achieved by requiring air-quality assessments for major schemes, incorporating mitigation measures into planning conditions and designing new sites to minimise exposure through good layout, sustainable transport access and high-quality green infrastructure. Where residual emissions remain, approaches such as urban greening and low-carbon construction practices can help offset impacts and deliver wider co-benefits. Collectively, these actions provide the strategic oversight anticipated in the project brief and demonstrate how Blaby District can optimise air-quality performance through new development while supporting wider climate and wellbeing objectives.

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