



Basildon Local Plan

Air Quality Review

26th May 2020

Basildon Council
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Document Control Sheet

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Report Title	Basildon Local Plan (Air Quality Review)
Project Number	B3553R9A
Status	Final (minor edits to draft 7)
Version	1
Control Date	26 th May 2020

Record of Issue

Issue	Status	Author	Date	Check	Date	Review	Date
0	Draft	KT/SB	05.02.20	HCP	05.02.20	HP	07.02.20
6	Draft	KT/SB	17.02.20	HCP	17.02.20	HP	17.02.20
7	Final	KT/SB	25.02.20	KT	25.02.20	KT	25.02.20
8	Final	KT	13.05.20	SB	26.05.20	SB	26.05.20

Approved for Issue By	Date
TK (Project Manager)	26/05/2020

Distribution

Organisation	Contact	Number of Copies
Essex County Council	Mark Robinson	1 by email
Basildon Borough Council	Lisa Richardson	1 by email

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1 Introduction

Basildon Council commissioned Ringway Jacobs to provide support for an Air Quality review of the Basildon Local Plan. More specifically, Basildon Council detailed a requirement for the following services:

1. To appraise the Basildon Local Plan with respect to Air Quality (looking at policies and general direction) and conduct specific sensitivity tests providing assurances on the effect of local growth on air quality.
2. To prepare a short guidance or technical note giving guidance to Development Management Officers in reviewing planning applications with respect to Air Quality and to provide some direct training for officers at Basildon Council on its use.
3. Provide support and guidance with respect to the technical aspects of Air Quality at the Basildon Local Plan Examination in Public (EiP). Currently the EiP is on pause until the Department for Environment, Food and Rural Affairs (DEFRA) come back with a firm response on whether they will be directing a Clean Air Zone. (CAZ; potentially late 2020).

The support, with respect to air quality, coincides with ongoing proposals to implement significant measures that would reduce emissions from road transport along the A127 and in Basildon's business area to the South of the A127. Therefore, it is important that plans and policies are in tune with air quality proposals and that their development over time is managed such that air quality continues to improve. The following section provides a backdrop to the current air quality situation in Basildon.

Each section is concluded independently.

1.1 Why is air quality important?

In 2019, Public Health England categorised air pollution as the biggest environmental threat to health in the UK, with between 28,000 to 36,000 deaths a year attributed to long-term exposure in the UK. There is strong evidence that air quality causes strokes, heart disease, respiratory disease, lung cancer and worsens asthma. Short-term exposure to high levels of air pollution can also trigger asthma, affect lung function and increase hospital admissions and mortality. The young, elderly and those with pre-existing medical conditions such as heart and lung problems are most susceptible to poor air quality. It is not necessarily the case that air quality which complies with the relevant UK Air Quality Objectives would not result in any adverse health effects, and it is widely acknowledged that for some pollutants there is no threshold below which health effects are not observed (i.e. PM10/PM2.5). There is also increasing evidence that shows adverse health outcomes at the population level for annual average concentrations of NO₂ which are well below the UK Air Quality Objective value.

1.2 Background to the Air Quality Management Plan (AQMP) proposals for Basildon

Basildon lies approximately 42km east of central London and 17km south of Chelmsford. The Borough includes the towns of Billericay to the north, Wickford northeast, Laindon south west and Pitsea to the east. The principal source of air pollution in the Basildon Council area are emissions from road traffic, particularly in the busy urban centres and on the wider strategic road network such as the A127, A13 and A130 and associated interconnecting roads.

Basildon Council reviews and assesses air quality within its Borough on an annual basis as part of the Local Air Quality Management process. This is undertaken to determine whether the UK Air Quality Objectives are likely to be achieved. Basildon Council has concluded that the objectives are being achieved and has not needed to declare an Air Quality Management Area or initiate a formal Air Quality Action Plan to work towards meeting the objectives.

On 26 July 2017, the Government published the UK Plan for tackling roadside Nitrogen Dioxide (NO₂) concentrations (“The Plan”). This set out how the Government would bring UK NO₂ concentrations within the statutory annual limit of 40 micrograms per cubic metre (µg/m³) in the shortest possible time. The Plan sets out several national and local measures that need undertaking based on evidence provided by the Pollution Climate Mapping (PCM) model administered by DEFRA. DEFRA reported the outputs of the PCM model in July 2017. The PCM model identified A-Roads (and other major roads) that are projected to be in exceedance of the NO₂ annual mean European Union (EU) Air Quality Directive (AQD) limit value of 40 µg/m³ beyond 2020.

The PCM model results indicated that, with no intervention in place, there would be exceedances of the EU AQD limit values adjacent to three identified PCM road links within Basildon and Rochford beyond 2020. The results of the PCM model for the A127 within Basildon and Rochford District are shown in Table 1. The locations of these PCM links are shown in Figure 1, with the Basildon links on the western side of the Figure and the Rochford District links to the east. Source apportionment for the year 2020¹ indicates that the contribution of NO_x from road vehicle sources to each Census ID is ranges from 80 to 83%, hence 20% to 17% from other sources.

¹ <https://uk-air.defra.gov.uk/library/no2ten/2017-no2-projections-from-2015-data>

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Table 1. Total NO₂ Concentrations at PCM links

Local Authority	Road	PCM ID	2018 (µg/m ³)	2020 (µg/m ³)	2020 Contribution of NO _x from road vehicles (%)
Basildon Council	A127	16646	50	45	83
Basildon Council	A127	75041	51	46	80
Rochford District Council	A127	46683	49	45	81

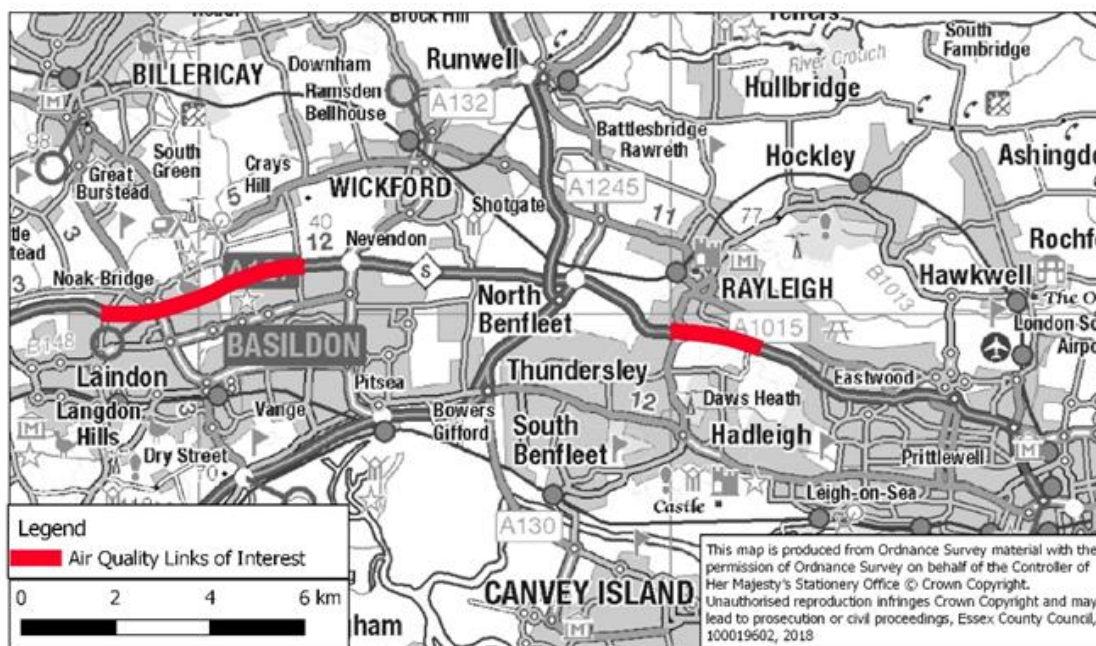


Figure 1. Basildon and Rochford PCM links of interest.

DEFRA and the Department for Transport's Joint Air Quality Unit (JAQU) oversees the delivery of The Plan by supporting Local Authorities with the delivery of local Air Quality Management Plan (AQMP) in their area. JAQU includes a dedicated team focused on supporting Local Authorities to identify appropriate measures, which would then be included in the AQMP and delivered by the Local Authorities.

Local Authorities need to undertake local assessments to develop an option that will achieve likely compliance within the shortest possible time. To this end, a Feasibility Study was undertaken centred on Basildon and Rochford which included a local air quality assessment (i.e. monitoring and modelling of concentrations). The Outline Business Case (OBC) was submitted to DEFRA in April 2019. The OBC presented evidence that speed management implemented in 2020 would offer a full year of compliance along the A127 in 2021 (i.e. in accordance with the AQD). However, pockets of non-compliance remain on the East and Upper Mayne roads. In other words, localised exceedances remain in Basildon but not in Rochford.

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Following submission of the OBC, DEFRA has written to Rochford District Council to confirm that there are no longer any exceedances within its District. Separately, Ministerial Directives were sent to Basildon Council and Essex County Council to direct the implementation of the Speed Limit on the A127 as set out in the OBC and to model a Charging Clean Air Zone (CAZ), where older more polluting vehicles are charged for entry, as a benchmark option for the remaining exceedances.

Separately to the OBC, additional modelling has been carried out to determine the relative effectiveness of different CAZ options to resolve these remaining exceedances (i.e. to identify the measure most likely to bring about compliance in the shortest possible time).

Accordingly, speed management on the A127 has progressed to a Full Business Case (FBC) Submission to DEFRA and is expected to be implemented by March 2020. In other words, the system will have undergone a period of settling in. Meanwhile, resolution of other non-compliant locations will be subject to further separate OBC and FBC submissions in 2020/21 respectively, which will consider additional measures. These measures could include a CAZ.

Evidence from ongoing work will be utilised to address the separate but interrelated concerns held by Basildon Council regarding the potential impact on air quality from development policies and plans (e.g. included in the Basildon Local Plan).

1.2.1 Defra Direction – Clean Air Zone

In December 2019, it was agreed with JAQU that a local model developed from Essex's Countywide Strategic Transport Model (referred to as the 'Countywide Traffic Model') would be suitable for ongoing CAZ assessment work. However, it was also agreed that it would be useful to undertake initial air quality modelling of a CAZ C² using outputs from an adapted Countywide Model as a series of "readiness" tests. This process would serve to check the effectiveness of a CAZ C to achieve compliance with the AQD and to inform development of any local traffic model for further or confirmatory tests of CAZ schemes.

Prior to undertaking the readiness testing, the risk was raised with JAQU that the new methodology could produce different results from that produced by the Countywide Traffic Model version used to test speed limit policies. The risk was acknowledged but it was agreed that the new modelling approach was necessary to analyse the impacts of a CAZ.

The preliminary results of the readiness tests using the adapted Countywide Traffic Model have indicated that the NO₂ levels using the assignment model were higher in 2022 than predicted in 2021 using the previous version of the Countywide Traffic

² CAZ C is a Clean Air Zone based on access controls to specific vehicle types (e.g. light and heavy goods vehicles and buses/coaches).

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Model. The adapted model also identified additional exceedances that, if confirmed, would need to be addressed. However, it should be recognised that these are findings from initial readiness tests, which could alter based on alterations to the assumptions in the model.

In March 2020 the JAQU acknowledged the likely adverse impacts of a charging CAZ in the area and agreed that alternatives should be investigated. This work is ongoing and will be reported later this summer.

COVID-19 may impact on the volume of traffic locally and may have an effect on the cleanliness of the fleet within the area (i.e. could delay the uptake of more modern and less polluting vehicles thereby slowing the rate of emissions improvements across the fleet). JAQU is undertaking a review of assumptions about the natural fleet renewal and upgrading to cleaner vehicles. The results of this review are expected later this summer. The indication is that this will be reviewed on a case by case basis.

2 Scope

2.1 Task 1 - Review Basildon Council Local Plan with respect to Air Quality

A relatively high-level review has been undertaken of the Basildon Local Plan document to ascertain:

- 1) if air quality is appropriately considered within each policy;
- 2) whether the air quality requirements are sufficiently specific or robust; and
- 3) whether there are any inaccuracies, omissions or inconsistencies with the relevant planning / development control technical guidance.

The review has assessed the air quality requirements of the policies from the wider perspective, covering the local air quality situation in Basildon. The review also covered further considerations such as whether the policies consider associated health effects/mortality, potential future issues such as exposure reduction and the drive to low/zero emission vehicles and increased use of public transport/cycling/walking etc and whether the Basildon Local Plan (including the associated Sustainability Appraisal) sufficiently considers the cumulative impact of development being brought forward in accordance with the allocation policies. Such development, for example, includes the proposed 19,500 new houses over the Basildon Local Plan period (2014-2034). Other elements considered, include national planning policy such as the National Planning Policy Framework (NPPF), which refers, for example, to the consideration of air quality at the plan-making stage (Paragraph 181).³

2.2 Task 1a1 – Sensitivity testing the impact on air quality for a 5% uplift in year 2020 growth compared to the core estimate

The situation in Basildon is that, as of 2020, 50 mph speed management will be rolled out along the Basildon section of the A127. For the speed management intervention, hereafter referred to as 'DS1', the economic business case included core and sensitivity testing. Sensitivity testing was necessary to account for uncertainty in developmental growth (e.g. increase in road traffic), which influences trip rates and the resulting vehicle emissions.

In the 2020 traffic model the amount of car trips assigned to the highway network was increased to reflect committed development growth and general traffic growth predicted by the National Trip End Model (NTEM). Meanwhile goods vehicles trips were increased using factors obtained from the National Transport Model (NTM).

³ NPPF (February 2019)

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Since there is uncertainty around the growth predicted by NTEM, the Department for Transport's guidance recommends carrying out sensitivity tests by increasing and decreasing the number of trips in the traffic model. The amount that the trips are increased depends on how far away the forecast year is from the base model year. For the FBC, a +/- 5% change to the amount of trips was made in 2020 (which is close to the 2016 base year of the model) and a +/- 9.4% change in 2030 (which is further away from the base year). It should be noted that these increases/decreases to the number of trips are only applied to the trips in the base model. Therefore, it is not the same as a sensitivity test on the Basildon Local Plan development per se, which could have a different spatial configuration than that found in the base model.

Traffic data were provided for scenarios where the demand for each period (AM, Inter-Peak (IP), PM and Off Peak (OP)) had been factored up or down by 5% relative to the 2020 DS1 scenario. These changes in demand alter the traffic flow on different roads, some roads may have limited changes due to capacity constraints, other roads will have higher than 5% increase in flows due to some diversion from constrained roads. These changes in flows also result in small influences on the speed as, in general, a reduction in flow corresponds to an increase in speed (i.e. less congestion) and vice versa.

Annual link emissions were then estimated for the network using the DEFRA Emission Factor Toolkit (EFT) v8.0.1.b and reported as part of the economic case presented in the FBC. This version of the EFT was used as it was the most current at the time of the original study for consistency.

Testing for the DS1 full business case concluded that natural compliance of the Air Quality Directive may well be achieved in 2023 across the whole study area, which included much of Basildon's urban area. The traffic team provided an updated set of traffic adjustment factors for year 2023 DM using TEMPro (the Trip End Model Presentation Program) and the NTEM (National Trip End Model). The same factors were then applied to derive the traffic for the 2023 DS scenario, which included speed management on the A127.

Background pollutant concentrations were obtained from the DEFRA Background Mapping Website and assumed to be consistent with the year 2023. In addition, the road traffic fleet emission standard profile for 2023, derived from local Automatic Number Plate Recognition (ANPR) survey data, were projected using the EFT to take account of the local fleet mix and age.

As mentioned, above, traffic model growth forecasts for Basildon to test the DS1 scenario in 2020 used assumptions based on committed development as well as adjustments provided by NTEM. This ensured that the overall number of trips was 'controlled' to the amount of trips predicted by NTEM. This is common practice to avoid being overly optimistic or pessimistic on development projections.

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However, further research subsequent to the FBC Submission found that there was a divergence in the amount of trips between the NTEM and the number of trips that could be generated by the full draft Basildon Local Plan. In other words, growth projections based on potential development included in the Basildon Local Plan were potentially higher than projected for the core DS1 scenario that was presented in the FBC. This divergence was relatively narrow in the shorter term (i.e. up to 2023) but is more pronounced by the end of the Basildon Local Plan period.

Given the divergence in medium to long term growth forecasts described above in the full draft Basildon Local Plan, it was recommended that evidence was provided to understand any implications this may have on air quality. As mentioned above, the test undertaken for the FBC for the DS1 scenario only included annual emissions. On this basis it was proposed to rerun the +5% high growth 2020 DS1 scenario and to provide annual mean NO₂ concentrations. These results have been compared to the 2020 core reference case (already reported in the FBC).

2.3 Task 1a2 – Sensitivity testing the impact on air quality using a revised demand growth in 2023 based on committed development

The amount of trips between the NTEM projection and the Basildon Local Plan projection is less than the number of trips added in the sensitivity tests described above. Nevertheless, it was considered worthwhile to carry out an additional test in which the number of trips in the Basildon area of the transport model were altered to match the quantum of trips expected in the emerging full draft Basildon Local Plan.

Therefore, in addition to the 2020 DS1 case, it was recommended to run the 2023 DS1 reference case but to take a fresh look at growth forecasts that reflect committed development as well as full draft Basildon Local Plan forecasts. These results were then compared to the previous results based on controlling the traffic to NTEM levels of growth.

2.4 Task 2 - Guidance note for reviewing air quality assessments and training

A separate technical note has been produced to provide a clear guide to reviewing air quality assessments that accompany planning submissions. It is noted that the technical guide is aimed at advising council officers to technically review air quality assessments and not as a supplementary planning document for use by developers/applicants on the relevant policies, guidance and content of an air quality assessment. The note sets out the key elements of reviewing an assessment, including:

- Use of the correct technical guidance to determine the need for an assessment and define the study area for different air quality aspects (e.g. road traffic emissions, construction dust, boilers/generators, industrial processes etc).

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- Appropriately applying thresholds for determining the need for a detailed assessment or screening out sources as negligible.
- Key aspects of a dispersion modelling assessment, for example:
 - Has an appropriate model been used?
 - Have the worst-case receptors been considered?
 - Has the appropriate meteorological data been used for the modelling?
 - Has the model been verified against roadside measurements in accordance with the relevant guidance?
 - How has the applicant calculated the vehicle emissions and accounted for uncertainty in future emissions estimates?
 - If the assessment is based on the outputs from a traffic model, does the assessment contain adequate information on the traffic modelling and validation, and model outputs etc?
 - Has a worst-case approach been used to account for uncertainty in the air pollution modelling for industrial sources (e.g. assuming emissions are continuous at the relevant emission limits, modelling several years of meteorological data, assuming all particulates emitted are PM₁₀/PM_{2.5}, assuming a high conversion of oxides of nitrogen to nitrogen dioxide, assuming no decrease in background pollutant concentrations in future years etc)?
- Whether adequate mitigation has been proposed and sufficiently detailed in the report, and whether the effectiveness of mitigation has been either backed up with further assessment or based on relevant guidance.
- Whether the conclusion of significance has been drawn appropriately from the assessment results, i.e. whether adequate justification has been provided in accordance with the relevant technical guidance and professional judgment has been correctly applied.

2.5 Task 3 - Provide air quality support at the Basildon Council Local Plan Examination in Public

Support is also being provided on an ad-hoc basis as required. The support is provided by Sam Pollard or Kevin Turpin, both Technical Directors within the Air Quality Team at Jacobs. Support can cover responding to requests for guidance/advice, responding to written questions from stakeholders, attendance at hearings / meetings and teleconference calls as required.

3 Results

Each of the Tasks, under Task 1, and sub-tasks are discussed below in the relevant headed sections:

- Task 1 - Local Plan Review
- Task 1a1 - Air quality sensitivity: direct +5% uplift of demand growth in 2020
- Task 1a2 - Air quality sensitivity: revised demand growth in 2023 based on committed development

3.1 Task 1: Review of Basildon Council Local Plan with respect to Air Quality

3.1.1 Introduction

This section provides a review of the Basildon Local Plan (Basildon Borough Revised Publication Local Plan 2014-2034, October 2018), hereafter referred to as the 'Local Plan'. The review focuses on whether air quality is adequately considered within the Local Plan for the following:

- In terms of the potential impact, both individually and cumulatively, of planned development being brought forward in line with the allocation policies and whether these consider the current air quality situation across the Borough.
- Whether the strategic and specific development management policies within the plan are robust in the way they take account of the significance of air quality issues and provide adequate mitigation of the potential individual and cumulative impacts of developments on air quality over the plan period.
- The compliance with national planning policies and other relevant requirements or aspects in relation to air quality.

Given that poor air quality is known to adversely influence human health (see Section 1.1), this review will attempt to determine if the policies within the Local Plan acknowledge the current issues and health effects of poor air quality and put in place appropriate measures or requirements to ensure new development does not compromise efforts to achieve compliance or improve air quality across the Borough. The review primarily focuses on the impact of air quality on human health. Note that direction to assess the impact of the PCM model leading to the development of AQMP and associated CAZ was issued after publication of the Basildon Borough Revised Publication Local Plan 2014-2034 (October 2018).

3.1.2 Documents considered

The following principal plan/evidence base documents were referenced for the purposes of this review:

- Revised Publication Local Plan, October 2018;
- Revised Publication Local Plan Policies Map, October 2018;
- Basildon Borough Air Quality Topic Paper, August 2017;

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- Basildon Borough Local Plan Sustainability Appraisal including Strategic Environmental Assessment, October 2018; and
- Sustainable Accessibility Appraisal, April 2017.

3.1.3 Commentary on the Revised Publication Local Plan, October 2018

Summary of content

The Foreword to the plan introduces the term 'Infrastructure first!' and highlights the importance of infrastructure investment in achieving the desired growth, and the need for infrastructure for large and small developments.

Chapters 1 to 4 of the Local Plan include an introduction, the policy context including national policy, a spatial portrait and description of the Borough, and drivers for change that Basildon Council has considered when preparing the Local Plan.

Chapter 5 of the Local Plan sets out the vision and objectives for future development and change within Basildon Borough.

The remainder of the Local Plan document (Chapter 6 – Chapter 18) comprises the full suite of strategic policies, allocation policies and development management policies that set out the approach to growth, distribution and management of development across the Borough.

Those paragraphs of the Local Plan which refer directly to air quality or air pollution are set out in Annex 1.

Appraisal of general direction

The key aspects of the Local Plan allocation that could potentially lead to increases in road traffic and related air pollution or create new sources of industrial air pollution are summarised below, where the Local Plan:

- Identifies the need for roughly 19,500 homes to be delivered over the plan period from 2014 to 2034 and makes provision for approximately 17,800 of these homes.
- Sets a target of a net increase of 20,000 jobs over the plan period, with the majority of employment policies and allocations focused along the A127 enterprise corridor.
- Allocates a series of sites for development to meet the identified housing and economic needs, focused primarily on Basildon, but also with some sites allocated at Billericay and Wickford.
- Sets out a retail and commercial leisure strategy and related town centre regeneration.
- Facilitates changes to the strategic and highways infrastructure to reduce congestion and increase capacity, which may make the road network more attractive for car journeys.
- Includes parking provision policies, which may encourage use of private vehicles.

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The Local Plan recognises that development should be undertaken sustainably and includes ten Strategic Objectives which have been set to deliver the spatial requirements of the plan. Several of the objectives relate to the planned growth in terms of housing allocation, employment, retail and leisure uses which could have adverse impacts on air quality through increased road traffic movements or the introduction of new emission sources such as power generation or industrial facilities. Those objectives directly or indirectly relevant to managing or improving air quality are summarised below in Table 2.

Table 2. Strategic Objectives Relevant to Improving Air Quality or Mitigating Air Quality Impacts

Strategic Objective Reference	Relevant Strategic Objective text
SO3: Minimise our Impact on the Environment	Promote the efficient use of resources by embracing sustainable patterns of development including maximising the use of previously developed land, improving energy and water efficiency, increasing the use of renewable energy technologies and minimising pollution including greenhouse gas emissions.
SO6: Delivering New Homes	Identify enough suitable land for new housing to meet Objectively Assessed Needs, whilst recognising the challenges to do so in respects of physical and environmental constraints and infrastructure phasing.
SO8: Helping Local People Maintain Healthier Lifestyles	Provide an environment that is attractive, enjoyable, safe, accessible and easy to live and work in.
SO10: Securing the Delivery of Supporting Infrastructure	<p>Ensure that all developments are in accessible locations to minimise the need to travel.</p> <p>Promote a reduction in car use and out commuting where possible and encourage the use of public transport, walking and cycling to minimise the impact of the Borough's growth on transport infrastructure. Ensure all developments are supported by the necessary transport, utility, green, education, health and community infrastructure in an effective and timely manner to make the development sustainable and minimise its effect upon existing communities.</p>

A review was undertaken to understand if these objectives have been translated into the Local Plan policies and if the Local Plan contains policies which prevent, offset or minimise the potential adverse air quality impacts associated with the desired

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housing and economic growth and policies which provide for or facilitate that growth. The review is summarised in Table 3.

As can be seen in Table 3, there are a number of policies which seek to reduce the impact of the housing and economic growth on air quality from road traffic emissions, the predominant source of air pollution in the Borough. These include strategic measures incorporated at the plan-making stage to minimise the increase in private car use, such as:

- Through the choice of the locations for housing allocations (this was explored by the Council through the Sustainable Accessibility Appraisal to determine the accessibility of each housing allocation and range of reasonable alternative options and new sites).
- Targeting employment use allocations in existing employment areas and focusing any new or expanded employment allocations primarily along the A127 enterprise corridor.
- Focusing on policies aimed at town centre regeneration, which is already well served by public transport.
- Through specific policies to increase the use of public transport, cycling and walking for commuting and leisure activities, with wider-ranging requirements on the council and more specific requirements for new developments.

Some of the policies in Chapter 11 of the Local Plan (Delivering a Wide Choice of High Quality Homes) aim to protect residents or users of new developments in areas of potentially poor air quality (e.g. housing allocation policies H9 and H10, which are relatively close to the A127, or H13, which is close to a sewage treatment works).

However, the terminology used in the Local Plan is to 'screen' the development from air pollution through retaining or creating a landscape buffer. It is assumed that the term 'screen' refers to ensuring the distance from the pollution source to new housing is maximised rather than actual physical screening of air pollution, which would be more applicable to noise or visual impacts.

Table 3. Local Plan Policies Most Relevant to Air Quality

Chapter	Policies with potential adverse impacts on air quality		Policies with potential beneficial impacts on air quality or which mitigate policies with potential adverse impacts		
	Policy Ref.	Comments	Policy Ref.	Comments	Strategic Objectives
Chapter 6: Achieving Sustainable Development	SD1 – SD4	Chapter 6 policies predominantly focus on the strategic development and do not directly provide mitigation of potential air quality impacts.	None	N/A	N/A
Chapter 7: Building a Strong, Competitive Economy	E1 – E11	Chapter 7 sets out the policies to achieve the desired economic growth. Several of the policies contain mitigation.	E1 – E4	By maintaining, protecting or intensifying use of existing employment areas in line with policies E1 – E4, this uses existing infrastructure and can exploit existing sustainable transport options such as public transport and cycle routes.	SO3, SO10
			E5, E6, E8	In accordance with policies E5, E6 and E8, new allocations are located within or adjacent to existing industrial/employment areas making it easier to exploit existing sustainable transport options such as public transport and cycle routes.	SO10
			E9	Policy E9: Locations for Employment Development states that developments are “ <i>expected to contribute, where appropriate, to environmental and traffic improvement schemes for that employment location.</i> ”.	SO10
Chapter 8: Ensuring the Vitality of Town Centres	R1 – R17	Chapter 8 sets out the policies relevant to the development of town centres. Several of the policies contain mitigation.	R1	Policy R1: Retail and Commercial Leisure Strategy applies a “ <i>town centre-first</i> ” approach to proposals for retail, leisure and other main town centre uses” - making it easier to exploit existing sustainable transport options such as public transport and cycle routes. “ <i>Greater emphasis will be placed on sustainable access to and from the town centres such as walking, cycling and public transport,...</i> ”	SO3, SO10
			R2 – R6, R7 – R9	Town centre regeneration or enhancement in line with policies R2 – R6 (strategic policies) and R7 – R9 (allocations policies) uses existing infrastructure and can exploit existing sustainable transport options such as public transport and cycle routes.	SO3, SO10
			R10	Policy R10: Local Centres promotes development at Local Centres, which is easily accessible by foot, bicycle or on main bus routes.	SO3, SO10

Chapter	Policies with potential adverse impacts on air quality		Policies with potential beneficial impacts on air quality or which mitigate policies with potential adverse impacts		
	Policy Ref.	Comments	Policy Ref.	Comments	Strategic Objectives
Chapter 9: Promoting Sustainable Transport	T1, T2, T8, T9	Several of the Chapter 9 policies facilitate an increased capacity on the road network and aim to reduce congestion, potentially making private car travel more attractive. Several of the policies contain mitigation.	T1	Policy T1: Transport Strategy includes several commitments for Basildon Council to fulfil. These include encouraging new developments to use sustainable modes of travel as an alternative to the private car, working with businesses to use travel plans and ensuring new premises are readily accessible by sustainable modes of travel. Working with Essex County Council and other agencies / authorities to deliver integrated transport measures to encourage increased use of public transport, cycling and walking. This includes targeted investment to improve transport infrastructure, with better integrated bus and train services, improved pedestrian and cycling networks, measures to encourage behavioural change in individual travel choices.	SO10
			T3	Policy T3: Improvements to Footpaths, Cycling and Bridleway Infrastructure includes provision to deliver the various “ <i>schemes and projects set out in the latest Essex Transport Strategy, Public Rights of Way Improvement Plan and Basildon Cycling Action Plan to improve footpaths, footways and cycling infrastructure...</i> ” It also includes a commitment to working with the relevant partners to secure the funding for these improvements and expects developments to retain existing footpaths, cycleways and bridleways. This commitment also extends to providing additional footpaths, cycleways and bridleways which link up with the existing network, providing facilities for pedestrians and cycle access, including cycle parking in residential and non-residential schemes, and contributing to facilities for pedestrian and cycle access at nearby public transport hubs.	SO8, SO10
			T4	Policy T4: Improvements to Public Transport Infrastructure and Services includes a number of policy measures to enhance the public transport network, work with Essex County Council and other partners to secure investment in services which accommodate growth in rail travel, improve bus connectivity to business areas and expects development proposals to incorporate bus routes, bus priority measures, design the development to make it as easy as	SO8, SO10

Chapter	Policies with potential adverse impacts on air quality		Policies with potential beneficial impacts on air quality or which mitigate policies with potential adverse impacts		
	Policy Ref.	Comments	Policy Ref.	Comments	Strategic Objectives
				possible to access bus transport and meet minimum standards for bus waiting facilities.	
			T7	Policy T7: Safe and Sustainable Access contains requirements for developments to provide safe access for cyclists and pedestrians, not have a significant adverse impact on air quality and make sure access to public transport services are within a set distance. Developments which generate significant traffic are to ensure the Transport Assessment or statement addresses sustainable travel modes and that all reasonable mitigation measures have been considered. If the development requires a Transport Statement or Transport Assessment, an air quality assessment is required to determine the impacts of the development on local air quality. A mitigation strategy is required where adverse air quality impacts are identified. Developments also require a Travel Plan, setting out how sustainable travel behaviours will be encouraged and how private car use for travelling to the nearest primary school can be minimised.	SO8, SO10
			T8	Policy T8: Parking Standards makes allowance for lower parking provision in developments which are well served by public transport and deviations from the parking standards must be justified and supported by evidence.	SO3
			T9	Policy T9: Town Centre, Employment Areas and Railway Station Parking Provision makes some allowance for the council to support proposals that seek to increase parking provision at the Borough's railway stations, if there is an identified shortfall. However, it also supports town centre and employment area car parking.	SO3, SO8
			T10	Policy T10: Electric Vehicle Charging Infrastructure Standards requires all new developments to include, where practical, appropriate provision for electric vehicle charging points and sets out minimum standards for this. It also includes the provision to seek developer contributions to provide these facilities in other locations should the development not be capable of installing charging points.	SO3, SO10

Chapter	Policies with potential adverse impacts on air quality		Policies with potential beneficial impacts on air quality or which mitigate policies with potential adverse impacts		
	Policy Ref.	Comments	Policy Ref.	Comments	Strategic Objectives
Chapter 10: Supporting High Quality Communications Infrastructure	No relevant policies directly relevant to adverse air quality impacts.		COM1	Policy COM1: Digital Communications Infrastructure Strategy aims to implement the Infrastructure Delivery Plan to improve communication technologies (e.g. superfast broadband and 4G mobile network coverage) which could reduce the need for people to travel.	SO8
Chapter 11: Delivering a Wide Choice of High Quality Homes	H4 – H23	Chapter 11 sets out the policies to achieve the desired growth in housing to meet future demand. Several of the policies contain mitigation.	H1	Policy H1: Housing Strategy encourages re-use of land within existing residential areas, development in town centres and requiring high levels of accessibility by public transport.	SO3, SO10
			H7	Policy H9: Land North and South of London Road, Vange requires that development on H7a and H7b is screened from air pollution from the A13 (i.e. safeguarding of new residents rather than limiting the impact of the development itself).	SO6, SO8
			H9	In recognition of the air quality issues associated with the A127, Policy H9: Land West of Steeple View, Laindon requires that development on H9 does not come forward until NO ₂ concentrations have been shown to be within the statutory limits. It also has a buffer to the south to screen the development from the A127 (i.e. safeguarding of new residents rather than limiting the impact of the development itself).	SO6, SO8
			H10	Policy H10: Land East of Noak Bridge, Basildon requires that development on H10 is screened from air pollution from the A127 (i.e. safeguarding of new residents rather than limiting the impact of the development itself).	SO6, SO8
			H12	Policy H12: Land South of Wickford requires that development on H12 is screened from air pollution from the A127 (i.e. safeguarding of new residents rather than limiting the impact of the development itself).	SO6, SO8
			H13	Policy H13: Land North of Southend Road, Shotgate requires that development on H13 is screened from air pollution from the A130 and odour dispersion modelling to justify development layout with regard to the nearby Shotgate Water Recycling Centre (i.e. safeguarding of new residents rather than limiting the impact of the development itself).	SO6, SO8

Chapter	Policies with potential adverse impacts on air quality		Policies with potential beneficial impacts on air quality or which mitigate policies with potential adverse impacts		
	Policy Ref.	Comments	Policy Ref.	Comments	Strategic Objectives
Chapter 12: Requiring Good Design	No relevant policies directly relevant to adverse air quality impacts		DES5	Policy DES5: High Quality Landscaping and Public Realm Design requires certain developments to integrate measures to improve air quality as well as managing climate change and promoting biodiversity.	SO3, SO8, SO10
Chapter 13: Promoting Healthy Communities	HC3, HC10	To meet the anticipated growth in population, the two Chapter 13 polices facilitate additional schools, additional education facilities and other community facilities. Some of the policies contain mitigation.	HC1	Policy HC1: Health and Well-being Strategy includes a number of commitments for the Council over the plan period, including promoting healthy lifestyles by providing opportunities for people to walk and cycle, both for recreation purposes, and also as part of their day to day activities, ensuring community facilities are of a good quality and are located where they can be accessed by walking, cycling and public transport and avoiding development in locations which may cause harm to human health by way of pollution.	SO6, SO8
			HC2	Policy HC2: Strategic Approach to Leisure and Recreation seeks improvements to the Public Rights of Way and cycle networks through the provision of routes to and through development sites, connecting to the existing networks.	SO8, SO10
			HC3	Policy HC3: Strategic Approach to Education, Skills and Learning requires locating any new schools on the strategic housing site allocations (H5 to H20). This will have some benefit in reducing private car trips as this will facilitate walking and cycling to school.	SO10
			HC10	Policy HC10: New and Enhanced Community Facilities supports new community facilities where these are well connected to, and associated with, existing facilities and readily accessible to adequate public transport, cycling and walking links for the benefit of non-car users.	SO3, SO10
Chapter 14: Protecting Green Belt Land	No policies which are directly relevant to air quality				
Chapter 15: Meeting the Challenge of Climate Change and Flooding	No relevant policies directly relevant to adverse air quality impacts.		CC1	Policy CC1: Responding to Climate Change aims to reduce carbon emissions by encouraging greater levels of sustainability. These could have some associated mitigation of air quality impacts of development by identifying development locations with good access to public transport provision, working with partners to improve public	SO3, SO10

Chapter	Policies with potential adverse impacts on air quality		Policies with potential beneficial impacts on air quality or which mitigate policies with potential adverse impacts		
	Policy Ref.	Comments	Policy Ref.	Comments	Strategic Objectives
				transport and active travel modes (linked to policies T3 and T4) and supporting eco-industrial park principles within the A127 enterprise corridor which could potentially reduce road traffic.	
			CC7	Policy CC7: Renewable Energy Infrastructure sets out that proposals for renewable energy and low carbon energy scheme will be positively considered. These could lead to lower emissions of air pollutants if it displaces higher polluting fossil fuel combustion energy generation.	SO3
Chapter 16: Conserving and Enhancing the Natural Environment	No relevant policies directly relevant to adverse air quality impacts.		NE1	Policy NE1: Green Infrastructure Strategy has the potential to increase the use of walking and cycling through the enhancement of networks of open spaces and green linkages. It also seeks to secure provision of green infrastructure alongside development on all sites to achieve a reduction in air pollution. It also seeks to develop the provision of local-scale green infrastructure including footpaths, cycleways etc.	SO3, SO8, SO10
			NE2	Policy NE2: Country Parks supports opportunities to connect County Parks to the Public Right of Way network, which may encourage more trips by walking or cycling rather than private car.	SO3, SO8
			NE6	Policy NE6: Pollution Control and Residential Amenity acknowledges the issue relating to compliance with the EU Directive limit for NO ₂ . The policy requires all development to be located and designed to not cause a significant adverse effect to the environment or health from pollution, including air pollution. It also states that planning conditions may be used to manage or mitigate the effects of pollution, covering both construction and operation.	SO3
			NE8	Policy NE8: Ensuring Health and Safety in Development requires developments close to water recycling centres (i.e. wastewater treatment plants) to undertake odour dispersion modelling to ensure the site is suitable for the proposed occupation.	SO8
Chapter 17: Conserving and Enhancing the Historic Environment	No policies which are directly relevant to air quality.				

Chapter	Policies with potential adverse impacts on air quality		Policies with potential beneficial impacts on air quality or which mitigate policies with potential adverse impacts		
	Policy Ref.	Comments	Policy Ref.	Comments	Strategic Objectives
Chapter 18: Implementation	No relevant policies directly relevant to adverse air quality impacts.		IMP1	Policy IMP1: Implementation Strategy requires proposals for developments to identify measures to mitigate environmental harm and provide infrastructure as identified in the Infrastructure Delivery Plan. It also requires development to be phased so that infrastructure capacity is created to accommodate the additional people or vehicles. Accelerated proposals will not be supported where delivery is at the expense of other components of sustainable development, including environmental mitigation.	SO3, SO10
			IMP2	Policy IMP2: Use of Planning Obligations states that new development will be expected to fully mitigate its impact on infrastructure, services and the environment. The types of infrastructure that developments may be required to provide obligations for include rail, bus and cycle/footpath network.	SO3, SO10
			IMP3	Policy IMP3: Phasing of Development facilitates the use of planning conditions or planning agreements to ensure that environmental mitigation measures are secured in a timely manner and growth is supported by infrastructure provision. These conditions or agreements would be used to limit the amount of development until such measures are in place or to set out the sequence of development. It also states that proposals would not be accepted where phasing results in unmitigated harm to the environment or infrastructure capacity is exceeded.	SO3, SO10

The Local Plan includes other policies related to reducing emissions from transport such as standards for electric vehicle infrastructure (Policy T10), in recognition of the move towards low emission and zero emission vehicles. From an air quality perspective, supporting the uptake of electric vehicles is likely to rank as highly as other Local Plan policies to reduce private car use through enhanced sustainable public transport, cycling and walking options for improving air quality in the Borough.

However, given the Government's recent commitment to electric vehicles (i.e. banning the sale of new petrol, diesel and hybrid vehicles from 2035, which is five years earlier than previously announced), Local Authorities will need to aggressively enforce policies like this to ensure the infrastructure is in place to support the ban and the Government's Road to Zero Strategy. In addition, local authorities will also need to potentially make the policy more onerous to force developers to deliver the necessary step change and install charging infrastructure. For example, Policy T10 requires one passive charge point per unit for each new residential dwelling with a parking space. Some larger new homes may have two or more off-street dedicated parking spaces so it may be prudent to ensure passive infrastructure requirements are scalable depending on the size of the home and related number of dedicated parking spaces. It may also be prudent for policies to require active charging infrastructure to be installed on all spaces for non-housing developments where only a relatively small proportion is currently required to include active charge points by Policy T10, or include for passive charging infrastructure to be put in place for those spaces without active charging. For example, a hotel which is proposed to commence operation near the end of the plan period of 2034 (i.e. one year before the ban) may need to consider a higher provision of active and passive charging infrastructure given the higher proportion of electric vehicles on the roads. For some developments, rapid as opposed to slow charging infrastructure may need to be installed (i.e. where cars are unlikely to stay for long periods, such as non-residential locations). There is no specific reference to the types of chargers to be installed at non-residential developments within Policy T10. It may be prudent to ensure that fast or rapid charging points are required for these types of developments where there will be a higher demand for shorter charging periods.

Another important element is understanding the demands that this policy places on the developers. For example, whether there are any issues for developers in reserving electrical capacity for charging infrastructure that is required by Policy T10 and how this may increase costs/reduce viability of proposals. It may be prudent for local authorities to include commitments in Local Plans to work more

closely with stakeholders (particularly electricity network operators) to ensure requirements for electric charging are pragmatic.

It's worth noting that the policies around the provision of electrical charging points have been included in an economic viability assessment of Basildon's Local Plan with a view for introducing a Community Infrastructure Levy (CIL)⁴.

It is not apparent from the Local Plan if the council is also adopting or committing to electric vehicle infrastructure standards for its own facilities, fleet or supporting initiatives such as introducing electric buses, for example as part of Policy T1 (Transport Strategy).

Other measures are not directly related to transport but which may have a beneficial impact. For example, Policy COM1 (Digital Communications Infrastructure Strategy) could offset or reduce private car travel as better access to superfast broadband and enhanced mobile phone signals may lead to higher use of video-conferencing/video calls, replacing business or social trips.

However, there are a number of proposed improvements to the local highway infrastructure set out in the Local Plan which would increase capacity and reduce congestion (Policy T1 (Transport Strategy), Policy T2 (Improvements to Carriageway Infrastructure) and Policy T5 (Transport Improvements Areas)). Whilst in the short-term this may lead to improvements in air quality at specific congestion hotspots where there are nearby residential properties, the traffic flows on the principal roads (i.e. A127, A13 etc), and wider road network, could increase due to the increase in capacity and also through making car travel more attractive due to shorter journey times resulting from the reduced congestion. Depending on when the highway infrastructure improvements are completed, this could work against other policies to increase the use of public transport or other forms of sustainable transport, and lead to increases in air pollution at locations close to the road network in the short-term. However, the Local Plan should seek to integrate enhanced provision for public transport (e.g. bus only lanes) within these infrastructure improvements wherever possible. The increased capacity may then encourage more public transport use, but not necessarily deliver air quality improvements in the short term, unless these provisions cater only for low emission public transport options, for example, bus lanes for electric or hydrogen powered buses only. Over the longer term, the higher proportion of lower emitting and electric vehicles on the roads would diminish the effect on pollutant concentrations from increased private car use

⁴ Draft Basildon Local Plan and CIL Reappraisals Addendum Report December 2019. Produced by Porter Planning Economics for BC.

facilitated by the highway infrastructure improvements (in terms of NO₂ concentrations).

Furthermore, development within the A127 enterprise corridor, including housing allocations such as H5, will increase road traffic flows on the A127 and also the A1235, East Mayne and A176 Upper Mayne. These roads are likely to be within the proposed Clean Air Zone and the Council will need to carefully consider how developments will impact on the implementation of this, individually and cumulatively during the planning application process, and whether sufficient mitigation is proposed to offset impacts.

It is noted that the Local Plan highlights the need for an air quality assessment within the transport policies (Policy T7) and requires that no significant adverse impacts on air quality arise, once mitigation measures have been taken into account. This assists in the linkage of environment impacts with transport and demonstrates the need to integrate sustainable transport options.

An area of potential weakness is the limited consideration of some non-transport pollution sources. For example, focussing on reducing pollutant exposure by defining smoke free areas or discouraging use of domestic solid fuel burning using wood burners/stoves for housing developments. Domestic solid fuel burning contributes a high proportion of total PM_{2.5} emissions (approximately 40%), primarily from wood burning. Given the greater understanding of the health effects of PM_{2.5}, it may be prudent to make some provision for reducing domestic solid fuel burning within the Local Plan.

Some consideration is given to encouraging or promoting low emissions or high efficiency heating systems such as district-heating systems. Policy CC5 (Sustainable Buildings – New Builds) requires the design for all new development to incorporate measures to use decentralised energy sources and also requires all new builds to be as efficient as possible, referencing relevant buildings regulations. Policy CC7 (Renewable Energy Infrastructure) makes some provisions for proposals for combined heat and power (CHP) facilities and community heating networks. Some consideration is given to potential locations of CHP within the policy text of Policy CC7 in terms of locations which would benefit from CHP. However, these mostly relate to existing facilities and there is limited consideration at a strategic level of the potential for decentralised energy to support the proposed housing and employment allocations. Although Policy CC5 requires designs to incorporate decentralised energy it is not clear how this would be proactively brought forward by a developer given the relatively limited consideration of this in the Local Plan.

Overall, the Local Plan appears to take forward the Strategic Objectives relating to air quality into the specific policies.

Alignment with National Planning Policy

Those paragraphs of the NPPF (National Planning Policy Framework, February 2019 version) which refer directly to air quality or air pollution are set out in Annex 2, for ease of reference. Chapter 2 of the Local Plan briefly discusses the relevance of the NPPF and acknowledges that Local Plans should be prepared in accordance with the principles and policies set out in the NPPF. It also refers to the Planning Practice Guidance (PPG) published by the Government which includes details that should be considered when preparing a Local Plan and making decisions on planning applications.

Each policy contained in the Local Plan also includes a section on policy context which refers to the relevant requirements or expectations contained in the NPPF for the particular policy topic. It would be prudent for Basildon Council to review the policy context for each Local Plan policy to confirm these remain consistent with the latest version of the NPPF published in February 2019.

Within the policy context section of Policy NE6: Pollution Control and Residential Amenity, direct reference is made to the NPPF with regard to air quality. The Local Plan states the importance of planning policies which sustain or contribute towards EU limit values and national objectives for pollutants, which reflects paragraph 181 of the NPPF. The Local Plan text refers to the relevant pollutants set out in the Air Quality Framework Directive 2008/50/EC and also refers to the PPG for how air quality should be considered during determination of planning applications.

The evidence base section for Policy NE6 includes a discussion on the potential for new development to lead to exceedances of the EU limit value for NO₂ on the A127 and that the council will *“look to locate new development, particularly those expected to generate a large number of vehicle journeys, to the most accessible locations encouraging alternative travel by active and sustainable travel modes.”*

Policy NE6 refers to the location and effect of new development proposals as follows:

“1. All development proposals must be located and designed in such a manner as to not cause a significant adverse effect upon the environment, the health of residents or residential amenity by reason of pollution to land, air or water, or as a result of any form of disturbance including, but not limited to noise, light, odour, heat, dust, vibrations and littering.”

In terms of the strategic approach to the location of the proposed housing allocations and employment land, it is not within the scope of this relatively high-level review to determine the suitability of each policy allocation. However, some strategic consideration of allocations, including consideration and scoring of alternative options as part of the Sustainable Accessibility Appraisal was undertaken during the plan-making process.

- Some of the housing allocations include consideration of specific existing environmental issue or constraints. For example, Policy H9 includes a requirement that the development cannot go ahead until air quality adjacent to the A127 is acceptable.
- Housing allocations located within or on the edge of existing urban areas. The Sustainable Accessibility Appraisal found that the majority of the proposed housing allocations were rated as 'good' or 'high' for sustainable accessibility as they were either located close to a town centre, on a main route to/from a town centre and routes with higher frequency of bus services.
- Employment allocations were focussed around existing employment areas along the A127 enterprise corridor (i.e. making use of existing infrastructure and services which promotes use of more sustainable transport options).

This is consistent with paragraph 103 of the NPPF which states “...*Significant development should be focused on locations which are or can be made sustainable, through limiting the need to travel and offering a genuine choice of transport modes. This can help to reduce congestion and emissions, and improve air quality and public health...*”

An area of potential weakness is the apparent lack of consideration of the cumulative air quality impacts from individual sites, which is required under paragraph 181 of the NPPF and is also referenced in the latest version of the PPG for air quality⁵ (see Paragraph: 002 Reference ID: 32-002-20191101). Although cumulative effects can be considered at the planning decision stage (if not considered during the plan-making process), it increases the risk that some developments may lead to a significant cumulative effect, particularly given the current constraint relating to air quality adjacent to the A127 and proposed introduction of a Clean Air Zone covering a relatively large area of north Basildon to the south of the A127. This could have some consequences for the phasing of developments or delay the provision of new housing or employment

⁵ Ministry of Housing, Communities & Local Government, Guidance, Air Quality, 1 November 2019 [Online] [accessed at <https://www.gov.uk/guidance/air-quality--3>]

that is needed to support growth as it may not be practicable to amend the proposal to make it acceptable (or the cost of mitigation may be prohibitive).

This places a larger emphasis on effective application of the policies included within the Local Plan to reduce the impacts from additional road traffic generated by new development. For example, the policies in Chapter 9 which aim to facilitate increased use of sustainable travel modes such as public transport, cycling and walking (for example, Policy T1 (Transport Strategy), Policy T2 (Improvements to Footpaths, Cycling and Bridleway Infrastructure), Policy T4 (Improvements to Public Transport Infrastructure and Services) and Policy T7 (Safe and Sustainable Access)).

Other relevant considerations

National Networks NPS

The NPPF is clear that it is not intended to contain policies for developments which are Nationally Significant Infrastructure Projects (NSIPs). The National Networks National Policy Statement provides the transport policies for NSIPs for national road, rail and strategic rail freight interchange developments. On this basis, there is no clear requirement for the Local Plan to adopt policies from the National Networks NPS. However, there are clear linkages between these as the proposed enhancements to the road network set out in the Local Plan are in line with the Government's vision and strategic objectives for national networks (i.e. resilience to support local economic activity, facilitate growth and create jobs, improve journey quality, reliability and safety and support delivery of environmental goals etc).

UK Air Quality Plan for Tackling Roadside Nitrogen Dioxide Concentrations

The UK plan for tackling roadside nitrogen dioxide concentrations issued by DEFRA and the Department for Transport in July 2017 is relevant to the Local Plan as it includes an area of the A127 where the limit value for NO₂ is exceeded, which could potentially constrain development. The Local Plan includes reference to the UK Air Quality Plan in Policy H9 and Policy NE6. Policy H9 inhibits development at this housing allocation plot, which is close to the A127, until air quality is below the limit value. However, there is no overarching consideration or requirement of how the planned developments could potentially impact on the compliance with the limit value at the A127 or how developments should consider this specific issue at the planning stage, particularly in terms of the additional road traffic that it would generate on the A127.

Local Air Quality Management

The Local Air Quality Management process is referred to in paragraph 16.51 of the Local Plan. This states that there are no Air Quality Management Areas in the Borough and that industrial and residential areas are largely separated. However, the Council will need to carefully assess any planning applications for developments which reduce any separation, for example, housing allocation H5 is within the A127 enterprise corridor, close to existing industrial uses and the extension of the Burnt Mills industrial area (Policy E6) which is close to housing to the north.

3.1.4 Conclusions

The general coverage of air quality issues in the Local Plan is considered to be appropriate and sufficiently robust. The Local Plan contains several policies aimed at reducing private car use for existing and new development and has translated the Strategic Objectives into relevant policies. The Local Plan states that an air quality assessment is required where a Transport Statement or Transport Assessment is required and that there should be no significant adverse impact on local air quality, once mitigation measures have been taken into account through the development of a Mitigation Strategy.

The Local Plan policies would appear to largely comply with the relevant paragraphs of the NPPF which relate directly to air quality, through the consideration of the locations for development and focus on sustainable transport options, improving cycle networks and connectivity. It also considers the potential air quality issues associated with the A127 and Clean Air Zone in relation to compliance with the relevant limit value.

No significant inconsistencies have been identified in the Local Plan during the review.

Some areas of potential concern have been highlighted:

- Improvements to the highways infrastructure could lead to increased traffic flows and divert people away from using public transport and set back other initiatives to reduce private car use, which may have adverse air quality impacts in the shorter term. This would become less of an issue over the longer term where NO₂ concentrations would be expected

to be much lower than current levels due to the much higher proportion of electric vehicles in use⁶.

- Although the policies place obligations on the developments to provide sufficient mitigation, this may not be practicable or the costs may be prohibitive.
- Some developments will need to be carefully considered where housing and employment uses are located close together.
- Adequacy of policies to require developers to make provision for electric vehicle charging infrastructure, including the types of fast or slow charging, and the potential constraints faced by the developer.
- Limited consideration of some non-transport related sources such as domestic solid fuel burning which accounts for a high proportion of PM_{2.5} emissions.
- There appears to be limited consideration at a strategic level of the potential for decentralised energy to support the proposed housing and employment allocations.
- Although the Local Plan sufficiently considers the individual impact of development, there is no apparent consideration or highlighting of the potential cumulative air quality impact of all the developments as required by the NPPF / PPG, or of the potential implications for the A127 and Clean Air Zone.

⁶ It is worth noting that non-exhaust particulate emissions from road vehicles such as private cars currently account for over 80% of the total particulate emissions from traffic, and this proportion will increase as exhaust particulate emissions continue to be reduced through stricter emissions standards. Electric vehicles (EVs) are on average heavier than their internal combustion engine vehicles (ICEVs) counterpart and are likely to emit higher levels of particulates. As such, EVs will continue to contribute to particulate matter (e.g. PM₁₀ and PM_{2.5}) related air quality and health issues into the future. National and local polices should be considered in order to tackle these sources of emissions.

<http://www.soliftec.com/NonExhaust%20PMs.pdf>

3.2 Tasks 1a1 and 1a2: Sensitivity testing

3.2.1 Introduction

Task 1a1 and 1a2 are concerned with understanding the sensitivity of results to changes in the demand forecasts applied to traffic models and the subsequent effect this has on local air quality. Work is currently being conducted in Basildon to develop measures to improve air quality and meet EU Air Quality Limits in the shortest possible timeframe. Speed management on the A127 is one such measure being implemented in 2020 followed by other measures in other locations. It is important that complementary measures can sustain the impact of additional trips into the future and, as such, sensitivity tests of this nature can help to direct the magnitude and scale of proposed interventions.

According to the Design Manual for Roads and Bridges (LA 105 Paragraph 2.2) there is no general requirement to air quality model traffic growth sensitivity scenarios, for example high and low growth traffic scenarios, but instead an assessment should depend on the most likely traffic forecast. This guidance was followed for the FBC submission. However, it's reasonable, given the scope of a Local Plan, to examine the limits of uncertainty in the short term (2020) and in the short to medium term (2023) where there is more information about committed development. The testing aims to highlight any locations other than those already under investigation which might be tipped into exceedance of the EU Limit Value in the very short term (2020) and whether these locations naturally resolve themselves in 2023 with the advent of cleaner vehicles (as indicated by previous modelling work). If the latter is still the case, this will provide an indication as to the sustainability potential of the Local Plan, especially when considering the spatial and temporal accumulation of emissions over the plan period. For clarity, all of the modelling to date associated with developing the Basildon AQMP, using the Countywide Traffic Model with base year 2016, has indicated that in 2023, the annual mean concentration of NO₂ is likely to be below the EU Limit Value. Although there would be further increases in traffic flows that would be brought about by developments in accordance with the Local Plan beyond 2023, this would be offset by lower vehicle fleet emissions which will continue to decrease year on year. The sensitivity test described below in section 3.2.2 (5% increase in demand growth) shows that for emissions representative of 2020, the maximum annual mean NO₂ concentration would increase by 1.5 µg/m³. Even if this robust sensitivity test were to occur in 2023, over and above the growth included in the modelling to account for Local Plan allocations, this would not result in a NO₂ concentration above the AQD reporting value of 40.4 µg/m³. This is because there is a headroom (i.e. difference between the maximum modelled concentration at any receptor and the AQD reporting value of 40.4 µg/m³) of 2 µg/m³ predicted for

2023. The headroom would be expected to increase into the future due to the lower fleet emissions. This would require an extremely exceptional traffic growth event to occur for the growth to be outside of the bounds of the current tests and lead to exceedance of the AQD reporting value of $40.4 \mu\text{g}/\text{m}^3$. On this basis, no specific post-2023 modelling has been undertaken.

3.2.2 Task 1a1: Sensitivity Test: Year 2020 DS1 +5% Demand Growth *Annualised emissions - 5% increase in demand growth*

A brief outline of the approach applied to understand the sensitivity of speed management on road traffic emissions with a +5% change in forecast developmental growth is provided in the Scope (see Section 2.2).

Sensitivity testing for the FBC required annualised oxides of nitrogen (NO_x) emissions to be compared against those calculated for the core speed management scenario in 2020 (i.e. DS1). The following results have been summarised from the A127 FBC Submission, 2019.

The emissions resulting from a 5% increase in growth are presented in Figure 2. The assumption was that an additional 5% loading of traffic demand was applied across the modelled road network. As expected, the figure shows that modelled pollutant emissions increase in response to this loading effect. It is worth noting that changes in emissions are not limited to the A127. In other words, this assumption is not focused on speed management, but rather the impact of traffic growth across the wider network. A larger magnitude of change is observed along the A1235 Cranes Farm Road. Here, emissions appear disproportionately higher than other locations. This is perhaps associated with higher levels of goods vehicles accessing the business area.

A further observation are the short links with notably higher emissions than those around them. This indicates locations which are more sensitive to increases in traffic flows, such as links that represent queues and have much lower speeds.

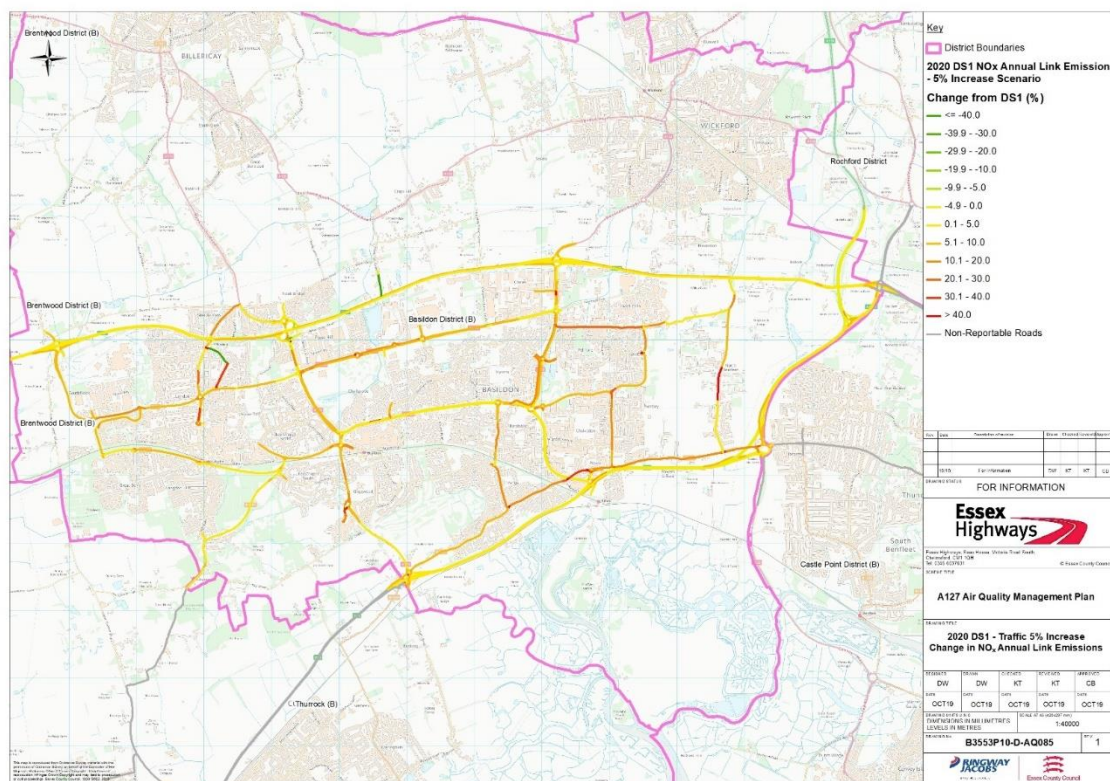


Figure 2. Change in NO_x annual link emissions between 2020 DS1 and the 2020 DS1 5% increase scenario (Source: FBC Annex N, 2019)

Annual Mean NO₂ concentrations - 5% increase in growth

Applying emission rates as reported above to the ADMS Roads air pollution dispersion model, the increased growth in development can be reported in terms of the impact on annual mean NO₂ concentrations. In this case concentrations are reported for roadside receptors placed at 4m from the kerbside and at 2m in height. Receptors were generally positioned at 10 m intervals, except for roads not included in the Pollution Climate Mapping Tool administered by DEFRA where they were placed at 100 m intervals. The statistical summary of results for all receptors⁷ are presented in Table 4. The summary includes the reference case, with DS1 and DS1+5% growth in demand. Compared to DS1 the mean and maximum concentrations increase in DS1+5%, with the maximum increasing by 1.5 µg/m³. Note that the maximum concentration is above the NO₂ annual mean AQD reporting value of 40.4 µg/m³. All other statistics are also increased as might be expected. Comparison

⁷ All receptors. Receptors were located in AQD reportable and non-reportable locations. Air pollution mitigation measures must be considered for reportable locations (i.e. where exposure has been identified). The AQMP deals with exceedances at both reportable and non-reportable locations.

Tasks1-3

of the median values indicates that, when accounting for outliers, the annual mean for the central population of receptors increased by $0.5 \mu\text{g}/\text{m}^3$. In DS1+5%, more receptors were subject to a change in concentration compared to a similar analysis between DS1 and the reference case. For the 5% growth scenario, around 1800 more receptors are estimated to experience a worsening of NO_2 concentration compared to DS1.

Table 4. Sensitivity statistics relating to the annual mean NO_2 results for the 2020 DM (no speed management), 2020 DS1 and 2020 DS1+5% growth scenarios.

Statistic	2020 DM reference case	2020 DS1	2020 DS1+ 5% Growth
Mean concentration ($\mu\text{g}/\text{m}^3$)	28.7	28.6	29.3
Median concentration ($\mu\text{g}/\text{m}^3$)	28.2	28.5	29.1
Maximum concentration ($\mu\text{g}/\text{m}^3$)	48.4	47.0	48.5
Minimum concentration ($\mu\text{g}/\text{m}^3$)	15.6	15.7	15.9
Upper Quartile concentration ($\mu\text{g}/\text{m}^3$)	32.6	32.1	32.8
Lower Quartile concentration ($\mu\text{g}/\text{m}^3$)	24.8	25.1	25.7
Standard Deviation ($\mu\text{g}/\text{m}^3$)	5.5	5.2	5.4
Range ($\mu\text{g}/\text{m}^3$)	32.8	31.3	32.6
Concentration increases (no. of receptors)		2432	4284
Concentration decreases (no. of receptors)		1703	588
No Change in concentration (no. of receptors)		786	49
Receptor count	4921	4921	4921

It should be noted that these statistics are based on all receptors which to the best of knowledge are still subject to public exposure in accordance with the AQD. In this respect the statistics are indicative of the direction of impact travel via changes in demand growth.

A spatial analysis of the statistics shown in Table 4 allows the impact of a 5% increase in demand growth to be further analysed. Mapped results are shown in Figure 3. The map shows the modelled roadside receptors and roads included in the PCM process undertaken by DEFRA, which is the focus of reporting protocols for the Air Quality Directive (PCM road sections are shown in red). The map also shows the modelled receptor network, which indicates all other roads where impacts are analysed for the AQMP. The light blue receptors indicate locations where the annual mean NO_2 exceeds the AQD threshold of $40.4 \mu\text{g}/\text{m}^3$ (i.e. $40.4 \mu\text{g}/\text{m}^3$ is classed as compliant). Ongoing analysis for the

Basildon Council AQMP estimated that, with speed management in place, compliance with the AQD threshold is likely to be achieved sometime in 2021, if implemented in 2020.

The analysis indicated that a +5% increase in growth causes a new exceedance on the A127 where the A127 intersects the A130 (just off of Figure 3 to the east), shown in detail in Figure 4. For DS1 in 2020, the concentration was estimated to be 40.3 $\mu\text{g}/\text{m}^3$ (blue shaded label) and for a 5% increase in growth the estimate was 41.2 $\mu\text{g}/\text{m}^3$ (green shaded label). Note this new exceedance is not adjacent to a PCM road section but would be reportable for consideration within the AQMP.

Figure 3 shows other locations of exceedance, highlighted in blue. However, not all locations are reportable, particularly those locations near road intersections or where there is no public exposure. East Mayne and Noak Bridge remain locations of concern and are the two areas being investigated in the current AQMP Feasibility Study. The A13 did indicate exceedances over and above that estimated in the DS1 core analysis. However, all of these locations were found not to be reportable locations.

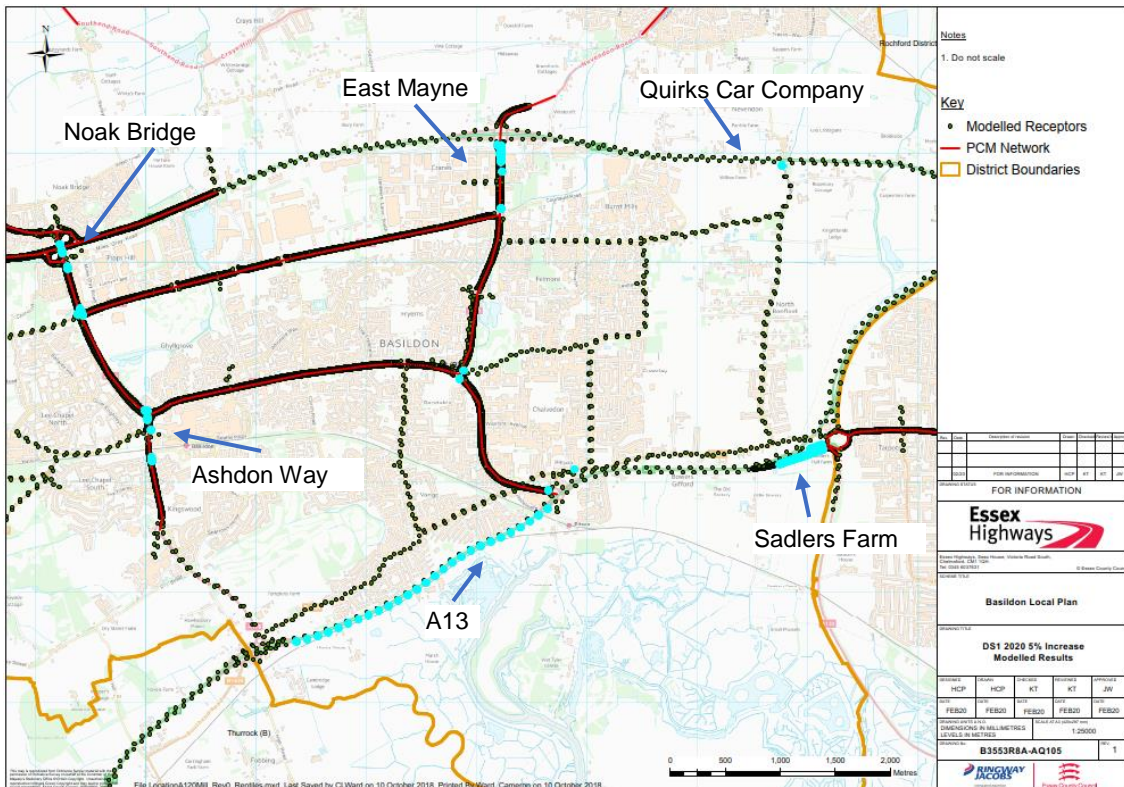


Figure 3. Modelled receptors across the study area applied for the AQMP Feasibility Study for year 2020.

The location that would be of most concern if this level of additional growth was to be realised is the Ashdon Way junction with Nether Mayne, as shown in Figure 5. This location is a PCM road link where the reportable maximum concentration increased from 40.4 $\mu\text{g}/\text{m}^3$ (compliance) to 42.0 $\mu\text{g}/\text{m}^3$ (non-compliance) between the DS1 and DS1+5% scenarios (see Figure 5). This location is currently outside of the region being considered for a Clean Air Zone.

On reflection of this sensitivity analysis, it would be prudent to keep these receptors under surveillance when conducting any future modelling or they could perhaps also be subject to air quality monitoring.

It's worth being reminded that a 5% increase in growth would be very unlikely when considering the core estimate applied in the FBC submitted to DEFRA for implementation of the speed management measure, which did account for committed developments included in the Basildon Local Plan. Task1a2 investigates this issue in more detail for the year 2023.



Figure 4. A127 intersection with A130.

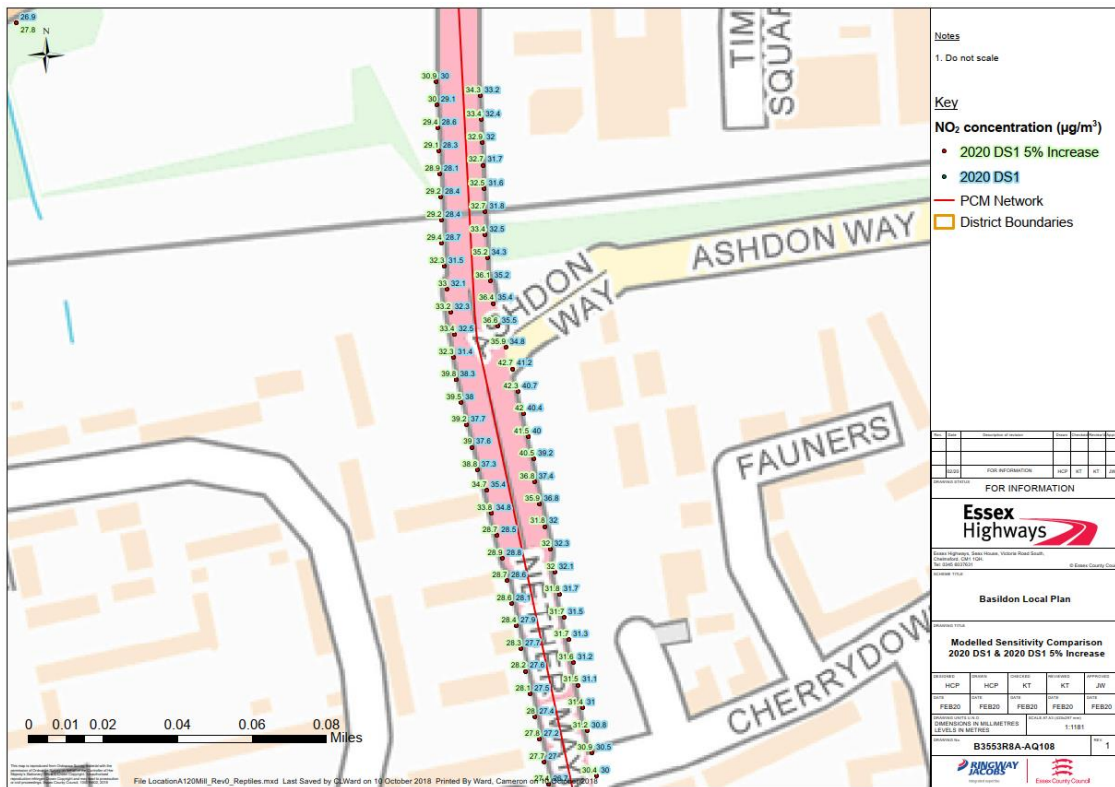


Figure 5. Ashdon Way junction with Nether Mayne.

3.2.3 Task 1a2. Sensitivity Test: 2023 DS1 Reference Case with reviewed growth estimates

Previous modelling work

In previous modelling undertaken for the A127 FBC Submission in 2019 the results of year 2023 Do Minimum analysis concluded that compliance of the AQD at all PCM Census IDs and all other receptors would be very likely in accordance with assumptions presented in the Technical Annex N supporting the FBC submission. That said, the magnitude of compliance was variable across the study area. For Location C, East Mayne to the south of the A127 close to the Sainsbury's Supermarket, compliance was just achieved in 2023. For Location B, Upper Mayne junction with the A127 where the original PCM tool identified a non-compliant Census ID in 2020, it was estimated to be below the AQD by approximately 7 $\mu\text{g}/\text{m}^3$ in 2023. This led to a suggestion that, at Location B, compliance may occur in an earlier year. Table 5 shows the modelling results at the highest ranked receptors siding the A127 and Upper Mayne (Location B). The results show the effects of speed management (DS1) at 2020 and 2023 compared to the do-minimum (DM). According to the analysis, receptors siding the A127 are compliant at 2020.

If the assumption concerning cleansing of the fleet was in line with projections made by the National Atmospheric Emission Inventory (which is having a large influence on the reduction of emissions between 2020 and 2023 and the effects of speed management in 2020, which is the second key measure pushing emissions down at this location) then it is reasonable through interpolation to suggest a concentration of approximately 37 $\mu\text{g}/\text{m}^3$ in 2021 and 34 $\mu\text{g}/\text{m}^3$ in 2022 at receptor R1623 siding the A127. For Upper Mayne compliance may be likely in 2022 rather than 2021 as the concentration here is slightly higher in the Do Minimum. Note that speed management is planned from mid-2020 and hence it's debateable that a full year of benefit can be assumed for this year. However, implementation as early as possible may lead to compliance on the A127 early 2021.

For Location C, a similar format of results is shown in Table 6. The natural compliance year at Location C is likely to be 2023. Assuming a linear interpolation from 2020 to 2023, in year 2022 the highest roadside receptor (not the receptor in the central reservation of East Mayne) is estimated to be 40.4 $\mu\text{g}/\text{m}^3$. Compliance with or without DS1 is therefore likely to be met in 2023 at this location.

Table 5. Location B (Upper Mayne) 2020 to 2023 modelled results.

ID	Location	Ranking (by highest concentration)	2020 Modelled Concentration (ug/m ³)		2023 Modelled Concentration (ug/m ³)	
			DM	DS1	DM	DS1
R1623	A127	1st	42.4	39.6	33.1	30.4
R1624	A127	2nd	42.3	39.6	33.1	30.4
R1625	A127	3rd	42.1	39.3	33.0	30.2
R1628	Upper Mayne	1st	42.7	42.1	33.1	33.2
R1629	Upper Mayne	2nd	42.5	43.3	32.8	32.9
R1627	Upper Mayne	3rd	42.3	43.7	32.8	32.9

Table 6. Location C (East Mayne) 2020 to 2023 modelled results.

ID	Location	Ranking (by highest concentration)	2020 Modelled Concentration (ug/m ³)		2023 Modelled Concentration (ug/m ³)	
			DM	DS1	DM	DS1
R9093	East Mayne - Middle of Carriageway	1st	48.4	47.0	39.9	38.7
R12	East Mayne - SB	2nd	46.7	45.6	38.6	37.6
R13	East Mayne - SB	3rd	46.6	45.6	38.6	37.7
R11	East Mayne - SB	4th	46.1	44.9	37.9	36.9
R14	East Mayne - SB	5th	46.0	45.1	38.1	37.3
R15	East Mayne - SB	6th	45.0	44.1	37.2	36.4

Revised demand growth in year 2023 with DS1

For Task 1a2 a fresh look at growth forecasts was undertaken that reflects committed development as well as Basildon Local Plan forecasts. These results could then be compared to the previous results presented in the FBC (see Section 3.2.3, “Previous Modelling Results”), which are based on controlling the traffic to NTEM levels of growth. The following describes how the traffic model assumptions were revised.

Within the VISUM traffic model used for the assessment of the A127, only Basildon district is partially covered by the model zones in the core area of the model. The northern part of Basildon district is covered by external model zones. Trips to and from these external zones combine trips to and from many other destinations. The zone structure of the traffic model is shown in the Figure 6.

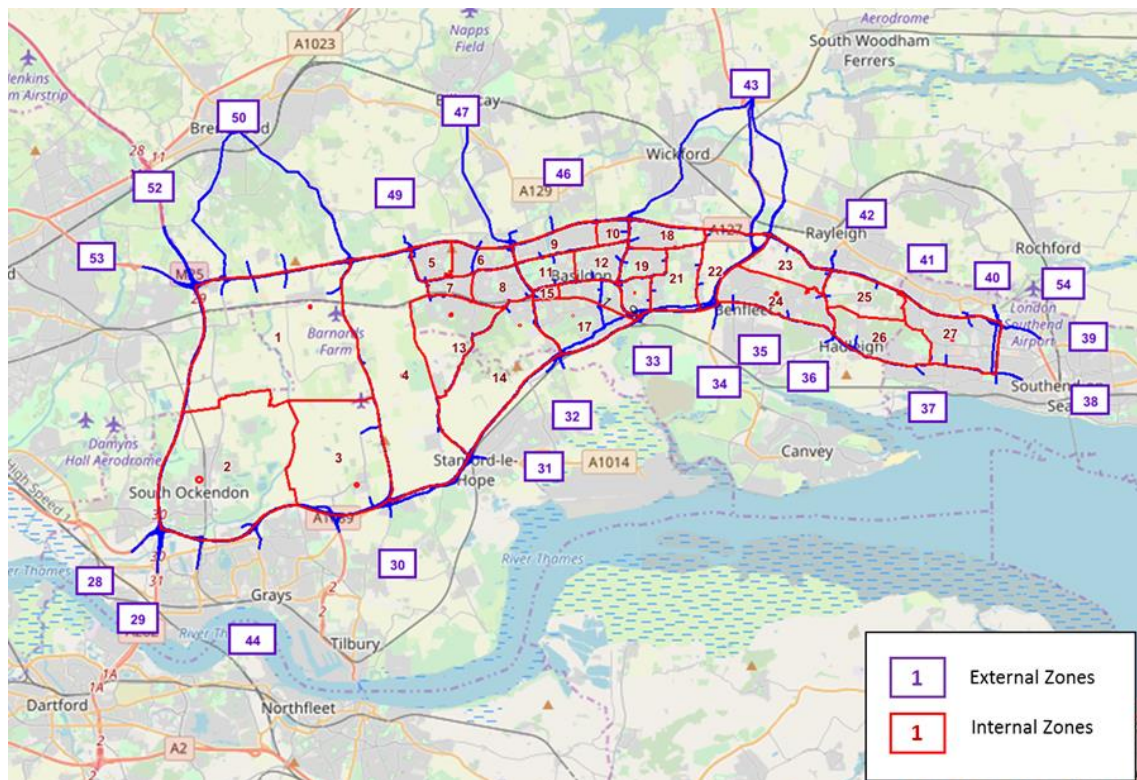


Figure 6. Traffic model zone structure.

In previous modelling for the A127 Air Quality Management Area (AQMA) project, the forecast years derived trip projections using a combination of information on committed development growth and projections from the NTEM. So, in 2023 the trips in the transport model matrices are at the level of trips found in NTEM. As noted, in Basildon, there is a discrepancy between NTEM housing employment projections and projections in the Local Plan.

For the purpose of adjusting the traffic model to reflect the actual number of trips in Basildon’s Local Plan we:

- Deducted development that occurred between 2014 and 2016 (which is the base year of the traffic model); and
- Derived sensible trip rates for broad development types (housing, employment and retail) from the TRICS (Trip Rate Information Computer System) database.

In this way, it was possible to identify the quantum of missing trips as set out in Table 7.

For each of the time periods, these trips were further subdivided across the car matrices in the model (commuting, employment and other trips). The trip ends were then added to the zones in Basildon. This process added most of the trips

to the core model zones. However, a proportion of trips are to relevant external model zones, which include some of the trips from Basildon.

Table 7. Trip allocation by sector

	AM		IP		PM	
	Inbound	Outbound	Inbound	Outbound	Inbound	Outbound
Housing trips to be added	347	706	451	128	649	523
Office trips to be added	337	67	109	122	54	306
Retail trips to be added	93	67	266	250	178	199
Total	777	841	826	500	880	1028

Following this process, a new set of trip matrices more closely reflecting the quantum of trips expected in the Local Plan by 2023 were developed. The AM, IP and PM traffic were then run and outputs provided to the air quality modellers. This step followed the method developed for the A127 AQMA project.

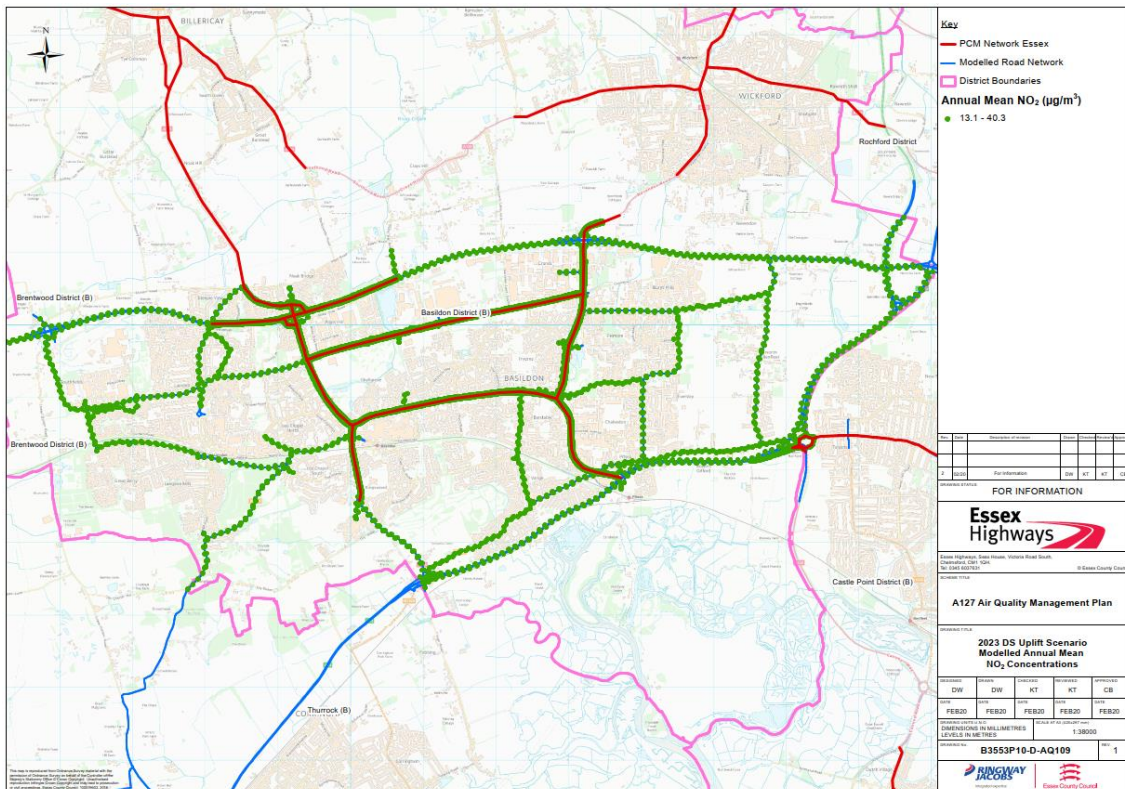


Figure 7. Annual mean NO₂ concentrations across the A127 Air Quality Management Plan study area (DS1)

The revised traffic model estimates (with speed management included - DS1) were applied to the air pollution dispersion model. The results for roadside receptors are shown in Figure 7. The figure shows that total compliance with the

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AQD is very likely in 2023. In other words, all receptors are below the annual mean NO₂ concentration of 40.4 µg/m³. More specifically compliance is likely at all Census IDs on roads considered by the National PCM tool (roads shaded red in Figure 7) in accordance with the AQD. All receptors are important for Local Air Quality Management in Basildon. It's worth being reminded that a similar outcome resulted from the previous work undertaken (see "Previous Modelling Work" sub-section).

Annual mean NO₂ concentrations for the receptors shown in Figure 7 are presented statistically in Table 8. The maximum concentration goes from 39.9 µg/m³ in the Do Minimum to 39.5 µg/m³ with speed management and the revised growth demand (i.e. just below the EU Limit Value applied for AQD reporting). So, with speed management in combination with an uplift in demand, concentrations are predicted to remain very similar to the Do Minimum scenario. Also included in the table is the 2023 DS1 scenario (i.e. typical Local Plan growth with speed management on the A127). Note, all receptors included in the analysis were in locations considered to be reportable in terms of public exposure. Table 8 shows that with the revised growth, the mean concentration increased by 0.3 µg/m³ and maximum concentration by 0.8 µg/m³, compared to the 2023 DS1 scenario.

Table 8. Air quality statistics. NO₂ annual mean concentrations (2023).

Statistic	2023 DM	2023 DS1	2023 DS1 +Revised Growth
Mean	23.0	22.7	23.0
Median	22.4	22.5	22.8
Maximum	39.9	38.7	39.5
Minimum	13.0	13.0	13.1
Upper Quartile	25.8	25.2	25.5
Lower Quartile	20.2	20.4	20.6
Standard Deviation	4.0	3.7	3.8
Range	27.0	25.7	26.4
Increase / Worse		1811	3168
Lower / Better		2424	1162
No Change		669	574
Reportable receptors	4904*	4904	4904

*There slightly less receptors here compared to Table 4 owing to developments around Fairglen by 2023.

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The following analysis considered similar receptors to those shown in Table 5 and Table 6.

Table 9 shows the impact of speed management and revised growth in 2023 at selected receptors. All receptors siding the A127 and Upper Mayne remain well below the compliancy threshold of $40.4 \mu\text{g}/\text{m}^3$. Revised growth has increased concentrations to between 0.3 and $0.5 \mu\text{g}/\text{m}^3$ over those predicted in Table 5.

Table 9. Location B (Upper Mayne) 2023 modelled results with revised demand growth.

ID	Location	Ranking (by highest concentration)	2023 Modelled Concentration ($\mu\text{g}/\text{m}^3$)	
			DM	DS1 Revised Growth
R1623	A127	1st	33.1	30.9
R1624	A127	2nd	33.1	30.8
R1625	A127	3rd	33.0	30.7
R1628	Upper Mayne	1st	33.1	33.4
R1629	Upper Mayne	2nd	32.8	33.2
R1627	Upper Mayne	3rd	32.8	33.2

Similar results for a revised demand growth in 2023 are presented in Table 10 for East Mayne. Here speed management has less of an influence on roadside receptors. The pattern of results shows that, with revised growth, the annual mean NO_2 concentrations still remain below the Do Minimum scenario. Receptor R9093 in the central reservation of the carriageway is $0.5 \mu\text{g}/\text{m}^3$ below the compliance threshold.

Table 10. Location C (East Mayne) 2023 modelled results with revised demand growth.

ID	Location	Ranking (by highest concentration)	2023 Modelled Concentration (ug/m ³)	
			DM	DS1 Revised Growth
R9093	East Mayne - Middle of Carriageway	1st	39.9	39.5
R12	East Mayne - SB	2nd	38.6	38.4
R13	East Mayne - SB	3rd	38.6	38.4
R11	East Mayne - SB	4th	37.9	37.6
R14	East Mayne - SB	5th	38.1	38.0
R15	East Mayne - SB	6th	37.2	37.1

3.2.4 Conclusions

Two sensitivity tests were undertaken examining the impact of revised demand growth. Test 1a1 was concerned with a flat 5% adjustment made to the origin destination matrix of the traffic model in year 2020 and Test 1a2 an adjustment to the matrix based on a fresh review of committed development in 2023.

It's worth noting that a flat 5% uplift of demand growth in 2020 would be very unlikely.

The 2020 test concluded that new annual mean NO₂ exceedances in Basildon may occur as a result of this additional growth. The results indicated that the subsequent increase in the traffic would create new reportable exceedances at receptors adjacent to PCM network as well as other receptors which would be required to be considered for AQMP. These locations may need closer attention in the short to medium term.

The 2023 test is perhaps the more useful of the two as it provides a reassurance about future air quality concerns related to Local Plan growth. A divergence between growth forecasts estimated in NTEM and modelled in the original Basildon AQMP modelling work and that considered for the Local Plan, after a more recent review, led to the concern that emissions in Basildon may have been underestimated. The results of the analysis confirmed that the original approach and conclusions about growth were acceptable and that NO₂ compliance thresholds are very likely to be achieved in 2023 in the absence of mitigation measures.

4 Annex A – Review of Local Plan Text

Direct References to Air Pollution in Strategic, Allocation or Development Management Policies

4.1 Policy T1: Transport Strategy

4.1.1 Policy Context, 9.5

“The Essex Transport Strategy sets out an overall vision for transport provision in Essex. It aims to deliver “a transport system which supports sustainable economic growth and helps deliver the best quality of life for the residents of Essex”. In order to deliver this vision, the strategy seeks to achieve five broad outcomes:

...

2. Reduce carbon dioxide emissions and improve air quality through lifestyle changes, innovation and technology;

...”

4.2 Policy T2: Improvements to Carriageway Infrastructure

4.2.1 Evidence Base, 9.31

“A127 Fortune of War: The UK Air Quality Action Plan for Nitrogen Dioxide (2017) is particularly relevant at this junction, as national modelling indicates the potential for Nitrogen Dioxide levels to exceed European limits in this location. Congestion management therefore has a role to play in addressing that issue. This junction remains the only constriction to free-flow along the A127 within Essex and is a ‘pinch point’. As such, it is a limiting factor for capacity between Southend-on-Sea and the M25, through Basildon and the delays it causes are at a cost to drivers and may discourage business and people locating to the area. Improvements at this junction are expected to offer benefits within the internal road network of Basildon in addition to freeing up capacity on the A127. Previous modelling of potential schemes at this junction suggest that benefits could also include reduced queuing at the junction of A176/Upper Mayne with St. Nicholas Lane, however, the full extent of potential scheme benefits are currently being investigated as part of separate study commissioned by the Highways Authority.”

Traffic issues at the Fortune of War roundabout have been considered as part of the FBC AQMP for speed management on the A127. According to analysis presented in the work reported here (see Figure 7, Section 3.2.3) Air Quality Objectives at this location are likely to be resolved in 2023.

4.2.2 Policy Context, 9.72

“The Essex Transport Strategy sets out five objectives for improving the transport network in Essex. Two are particularly relevant in respect of securing safe and sustainable access to developments. These are:

Reduce carbon dioxide emissions and improve air quality through lifestyle changes, innovation and technology; and...”

4.2.3 9.75

“The UK Air Quality Action Plan for Nitrogen Dioxide is also relevant in the Borough, as national modelling indicates the potential for Nitrogen Dioxide levels to exceed European limits on the A127 at the Fortune of War junction. Congestion management has a role to play in addressing that issue.”

4.2.3.1 Policy wording

“1. In order to ensure that development proposals offer safe and sustainable access either directly, or via appropriate mitigation, the following requirements must be met

*c. No significant adverse impact **on local air quality**, once mitigation measures have been taken into account;”...*

*“3. Where a development requires a Transport Assessment or Transport Statement it must incorporate, or be accompanied by, an **Air Quality Assessment**, which includes air quality monitoring data, to determine the impacts of the proposal on local air quality. Where adverse impacts on local air quality are identified, a Mitigation Strategy will be required.”*

4.3 Policy H7: Land North and South of London Road, Vange

*“5. In order to ensure that development on these sites is well screened from noise and **air** pollution arising from the A13, and in order to limit harm to the open landscape and wildlife designations to the north, landscape buffers should be provided to the southern boundary of H7a and to the south-western and northern boundaries of H7b...”*

4.4 Policy H9: Land West of Steeple View, Laindon

*“2. In order to ensure residents of this development are not exposed to unsafe **air quality**, development on this site must not come forward until such time as*

air quality within the vicinity of the site has been shown to be within statutory limits for NO₂.”

*“3. In order to ensure that development on this site is well screened from noise and **air pollution** arising from the A127 to the south, and in order to limit harm to the open landscape to the north, the existing tree belt to the south and west should be retained, along with the hedgerow on Dunton Road and incorporated into hard and soft landscape buffers along these boundaries.”*

4.5 Policy H10: Land East of Noak Bridge, Basildon

*“2...A further landscape buffer must be provided between development in H10 and the Noak Bridge Nature Reserve and any development on this site must be well screened from noise and **air pollution** arising from the nearby A127 to the south.”*

4.6 Policy H12: Land South of Wickford

*“4. In order to ensure that development on this site is well screened from noise and **air pollution** arising from the A127 to the south, and in order to limit harm to the open landscape and strategic Green Belt gap to the south separating Wickford and Basildon, landscape buffers should be provided to the southern and eastern boundaries of the site...”*

4.7 Policy H13: Land North of Southend Road, Shotgate

*“3. In order to ensure that the impacts on new homes from noise and **odour pollution** arising from the Shotgate Water Recycling Centre are minimised, the strategic open space provision will be located to the northern part of the site. A landscape buffer should also be provided to the eastern boundary of the site to ensure that development on this site is well screened from noise and **air pollution** arising from the A130...”*

4.8 Policy DES5: High Quality Landscaping and Public Realm Design

4.8.1.1 Policy wording

“In all cases where a Public Realm Strategy is required, and in any other case where landscaping is required to make a development proposal acceptable, a detailed Landscape Strategy should be prepared and approved by the Council, which can be incorporated into the Public Realm Strategy if appropriate, which:

*d. Integrates measures to manage climate change, **improve air quality** and promote biodiversity;...”*

4.9 Policy GB7: Change of Use of Buildings and Land in the Green Belt

4.9.1 Policy wording

“The Council will only support applications for the change of use of buildings and land in the Green Belt where:

*f. It will not result in unacceptable generation of traffic, or excessive noise or **air pollution**, or other forms of disturbances...”*

4.10 Policy NE1: Green Infrastructure Strategy

4.10.1 Policy Context

*“16.1 The protection of, and improvement to the Borough’s natural environment is important to those living in, working in and visiting the Borough and its long term sustainability. The Borough has a wealth of natural, semi-natural and planned green and blue spaces habitats and corridors. These are part of our everyday lives; where we work, do business and learn, the way we travel around, where we play, celebrate and spend our leisure time. They play host to wildlife, are part of our cultural heritage and sit in a landscape shaped over time. Their cumulative presence also contributes to providing **cleaner air**, managing flood risk, addressing urban cooling and the wider challenges of our changing climate.”*

*“16.22 As well as the amenity and biodiversity benefits green infrastructure provides, green infrastructure can also help reduce the impact from sources of pollution. Trees can capture and absorb large amounts of water and thus help to reduce surface water run-off, (a major cause of water based pollution in the Borough). They also act to reduce levels of CO₂ and **other pollutants in the air**. Whilst there are currently no declared Air Quality Management Areas (AQMAs) within the Borough increased levels of traffic congestion around main highway interchanges may give rise to increased Nitric Oxide (NO_x) levels which can be harmful to health, but which can also be ameliorated through tree planting and the retention of trees.”*

4.10.2 Policy wording

“In delivering green infrastructure projects, and when considering applications for development, the Council will work with partners and developers to:

*f. Secure the provision of green infrastructure alongside development across all sites to achieve a reduction in **pollution to air**, water and soil;...”*

4.11 Policy NE6: Pollution Control and Residential Amenity

4.11.1 Policy Context

*“16.46 The NPPF details how the planning system should prevent both new and existing development from contributing to or being put at unacceptable risk from, or being adversely affected by unacceptable levels of soil, **air**, water or noise pollution.”*

“16. 48 The NPPF also expects planning policies to contribute towards EU limit values or national objectives for pollutants. It is therefore important to have regard to the legal requirements, objectives and targets set out in key pieces of European legislation including:

- *The Air Quality Framework Directive 2008/50/EC which sets limits for air quality related to the following pollutants: Sulphur Dioxide; Nitrogen Dioxide and other oxides of Nitrogen; Particulate Matter (PM₁₀ and PM_{2.5}); Lead; Benzene; and Carbon Monoxide....”*

*“16.50 The PPG sets out detailed guidance on specific types of pollution including light, noise, **air** and water pollution, and how they should be considered when determining planning applications.”*

4.11.2 Evidence Base

4.11.2.1.1 Air pollution

*“16.51 The Environment Act 1995 gives local authorities the responsibility to periodically review and assess local **air quality** and where air quality objectives are unlikely to be achieved, to designate Air Quality Management Areas (AQMAs). Subsequently the local authority develops action plans aimed at reducing **air pollution**. As a result of the review and assessment process, three pollutants have been identified as potential threats to air quality in the Borough. They are Nitrogen Dioxide, Particulate Matter (PM₁₀), Dust and Sulphur Dioxide (SO₂). There are no AQMAs designated in the Borough, and industrial and residential land uses are largely separated thereby minimising potential instances of **air quality** conflicts. The main source of **air pollution** in the Borough is therefore from traffic emissions, particularly along major routes and at key junctions. The UK Air Quality Plan identifies a stretch of the A127 where modelling indicates that EU Limit Values for Nitrogen Dioxide emissions are at risk of being exceeded up until 2023. Ongoing primary data collection is therefore underway to assess the extent of this harm. As the type and location of new development will influence traffic generation and the pattern and volume of vehicular movement, impact on the potential for EU Limit Values to be exceeded, the Council will look to locate new development, particularly those expected to generate a large number of vehicle journeys, to the most accessible*

locations encouraging alternative travel by active and sustainable travel modes. It will also seek to mitigate the highway impacts of development by improving highway and junction capacity. This will help to prevent congestion which can lead to cars remaining idle or queueing in peak periods. Developers will be expected to contribute towards accessibility and junction capacity improvements as detailed in chapter 9”.

*“16.52 Increasing risks to **air quality** should also be addressed through tree planting to ameliorate impacts from emissions, and by ensuring the design of new development adopts appropriate energy efficient building techniques, contributing to a reduction of local greenhouse gas emissions and pollution levels.”*

4.11.3 Policy wording

*“1. All development proposals must be located and designed in such a manner as to not cause a significant adverse effect upon the environment, the health of residents or residential amenity by reason of pollution to land, **air** or water, or as a result of any form of disturbance including, but not limited to noise, light, odour, heat, dust, vibrations and littering.”*

5 Annex B – National Planning Policy

Direct References to Air Quality in National Planning Policy Framework

“103. The planning system should actively manage patterns of growth in support of these objectives. Significant development should be focused on locations which are or can be made sustainable, through limiting the need to travel and offering a genuine choice of transport modes. This can help to reduce congestion and emissions, and improve air quality and public health. However, opportunities to maximise sustainable transport solutions will vary between urban and rural areas, and this should be taken into account in both plan-making and decision-making.”

“170. Planning policies and decisions should contribute to and enhance the natural and local environment by:

...

e) 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

...”

“180. Planning policies and decisions should also ensure that new development is appropriate for its location taking into account the likely effects (including cumulative effects) of pollution on health, living conditions and the natural environment, as well as the potential sensitivity of the site or the wider area to impacts that could arise from the development...”

“181. 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 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.”