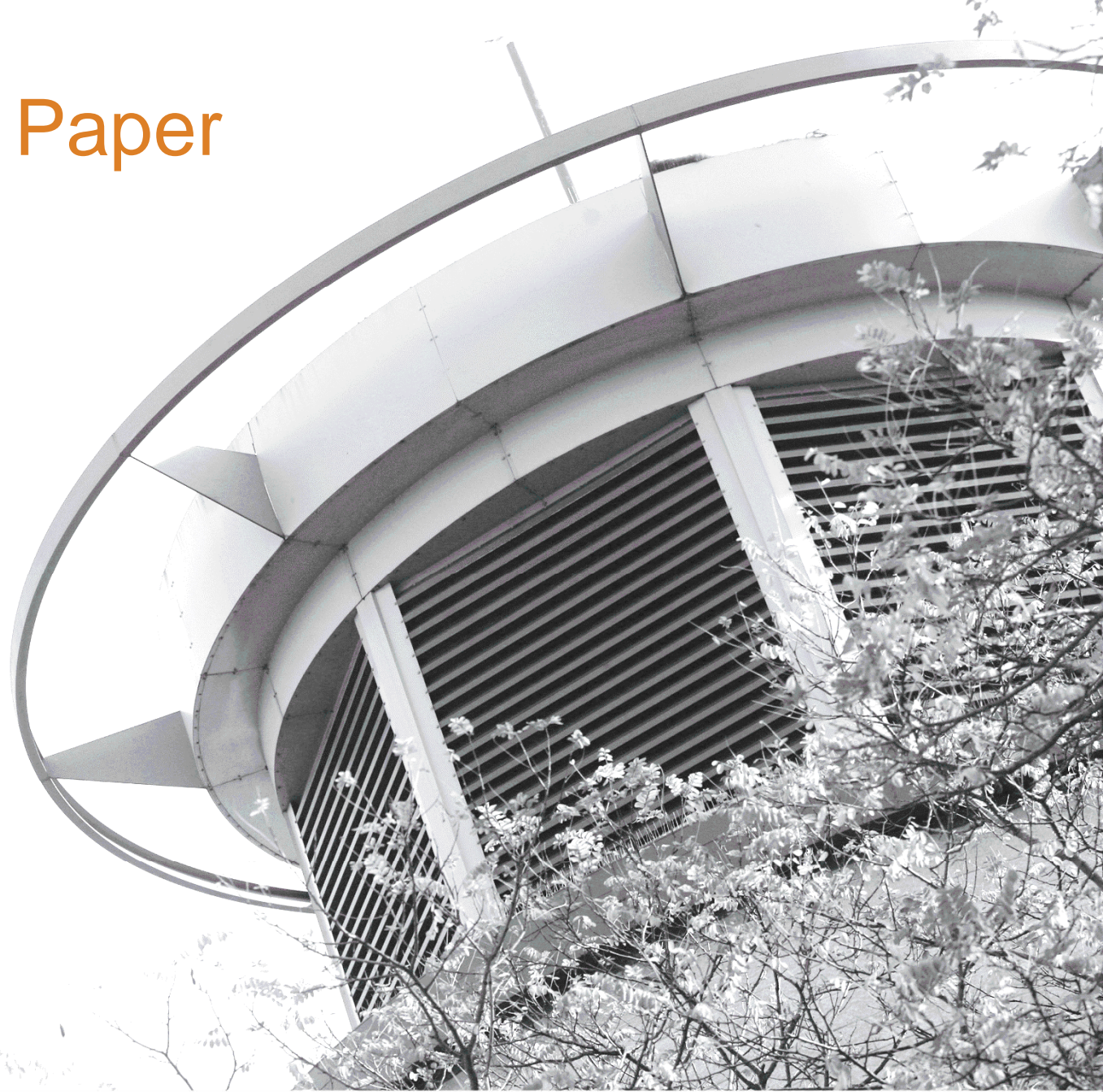
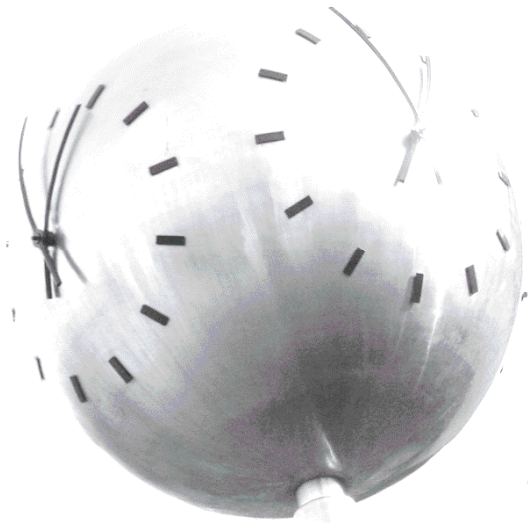


Air Quality Topic Paper

August 2017



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1. Introduction

- 1.1 Action to manage and improve air quality in the UK is largely driven by EU legislation. The 2008 Ambient Air Quality Directive sets legally binding limits for concentrations in outdoor air of major air pollutants that impact public health such as particulate matter (PM₁₀ and PM_{2.5}) and nitrogen dioxide (NO₂). As well as having direct effects, these pollutants can combine in the atmosphere to form ozone, a harmful air pollutant (and potent greenhouse gas) which can be transported great distances by weather systems.
- 1.2 Defra carries out an annual national assessment of air quality using modelling and monitoring to determine compliance with EU Limit Values. It is important that the potential impact of new development on air quality is taken into account in planning where the national assessment indicates that relevant limits have been exceeded or are near the limit.
- 1.3 The local air quality management (LAQM) regime requires every district and unitary authority to regularly review and assess air quality in their area. These reviews identify whether national objectives have been, or will be, achieved at relevant locations, by an applicable date.
- 1.4 If national objectives are not met, or at risk of not being met, the local authority concerned must declare an air quality management area (AQMA) and prepare an air quality action plan. This identifies measures that will be introduced in pursuit of the objectives and can have implications for planning.
- 1.5 Air quality can also affect biodiversity and may therefore impact on international obligations under the Habitats Directive.
- 1.6 The Draft Local Plan consultation gave rise to a number of representations from residents and other stakeholders with regard to the potential impact growth in Basildon Borough may have on air quality, and resultant health outcomes for local people. Consequently, Action 46 of the Draft Local Plan Statement of Consultation required further work to be undertaken on Air Quality and for that additional work to inform the selection of the most sustainable sites for the allocation of development within the submission Local Plan.

- 1.7 Air Quality data is already collected throughout the year the as required by the LAQM regime, and is reported annually to the Government. These reports are available to view on the Essex Air Consortium website www.essexair.org.uk
- 1.8 The location of existing air quality monitoring locations seek to model human exposure near to major routes within the Borough. However, future additional development may have the effect of altering air quality in locations within the Borough where monitoring does not currently occur. Therefore, additional air quality monitoring was undertaken to align with sites proposed for inclusion in the Local Plan to ensure that the impacts of development were considered also.
- 1.9 This topic paper seeks to draw together these two sources of primary data, along with modelling currently undertaken at a national level by Defra, to determine where air quality issues may have implications for the Local Plan as it is progressed to submission.

2. Legislative and Policy Context

National Air Quality Legislation and the UK Draft Air Quality Plan

- 2.1 As stated in the introduction, The 2008 Ambient Air Quality Directive sets legally binding limits for concentrations in outdoor air of major air pollutants that impact public health such as particulate matter (PM₁₀ and PM_{2.5}) and nitrogen dioxide (NO₂). At present, the UK is currently failing to meet the air quality obligations in relation to NO₂ concentrations around roads, and in July 2017 Defra published a UK Air Quality Plan for tackling nitrogen dioxide.
- 2.2 The UK Air Quality Plan for tackling nitrogen dioxide sets out the draft proposals of the Government for bringing nitrogen dioxide levels down to acceptable levels across the UK, with a particular focus on those 100 major roads which national modelling suggests will continue to have air pollution problems (NO₂ exceedance of EU Value Limits) in 2021, mostly in cities and towns.
- 2.3 The Plan expects that local actions will be taken to address these problem areas. Local authorities already have air quality obligations under the Environment Act 1995 to monitor air pollution and take action where it is found that it is unlikely to meet national targets. The Plan goes further to list all those local authorities with roads that have NO₂ levels above the legal limits based on national modelling, and identifies those local authorities with areas where exceedances are projected beyond 3 to 4 years either by urban traffic or on a road that passes through, or around, a town or city. Local authorities with persistent exceedances are required to undertake local assessments to consider measures to reduce NO₂ levels to within the legal limits within the shortest time possible and submit initial plans to Government to be approved.
- 2.4 Basildon Borough Council is one of a number of local authorities with persistent exceedances where action is required and a plan must be produced. The national model indicates that in relation to Basildon Borough there is a risk of statutory NO₂ levels being exceeded at stretches along the A127 in the period to 2022, before declining in accordance with national trends to levels well below the EU Limit value.

- 2.5 When preparing the plan the UK Air Quality Plan states that a wide range of innovative options should be considered, exploring new technologies, and seeking to support the government's industrial strategy so that they can deliver reduced emissions in a way that best meets the needs of their communities and local businesses. The plan could include a wide range of measures such as: changing road layouts at congestion and air pollution pinch points; encouraging public and private uptake of ULEVs; using innovative retrofitting technologies and new fuels; and, encouraging the use of public transport. If these measures are not sufficient, plans could include access restrictions on vehicles, such as charging zones or measures to prevent certain vehicles using particular roads at particular times. However, local authorities should bear in mind such access restrictions would only be necessary for a limited period and should be lifted once legal compliance is achieved and there is no risk of legal limits being breached again.
- 2.6 To assist local authorities in delivering plans to address air quality issues in their areas, a £255m implementation fund has been established by Government. This will be supplemented by a Clean Air Fund which local authorities can bid into for implementation measures such as improvements to local bus fleets, support for concessionary travel and more sustainable modes of transport such as cycling.

The National Planning Policy Framework and Planning Practice Guidance

- 2.7 Given the issues for Basildon Borough emerging from the UK Air Quality Plan, air quality is a material consideration in the plan-making and decision-taking processes of planning for the Borough. The National Planning Policy Framework (NPPF) states at paragraph 124 the following:

Planning policies should sustain compliance with and contribute towards EU limit values or national objectives for pollutants, taking into account the presence of Air Quality Management Areas and the cumulative impacts on air quality from individual sites in local areas. Planning decisions should ensure that any new development in Air Quality Management Areas is consistent with the local air quality actions plan.

- 2.8 The national Planning Practice Guidance (PPG) expands on the requirements of the NPPF by setting out when air quality may be a consideration for planning, how it should be taken into account and what mitigation can be used to reduce,

manage or ameliorate concerns. With regard to Local Plans, the PPG advises the following at paragraph 32-002-20140306:

Local Plans can affect air quality in a number of ways, including through what development is proposed and where, and the encouragement given to sustainable transport. Therefore in plan making, it is important to take into account AQMAs and other areas where there could be specific requirements or limitations on new development because of air quality. Air quality is a consideration in Strategic Environmental Assessment and sustainability appraisal can be used to shape an appropriate strategy, including through establishing the 'baseline', appropriate objectives for the assessment of impact and proposed monitoring.

Drawing on the review of air quality carried out for the local air quality management regime, the Local Plan may need to consider:

- the potential cumulative impact of a number of smaller developments on air quality as well as the effect of more substantial developments;*
- the impact of point sources of air pollution (pollution that originates from one place); and,*
- ways in which new development would be appropriate in locations where air quality is or likely to be a concern and not give rise to unacceptable risks from pollution. This could be through, for example, identifying measures for offsetting the impact on air quality arising from new development including supporting measures in an air quality action plan or low emissions strategy where applicable.*

2.9 Given the outcomes of Defra's modelling air quality is a relevant consideration for plan-making purposes, and needs to be taken into account in relation to both the quantum of growth proposed and also the location of any development proposals. However, as made clear by the UK Air Quality Plan it is not intended that air quality management stifles growth, but that growth is delivered in a different way which decouples development from pollution.

The Local Transport Plan and the A127 Corridor for Growth

2.10 The Essex Local Transport Plan (2011) recognised that there was a need to improve air quality around the road network, specifically identifying such as requirement as part of outcome 2:

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

2.11 Furthermore, it seeks another outcome which would have benefits for air quality if implemented, by encouraging people to use more sustainable forms of travel compared to the private car as part of outcome 5:

Provide sustainable access and travel choice for Essex residents to help create sustainable communities.

2.12 There is therefore a degree of alignment between what is required to improve NO₂ levels around the road network, and what the local Highway authority are seeking to achieve through their Transport Plan. The A127 Corridor for Growth Strategy recognises that there are air quality concerns associated with the build-up of congestion on this route. The incorporation of air quality monitoring equipment with new traffic signage is being considered to improve data collection and knowledge of air quality on the route.

3. Baseline Position

LAQM Monitoring

- 3.1 Pursuant to the requirements under the Local Air Quality Management (LAQM) regime, the Council has been undertaking regular air quality monitoring using diffusion tubes to capture NO₂ levels at 12 locations within the Borough. Figure 1, shows these locations. These are largely located to the south of the Borough in areas that, in line with the methodology which seeks to model human exposure near to major routes.

- 3.2 The most recent Air Quality Annual Status Report was published in July 2017, and shows that at none of these 12 sites were EU Limit values exceeded. Table 1 shows the full results across all sites for the period January to December 2016, and the cumulative result adjusted for bias. All monitoring locations have a resultant outcome below the 40µg/m³ once adjusted for bias in accordance with the recognised national methodology for such assessment. Whilst the latest results show a slight increase in NO₂ levels at a number of monitoring locations, when compared to the previous year, Figure 2 shows an improvement in air quality since 2012, with NO₂ levels showing a reduction in all locations when 2016 levels are compared to 2012 levels.

Figure 1: Local Air Quality Management Diffusion Tube Monitoring Locations (Extract - LAQM Annual Status Report 2017)

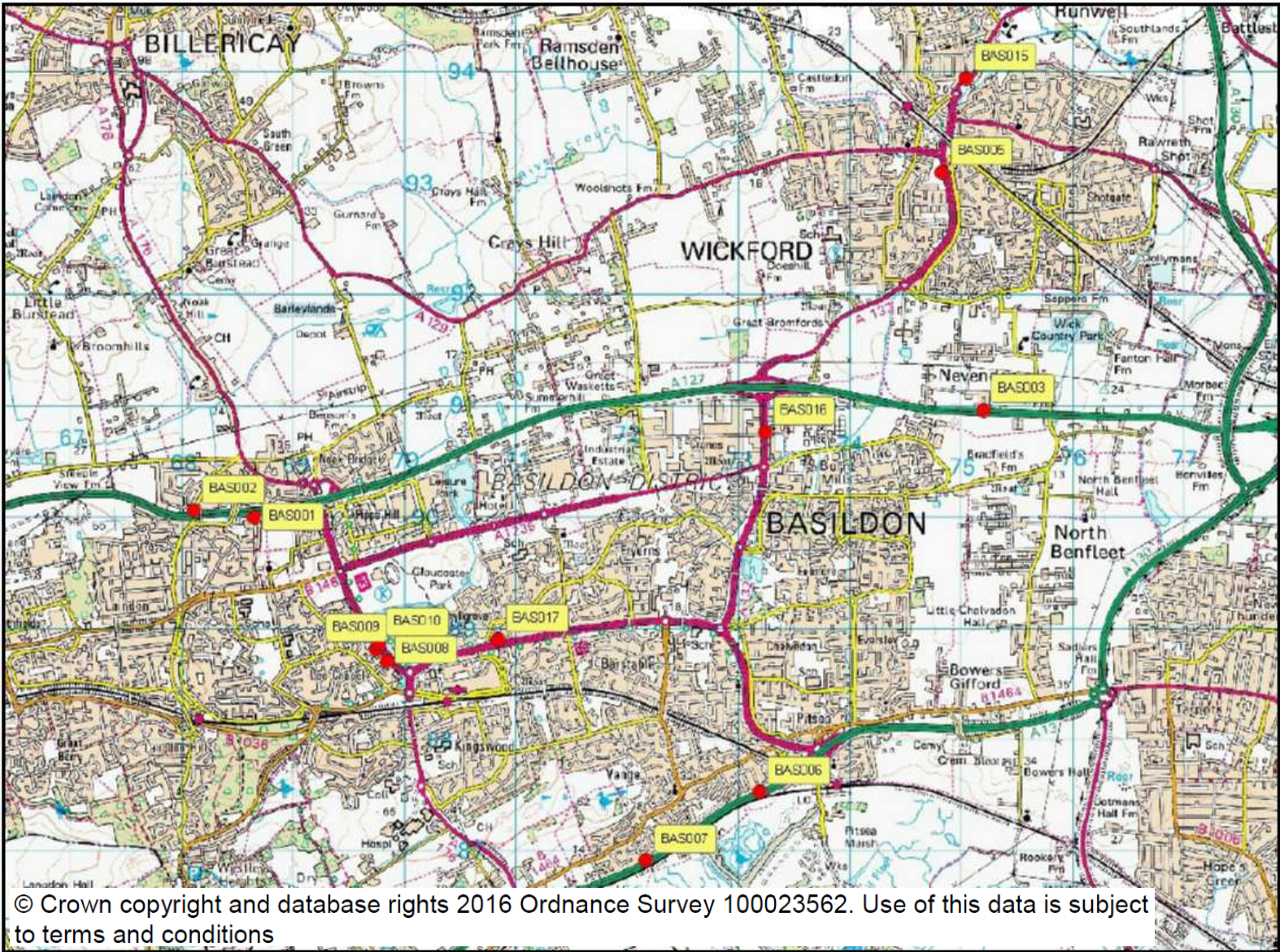
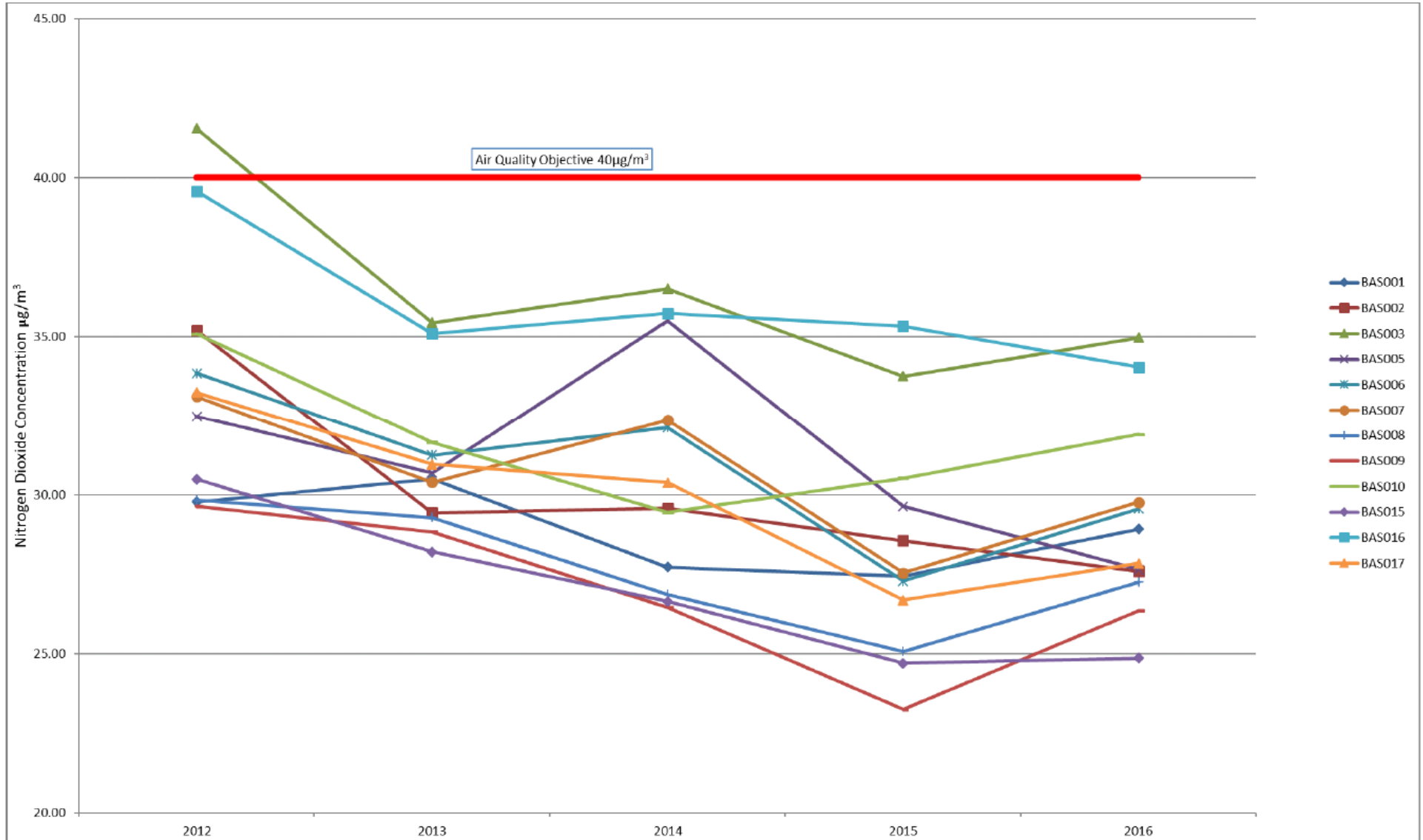


Table 1: NO₂ Monthly Diffusion Tube Results 2016 (Extract from LAQM Annual Status Report 2017)

Site ID	NO ₂ Mean Concentrations (µg/m ³)														
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean		
													Raw Data	Bias Adjusted ⁽¹⁾	Distance Corrected to Nearest Exposure ⁽²⁾
BA001	27.50	40.30	46.40	38.90	38.10	34.70	27.20	30.90	30.90	41.30	45.70	48.70	37.55	28.91	19.03
BA002	35.80	41.30	29.60	38.50	27.70	28.20	32.00	30.40	33.90	31.10	47.70	53.80	35.83	27.59	25.29
BA003	57.20	48.00	34.70	41.10	42.20	36.70	41.40	36.10	45.30	34.60	54.80	72.90	45.42	34.97	29.30
BA005	40.00	40.60	43.10	39.20	37.90	29.90	19.00	22.90	33.50	35.30	35.50	53.90	35.90	27.64	18.57
BA006	42.70	46.00	34.90	40.70	40.40	13.40	32.50	29.20	38.70	36.20	46.50	59.50	38.39	29.56	23.09
BA007	49.20	41.20	32.30	40.30	38.30	32.20	31.30	30.80	39.60	31.60	43.20	53.80	38.65	29.76	29.76
BA008	39.70	40.80	33.70	34.50	34.80	25.00	Missing	23.20	34.50	30.30	45.30	47.50	35.39	27.25	27.25
BA009	Missing	36.00	36.50	34.80	35.60	26.30	22.80	25.20	34.40	34.10	42.50	48.30	34.23	26.36	26.36
BA010	52.30	44.80	36.10	41.00	37.50	35.20	41.10	36.10	41.40	37.30	42.20	52.20	41.43	31.90	20.33
BA015	42.40	38.20	28.50	26.30	27.80	24.30	24.10	23.70	36.30	25.50	38.80	51.50	32.28	24.86	22.54
BA016	57.40	51.30	39.70	45.50	42.00	34.20	39.40	36.10	42.40	35.90	49.20	57.30	44.20	34.03	25.37
BA017	45.00	42.80	31.30	35.50	33.00	26.80	28.00	30.00	37.00	33.90	46.10	44.40	36.15	27.84	22.45

Figure 2: Nitrogen Dioxide Trend Data 2012 – 2016 (Extract from LAQM Status Report 2017)



Additional Monitoring to for the Local Plan

- 3.3 As stated above, the regular air quality monitoring locations have been identified by the Council to model human exposure near to major routes. They do not reflect the potential locations of future growth and there are significant gaps in the coverage of air quality monitoring within the Borough, most notably in Billericay where no regular monitoring currently occurs.
- 3.4 In order to overcome this issue, a single month worth of monitoring was undertaken in August 2016 across 20 additional locations aligned with potential growth locations identified in the Draft Local Plan, or subsequently promoted to the Council as a new site through the Draft Local Plan consultation.
- 3.5 The precise locations of the monitoring stations were agreed with the Council's Environmental Health professionals, in order to capture worst case scenarios around congested junctions which may be impacted by growth. Regular monitoring locations were avoided as data already existed for those. A map showing the location of these additional monitoring locations is included as Figure 3.
- 3.6 Unfortunately, two of the monitoring tubes went missing during the course of the collection period. However, these were nearby other tubes put in place for this exercise and their loss did not result in a significant gap in coverage. For those tubes where a result was collected, Table 2 shows the results to all fall below the EU Limit value of $40\mu\text{g}/\text{m}^3$.
- 3.7 These results are caveated, as they are for one month only and have not been subject to bias adjustments. However, the figures are broadly consistent with the figures collected for other sites during the month of August for the regular monitoring locations, and typically bias adjustments amend the monitored figure downwards. Consequently, no serious concerns arise as a result of this exercise, although more regular monitoring may be appropriate in some locations where the result is closer to the EU Limit value, particularly where higher levels of growth are proposed.

Figure 3: Additional Air Quality Diffusion Tube Monitoring Locations for the Local Plan (August 2016)

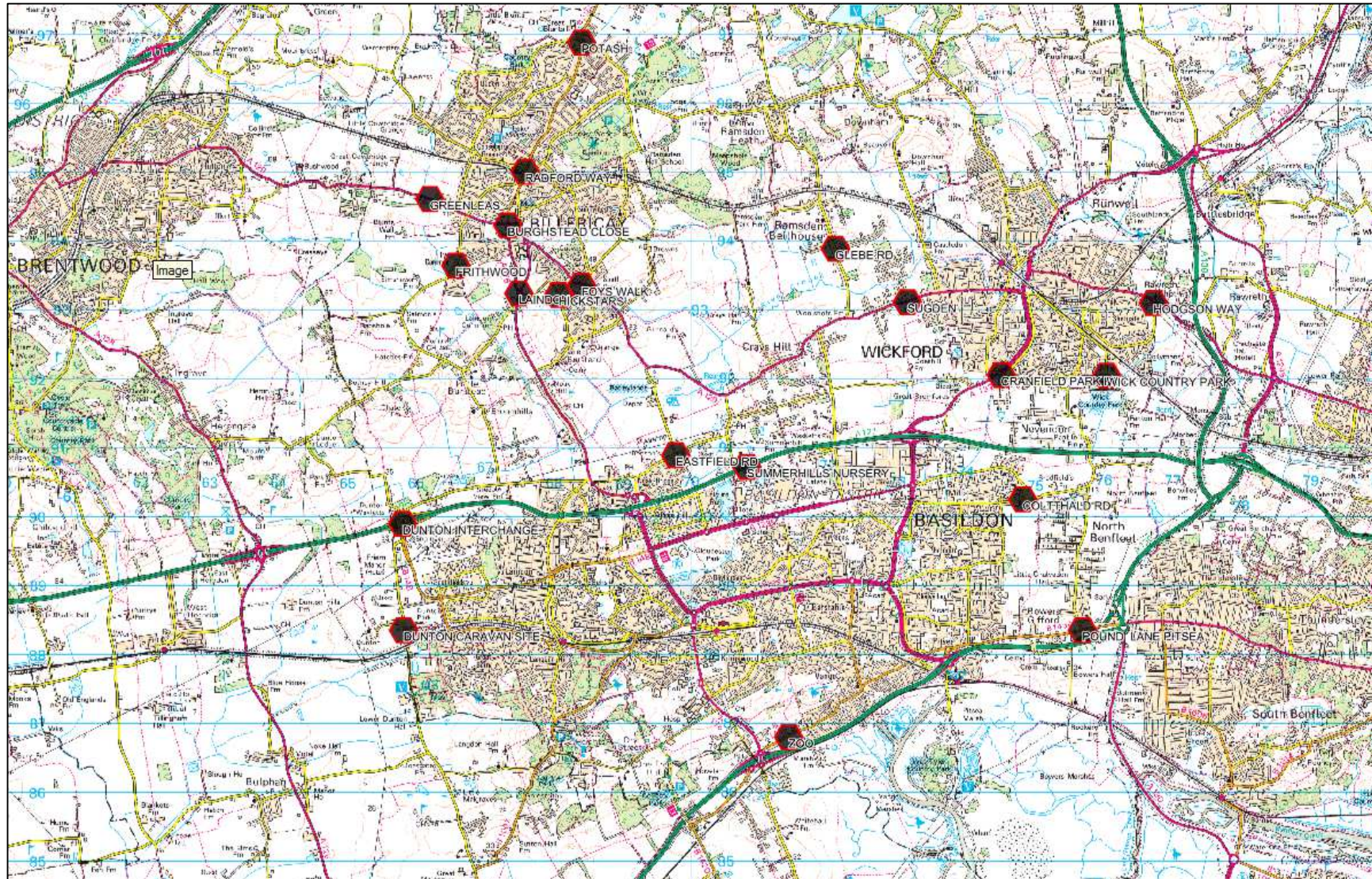


Table 2: NO₂ Results for the Additional Air Quality Diffusion Tube Monitoring Locations for the Local Plan (August 2016)

Sample Number	Site	NO ₂ µg m ⁻³
BASIL/16A/NB1S1	DUNTON CARAVAN SITE	29.2
BASIL/16A/NB1S2	DUNTON INTERCHANGE	36.3
BASIL/16A/NB1S3	SUMMERHILLS NURSERY	34.9
BASIL/16A/NB1S4	EASTFIELD RD	29.8
BASIL/16A/NB1S5	FOYS WALK	27.8
BASIL/16A/NB1S6	HICKSTARS	22
BASIL/16A/NB1S7	LAINDON COMMON	29.5
BASIL/16A/NB1S8	FRITHWOOD	Missing
BASIL/16A/NB1S9	GREENLEAS	23.7
BASIL/16A/NB1S10	BURGHSTEAD CLOSE	34.5
BASIL/16A/NB1S11	RADFORD WAY	27.8
BASIL/16A/NB1S12	POTASH	35.3
BASIL/16A/NB1S13	GLEBE RD	20.5
BASIL/16A/NB1S14	SUGDEN	23.1
BASIL/16A/NB1S15	WICK COUNTRY PARK	Missing
BASIL/16A/NB1S16	CRANFIELD PARK RD	28.2
BASIL/16A/NB1S17	HALGSON WAY	30.7
BASIL/16A/NB1S18	COLTTHALD RD	25.3
BASIL/16A/NB1S19	POUND LANE PITSEA	36.5
BASIL/16A/NB1S20	ZOO	29.3

Existing Mitigation Measures

- 3.8 Whilst there are no monitoring locations showing exceedance of EU Limit values within Basildon, and consequently no Air Quality Management Areas (AQMAs), the LAQM Annual Status Report 2017 still sets out actions that are being taken to improve air quality in the Borough. These actions are set out in Table 3, which follows. Of the actions included on that list both capital projects (A176 Nethermayne Improvement scheme and the Laindon Cycle Route) have been completed.

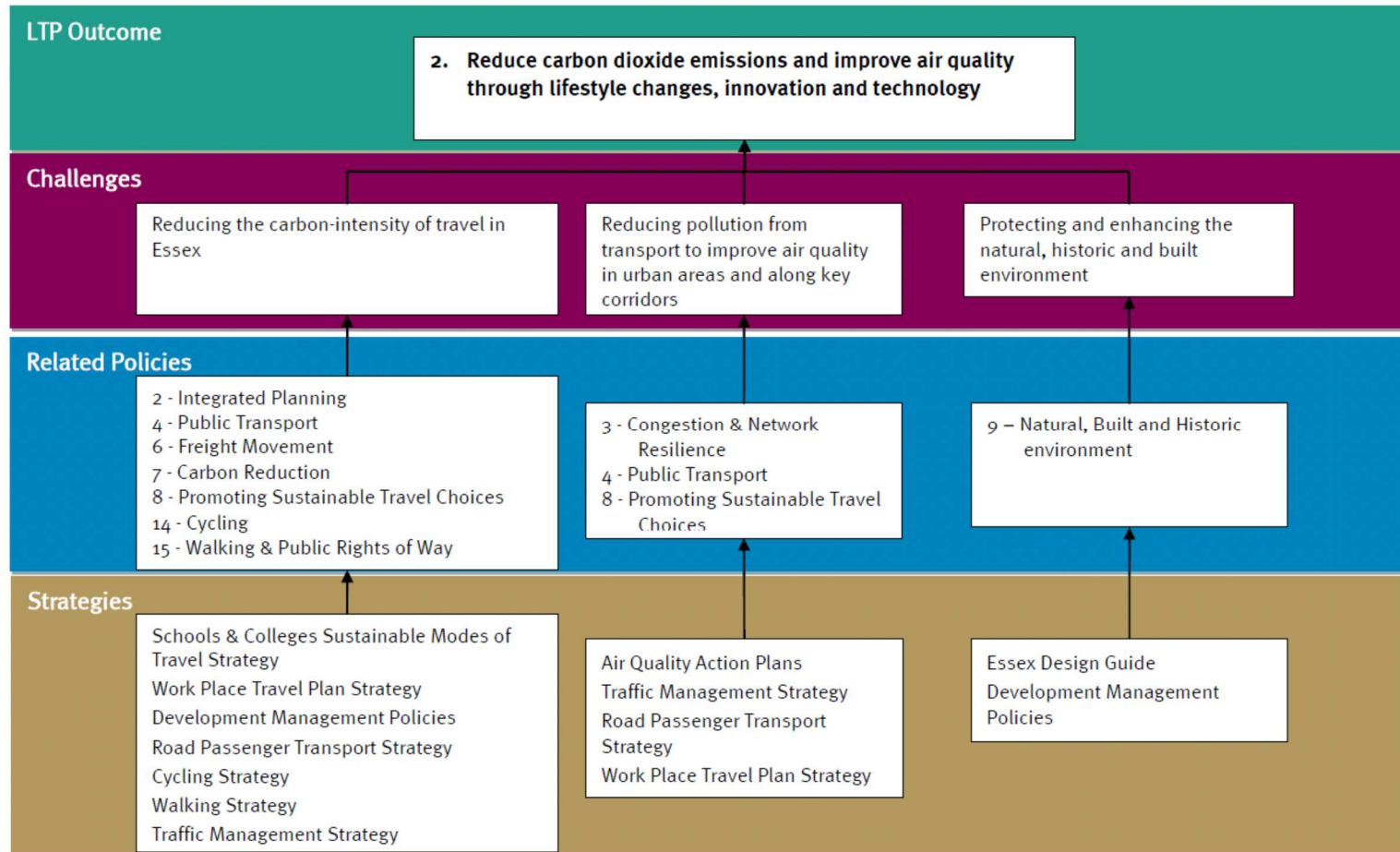
Table 3: Measures to Improve Air Quality (Extract from LAQM Status Report 2017)

Measure No.	Measure	EU Category	EU Classification	Lead Authority	Planning Phase	Implementation Phase	Key Performance Indicator	Target Pollution Reduction in the AQMA	Progress to Date	Estimated Completion Date	Comments
1	Essex Liftshare	Alternatives to private vehicle use	Car & lift sharing schemes	Essex County Council	N/A	2014	Number of Users	No AQMA	Ongoing	N/A	
2	Member of Essex Air	Policy Guidance and Development Control	Regional Groups Co-ordinating programmes to develop Area wide Strategies to reduce emissions and improve air quality	Essex Air	N/A	N/A	N/A	No AQMA	Ongoing	N/A	
3	Environmental Permit Inspection & Enforcement	Environmental Permits	Measures to reduce pollution through IPPC Permits going beyond BAT	Basildon Council	N/A	N/A	Operator compliance with Environmental Permit	No AQMA	Ongoing	N/A	
4	Smoke Controlled Zones	Policy Guidance and Development Control	Low Emissions Strategy	Basildon Council	N/A	N/A	N/A	No AQMA	Ongoing	N/A	
5	Laindon Cycle Route	Transport Planning and Infrastructure	Cycle Network	Essex County Council	2015	2016	Reduced personal car use	No AQMA	Works Completed	2016	
6	Neverdon Interchange Scheme	Traffic Management	UTC, Congestion management, traffic reduction	Essex County Council	2015	2016	Manage congestion	No AQMA	Ongoing	2017	
7	Wickford Rail Station	Transport Planning and Infrastructure	Public transport improvements- interchanges stations and services	Essex County Council	2016	2017	Improve vehicle access & cycle facilities	No AQMA	Ongoing	2017	

Other mitigation measures already proposed or underway which benefit air quality

- 3.9 In addition to those mitigation measures already being acted upon, as detailed above, there are other proposals set out in public documentation which will aid in delivering air quality improvements at a local level. The Essex Local Transport Strategy 2011 specifically seeks to reduce CO₂ emissions and improve air quality as an outcome of transport planning. Figure 4 is an extract from the Local Transport Strategy showing how emissions from vehicles will be achieved:

Figure 4: Essex Local Transport Strategy approach to reducing CO₂ emissions and improving air quality



3.10 In relation to Basildon Borough, key actions falling under this element of the Local Transport Strategy include:

- The preparation and delivery of a Cycling Action Plan for the Borough with the aim of promoting sustainable travel choices.
- Involvement in the review of the Essex Design Guide, with the aim of ensuring it is suitable for adoption within the Borough.

- The specific referencing of the Highway Development Management Policies in the Draft Local Plan, ensuring new developments promote sustainable travel choices.
- The selection of development sites which have good access, or the potential to have good access, to sustainable travel choices in the Draft Local Plan. This will ensure that occupants of new developments can develop new behaviours that are less reliant on private vehicles.
- The modelling of the potential transport impacts of the proposals in the Local Plan in order to identify where congestion issues may arise as a result of development, and how those impacts can be mitigated through the appraisal of mitigation options.

3.11 Additionally, Essex County Council, as the Local Highway Authority, are pursuing a number of specific projects in and around Basildon in order to support sustainable travel choices and reduce congestion on strategic routes. Most notably, they are:

- Working with Basildon Council to deliver the transport components of the Basildon Town Centre Masterplan. This is being funded using the Basildon Integrated Transport Package secured from SELEP.
- The Basildon Integrated Transport Package is also being used to secure a bus link within the A127 Enterprise Corridor, linking Endeavour Drive with the Mayflower Retail Park.
- Updating the A127 Corridor for Growth Strategy, and securing funding for congestion relieving projects along its route. The Nevendon Junction has recently been upgraded to provide additional capacity, and £27m has been secured to fund improvements to the Fairglen Interchange junction. Options are also being considered for the Fortune of War Junction.

3.12 There is therefore a number of projects underway, both in terms of strategy and delivery which will benefit air quality within the Borough. Whilst their initial focus may not be on air quality matters, the promotion of sustainable travel choices and the relief of congestion will undoubtedly improve air quality by reducing reliance on private vehicles responsible for NO₂ emissions.

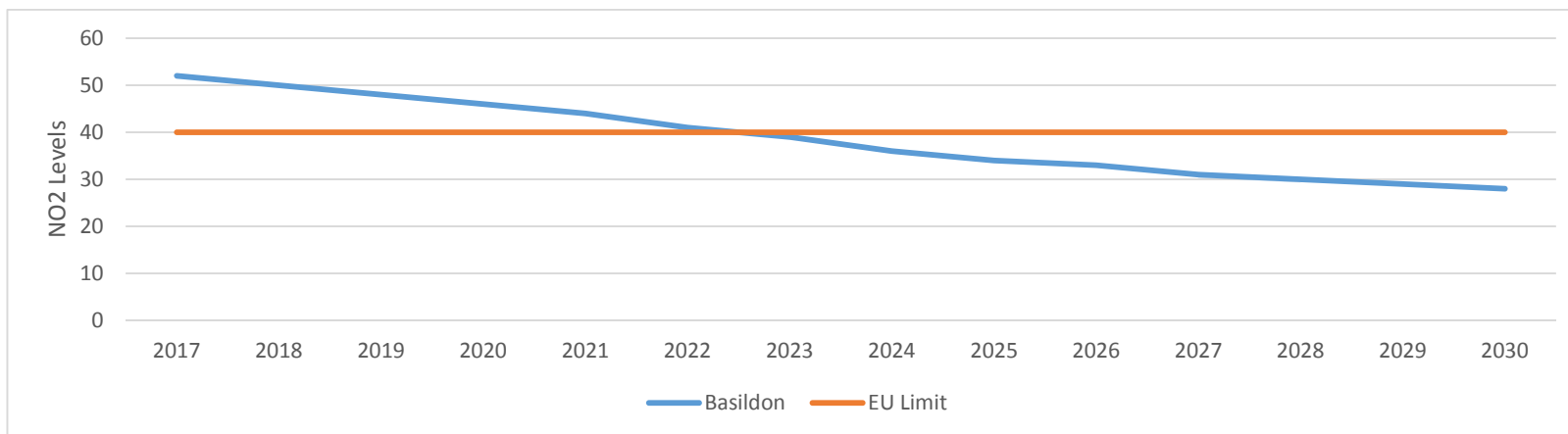
4. Future Situation

DEFRA/DfT Modelling

- 4.1 For the purposes of the UK Air Quality Plan for tackling nitrogen dioxide, modelling has been undertaken to forecast NO₂ concentrations in the different local authority areas in the UK. This work has identified those local authorities where one or more roads will have NO₂ concentrations above statutory limits, and how long this exceedance would last without additional measures.
- 4.2 This modelling was undertaken using the Pollution Climate Mapping (PCM) model using 2015 baseline data from the National Atmospheric Emissions Inventory, and 2015 road transport figures from the Department for Transport (DfT), information from COPERT V5 and AURN air quality monitoring data.
- 4.3 This modelling deviates from the locally collected primary data, and shows that there are parts of Basildon where the EU Limit values are currently being exceeded, and will continue to be exceeded up to around 2022. Discussions with DEFRA have indicated that this is likely to occur along the A127, and specifically at the Fortune of War Junction in Basildon Borough. The neighbouring district of Rochford has a similar issue at the Rayleigh Weir Junction, and there are also issues on the A127 in Southend Borough. Figure 5 shows the modelling outcomes for Basildon Borough.

Figure 5: NO₂ forecasts for Basildon from the Draft UK Air Quality Plan.

All figures provided are in $\mu\text{g}/\text{m}^3$. The EU Limit value is $40\mu\text{g}/\text{m}^3$



4.4 Given that the A127 extends across borough boundaries, and also carries traffic from a wide area due to its strategic role, it is expected that a coordinated approach to managing air quality on the A127 will be taken by both the districts/boroughs and also the County Council to reduce emissions below the EU Limit value in the shortest time possible. This is one of around 40 areas within the UK where such action will be required. Many of these areas comprise ‘through roads’ such as the A127, so this issue is not confined to South Essex.

Future Mitigation Opportunities

4.5 Through initial discussions it has been concluded that whilst all possible measures should be considered, a Clean Air Zone is not practicable, as it is not possible to bypass the A127 without increasing congestion, and consequently air quality challenges, on nearby minor roads. However, examples of local measures that could be considered include:

- Lowering the speed limit, although the average speeds along the A127 are already at 60mph, and at the Fortune of War Junction the speed limit is already reduced to 40mph due to the chicane. This is not necessarily therefore a feasible option.
- Introducing local taxi licensing policies which favour newer vehicles and low emission vehicles.

- Elevating the role of travel planning to promote sustainable travel choices.
- Encouraging the uptake and use of electric vehicles.
- Publishing public information on pollution levels.
- Campaigning to influence behaviour change.
- Including air quality management as a criteria when considering transport infrastructure improvements.
- Considering the relationship between new development and the A127 to avoid putting residents of that new development at risk of poor air quality. It is however noted that the UK Air Quality Plan does not expect Air Quality management to be a constraint on growth, and therefore the use of buffer zones and landscaping may be emphasised in relation to this measure.

4.6 Additionally, there is a need for local monitoring outputs, including those collected through the LAQM work, to be factored into the national air quality modelling, to help resolve the discrepancy and improve the robustness of the modelling compared to primary data.

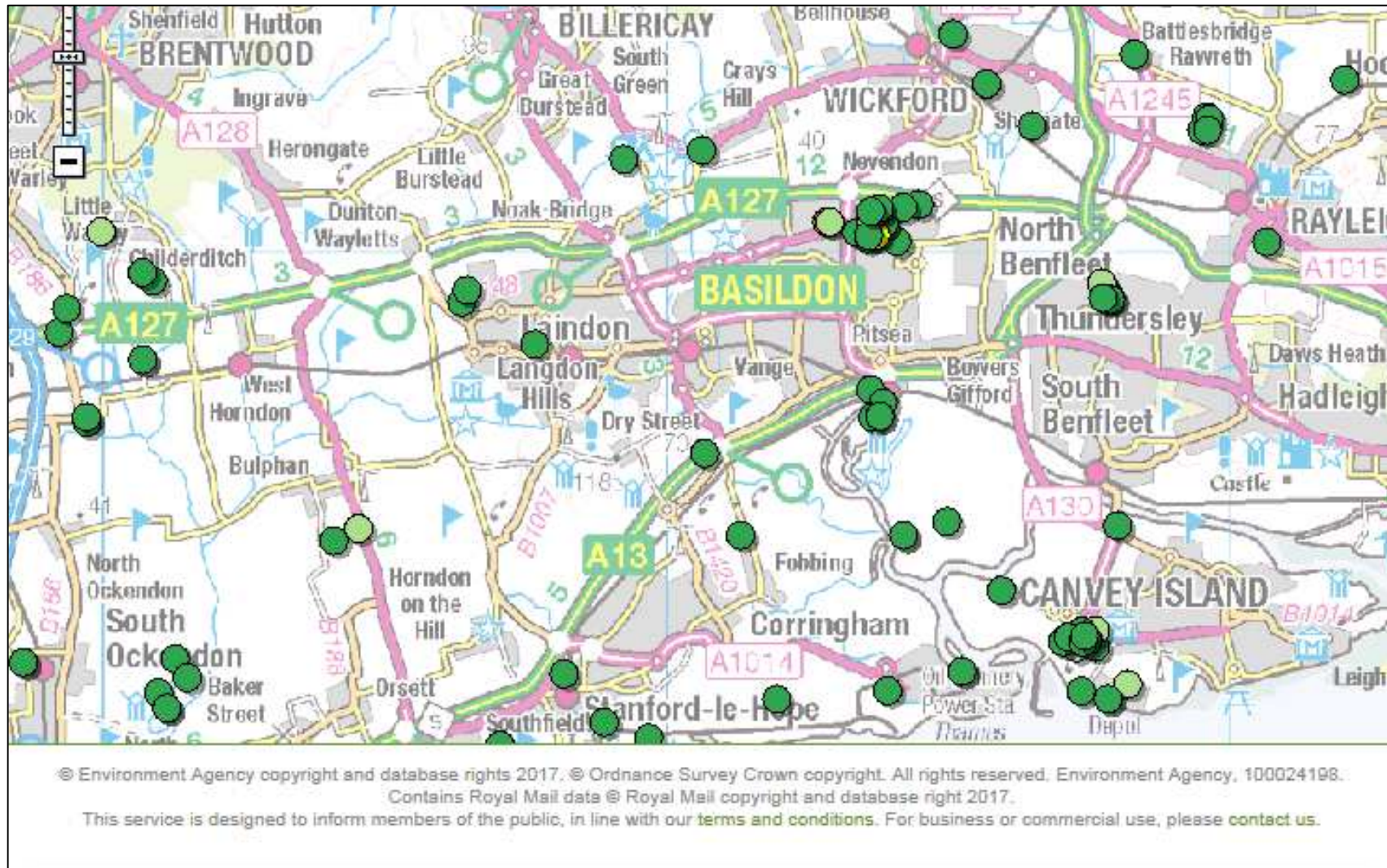
5. Other Sources of Air Pollution

- 5.1 Defra has identified NO₂ emissions as a key area of concern in relation to air quality in the Borough. However, it is important to recognise that there are industrial and waste operations occurring within Basildon Borough which are potential sources of air pollution. These are known as 'point sources' and can have an impact on the environment and residential amenity within their proximity.
- 5.2 In order to manage point source pollution, certain industrial activities known as 'prescribed processes' which have the potential to emit significant amounts of air pollution, are required to obtain a permit. These are inspected regularly to ensure compliance with the conditions needed to minimise pollution emissions.
- 5.3 Pollution Prevention and Control (PPC) is a regulatory regime for controlling pollution from certain industrial activities. From 6th April 2008 it has been incorporated into the framework of the Environmental Permitting Regulations (EPR). The industrial activities caught by the PPC element of the Environmental Permitting Regulations are split into three categories and are regulated by two different regulators.
- 5.4 If a permit is granted it will contain a number of conditions the operator has to comply with and they will be subject to regular inspection by the regulator. They may also require the operator to install abatement equipment and introducing monitoring systems.

Part A(1) - The Environment Agency

- 5.5 The Environment Agency regulates what is considered to be the most polluting of the three industrial categories, A(1) activities. These are regulated for multi-media emissions such as air, land, water and other environmental considerations.
- 5.6 Figure 6 shows the location and compliance scoring for those Part A(1) operations regulated by the Environment Agency. Figure 6 shows that the majority of the most polluting activity occurs within the A127 Enterprise Corridor, most notably around the Burnt Mills Industrial Estate. It should be noted that this aligns with current planning policy, which directs 'untidy industry' to this location. In addition to this, Figure 6 also shows the majority of these locations in dark or light green. This means that there compliance within permit conditions is very good or good respectively.

Figure 6: Environment Agency Map showing Compliance Rating Scores for Industrial Operators



Part A(2) and Part B – Basildon Council

5.7 Basildon Council regulates the comparatively less polluting Part A(2) activities (e.g. glass manufacturing, foundries etc.) and the lesser polluting Part B activities (e.g. concrete batching, vehicle re-spraying, dry cleaning etc.). Part B activities are regulated for emissions to air only. If a permit is granted it will contain a number of conditions the operator has to comply with and they will be subject to regular inspection by the Council. For a Part B process i.e. those regulated by the Council, these conditions control air pollution and may involve the operator installing abatement equipment and introducing monitoring systems. These uses are largely concentrated around the employment areas and rural employment sites in Basildon Borough, and impacts on the resident population are therefore largely avoided.

6. Relationship between Air Quality and Public Health

- 6.1 The UK Air Quality Plan reports that there is increasing evidence that air quality has an important effect on public health, the economy, and the environment. According to Public Health England, poor air quality is the largest environmental risk to public health in the UK. Public Health England estimate that 6.2% of deaths in Basildon Borough in 2010 could be attributed to air pollution. This compares to a national average of 5.6% indicating that the link between mortality and air pollution is slightly higher in Basildon Borough than the national average¹. Evidence from the World Health Organization (WHO) shows that older people, children, people with pre-existing lung and heart conditions, and people on lower incomes may be most at risk².
- 6.2 Evidence collated by Defra, Public Health England and the Local Government Association³ shows that short-term exposure to high levels of air pollution can cause a range of adverse health effects including exacerbation of asthma, effects on lung function, increases in hospital admissions and mortality. A review by the World Health Organization concludes that long-term exposure to air pollution reduces life expectancy by increasing deaths from lung, heart and circulatory conditions. There is emerging evidence from the Royal College of Physicians (amongst others) of possible links with a range of other adverse health effects including diabetes, cognitive decline and dementia, and effects on the unborn child⁴.
- 6.3 As well as having an effect on life-expectancy, air quality also impacts other aspects of health, productivity and wellbeing. Although it is difficult to quantify the economic impact of poor air quality with precision, research commissioned by Defra estimated that in 2012, poor air quality had a total cost of up to £2.7 billion through its impact on productivity⁵.
- 6.4 It is therefore imperative that air quality issues are effectively dealt with in order to ensure that people living in Basildon Borough have better health outcomes, and businesses in the Borough are able to benefit from reduced impacts of air quality on productivity levels. The Local Plan will have a role to play in this.

¹ Public Health England, 'Estimating local mortality burdens associated with particulate air pollution', 2014, www.gov.uk/government/publications/estimating-local-mortality-burdens-associated-with-particulate-air-pollution

² World Health Organization, 'Review of evidence on health aspects of air pollution – REVIHAAP Project', 2013 http://www.euro.who.int/__data/assets/pdf_file/0004/193108/REVIHAAP-Final-technical-report-final-version.pdf?ua=1

³ www.local.gov.uk/sites/default/files/documents/6.3091_DEFRA_AirQualityGuide_9web_0.pdf

⁴ Royal College of Physicians 'Every breath we take. The lifelong impact of air pollution' (2016)

⁵ Department for Environment, Food and Rural Affairs, 'Valuing the impacts of air quality on productivity', 2015, https://uk-air.defra.gov.uk/assets/documents/reports/cat19/1511251135_140610_Valuing_the_impacts_of_air_quality_on_productivity_Final_Report_3_0.pdf

7. Relationship between Air Quality and Natura 2000 Sites

7.1 Natura 2000 sites are those sites of nature conservation importance that are protected by the Habitat Regulations. These sites have been designated because they are important at an international level and have been identified for protection either under the EU Birds Directive (Special Protection Areas (SPA)), the EU Habitats Directive (Special Areas of Conservation (SAC)), or as part of the Ramsar Convention on the protection of migratory bird species. The Habitat Regulations seek to ensure that harm to these sites is avoided. There are no Natura 2000 sites within Basildon, however, there are a number nearby as listed below:

- Abberton Reservoir Special Protection Area (SPA) and Ramsar Site
- Benfleet and Southend Marshes SPA and Ramsar Site
- Blackwater Estuary SPA and Ramsar Site
- Colne Estuary SPA and Ramsar Site
- Crouch and Roach Estuaries SPA and Ramsar Site
- Essex Estuaries SAC
- Hamford Water SPA and Ramsar Site
- Medway Estuary and Marshes SPA and Ramsar Site
- Stour and Orwell Estuaries SPA and Ramsar Site
- Thames Estuary and Marshes SPA and Ramsar Site

7.2 In some cases, there is a risk of harm to these sites as a result of atmospheric nitrogen deposits, as identified in the *Draft Local Plan Habitat Regulations Assessment*. However, Basildon is remote from all of these sites, and consequently the *Draft Local Plan Habitat Regulation Assessment* did not identify significant air quality impacts on Natura 2000 sites arising from Basildon, or the proposals in the Draft Local Plan.

7.3 It should be noted that it is not always the case that air quality impacts are screened out. Epping Forest SAC for example is subject to significant impacts arising from poor air quality arising from London and its surroundings. Similarly, authorities comprising and surrounding the Thames Basin Heath SPA have recently enacted planning controls to mitigate air quality impacts on this protected area. Such controls are not required, and cannot be justified in Basildon under these regulations.

8. Recommendations for the Publication Local Plan

Implications for Growth

- 8.1 It is not expected that local planning authorities will seek to limit growth in their attempt to manage air quality with the UK Air Quality Plan very clear in this regard. However, there are two proposed development locations being considered for inclusion in the Local Plan at Steeple View (H11) and Noak Bridge (H12) which are nearby that part of the A127 where Defra are indicating NO₂ levels are currently exceeding the EU Limit value, and would consequently pose a risk to human health. As NO₂ levels are expected to fall below this limit by 2022, the risk to potential residents of these sites is not ongoing. In order to ensure that this risk is avoided, it is recommended that should these sites be included in the Submission Local Plan, they are phased so that any development is not occupied before 2022.
- 8.2 Furthermore, it is recommended that landscape buffers are provided to the south of both proposed sites H11 and H12, and also to the north of proposed site H10 in order to ameliorate the impacts of air quality around the A127 in the long-run. Similarly, such landscape buffering should also be used to the south of proposed site H9, which is close to the A13, as this is also a strategic road link susceptible to congestion. Appropriate types of vegetation are able to assimilate NO₂, reducing concentrations in the environment to safer levels.

Sustainable Locations

- 8.3 In order to reduce the need to travel by private vehicle, and consequently help to limit vehicle emissions, new development should be sustainably located with good access to services and good access to sustainable and active travel choices. Where access is currently poor, the development should be of a scale to provide the potential for the provision of new services and new sustainable travel choices. A sustainable access assessment has been prepared for all the sites being considered for inclusion in the Publication Local Plan so that the most sustainable sites can be selected. This should form a key consideration in the preparation of the Publication Local Plan.

Sustainable Travel Choices

- 8.4 There is evidence to show that one of the best times to influence behaviour change is when people move home. At such a time, people are more likely to consider travelling to work in a different way such as by public transport, by bicycle or by foot.

Therefore, it is essential that sustainable travel choices are available as soon as people move into a new home. A delay or several years may mean that unsustainable travel choices are made and become the norm, affecting the success of more sustainable modes delivered later on. Consequently, the Local Plan should be amended to require the provision of sustainable travel choices during the early phases of development. This will reduce reliance on private vehicles to the benefit of air quality.

Electric Vehicle Charging

- 8.5 Electric vehicles do not produce NOx emissions. Therefore, there is a benefit to air quality of their use, with the Government expecting a shift to such vehicles overtime, with the intention that petrol and diesel vehicles will be banned from 2040. Electric vehicles require different infrastructure to petrol and diesel vehicles such as charging points at places of residence and also at workplaces and other destinations. There is currently limited provision of such infrastructure especially at destinations in Basildon at this time, and therefore in order to accelerate the uptake of electric vehicles there is a need to address this gap. It is recommended that an additional policy on Electric Vehicle charging is introduced into the Local Plan in this respect. A separate paper has been prepared considering the details that such a policy should address.

Assessing Air Quality Impacts as part of Transport Assessments / Transport Statements

- 8.6 As the main cause of poor air quality in Basildon Borough is associated with vehicle emissions, and poor air quality can mainly be found around those parts of the transport network which are most congested, it would seem appropriate for those submitting planning applications to incorporate an assessment of air quality impacts within their Transport Assessments / Transport Statements. This will ensure that the costs to health and the environment of transport impacts, and indeed any benefits that proposed mitigation may bring, are also captured in determining the appropriateness of development.
- 8.7 It is recommended that the Local Plan is amended to introduce a requirement for air quality impacts to be considered as part of Transport Assessments and Transport Statements, and for air quality impacts arising from transport to be a consideration in determining the appropriateness of transport mitigation and the overall transport impacts arising from development.

Monitoring Aligned with Development

- 8.8 Given that development proposes a potential risk to the achievement of air quality improvement objectives, it is imperative that the elements of the Traffic Impact Assessment mitigation which are intended to improve air quality do so. Consequently, it is

further recommended that air quality monitoring is also secured through a planning obligation attached to any planning consent for any significant developments which may impact on areas of the Borough at risk of exceeding EU Limit values.

- 8.9 Any monitoring undertaken must be consistent with the monitoring undertaken by the Council for the LAQM. Therefore, monitoring locations and programmes should either be agreed with the relevant officers at the Council, with information submitted on an annual basis, or else a payment in lieu should be made to the Council to undertake the monitoring on behalf of the developer. It is possible to secure payments in lieu for air quality monitoring via S106 Agreements. Castle Point Borough Council was able to secure such a payment in relation to the construction of a new supermarket in Hadleigh in 2011/12. This is not therefore an unusual concept.
- 8.10 It is recommended that the Local Plan is amended to introduce a requirement for ongoing monitoring of the impacts of development on air quality in those locations within the Borough most at risk of poor air quality.