



Department  
for Environment  
Food & Rural Affairs

# Report on measures for 2014 exceedance of the Target Value for Benzo[a]pyrene in East Midlands non- agglomeration zone (UK0032)

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Any enquiries regarding this publication should be sent to us at

Air Quality  
Department for Environment, Food and Rural Affairs  
Area 2C  
Nobel House  
Smith Square  
London  
SW1P 3JR

Email: [air.quality@defra.gsi.gov.uk](mailto:air.quality@defra.gsi.gov.uk)

With technical input from Ricardo Energy & Environment

[www.gov.uk/defra](http://www.gov.uk/defra)

## Contents

1. Introduction .....	4
1.1 Context.....	4
1.2 Status of zone .....	4
2 Exceedance situation East Midlands [B[a]P_UK0032_2014_1] related to domestic emissions.....	7
2.1 Description of exceedance .....	7
2.2 Source apportionment.....	10
2.3 Measures .....	12

# 1. Introduction

## 1.1 Context

Under the EU Directive 2004/107/EC<sup>1</sup>, the target value (TV) for Benzo[a]pyrene (B[a]P) is an annual mean concentration of 1 nanogram (one billionth of a gram ( $10^{-9}$ ) per cubic metre ( $m^{-3}$ ) of ambient air or lower. The Directive requires that Members States report on measures in place to address the exceedance of the TV and that all reasonable measures that do not entail disproportionate cost should be taken to ensure this target is not exceeded.

Exceedance of the TV was reported in 2013 in the East Midlands non-agglomeration zone and a report on measures was published detailing the exceedance and the measures in place<sup>2</sup>.

This document reports the exceedance situation for 2014 reflecting the more recent assessment and updating the 2013 report on measures.

## 1.2 Status of zone

This is the report on measures required for exceedances of the TV for B[a]P within the East Midlands zone identified within the 2014 UK air quality assessment. Exceedances within this zone were identified on the basis of model results on a 1 km x 1 km grid resolution providing supplementary information. This exceedance was reported via e-Reporting dataflow G<sup>3</sup> on attainment and Air Pollution in the UK<sup>4</sup>.

Table 1 summarises the spatial extent and associated resident population for the exceedance identified in this zone, as reported via e-Reporting.

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<sup>1</sup> <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2005:023:0003:0016:EN:PDF>

<sup>2</sup> [https://uk-air.defra.gov.uk/assets/documents/reports/bap-nickel-measures/bap\\_eastmidlands\\_UK0032\\_reportonmeasures\\_2013.pdf](https://uk-air.defra.gov.uk/assets/documents/reports/bap-nickel-measures/bap_eastmidlands_UK0032_reportonmeasures_2013.pdf)

<sup>3</sup> <http://cdr.eionet.europa.eu/gb/eu/aqd>

<sup>4</sup> <http://uk-air.defra.gov.uk/library/annualreport/index>

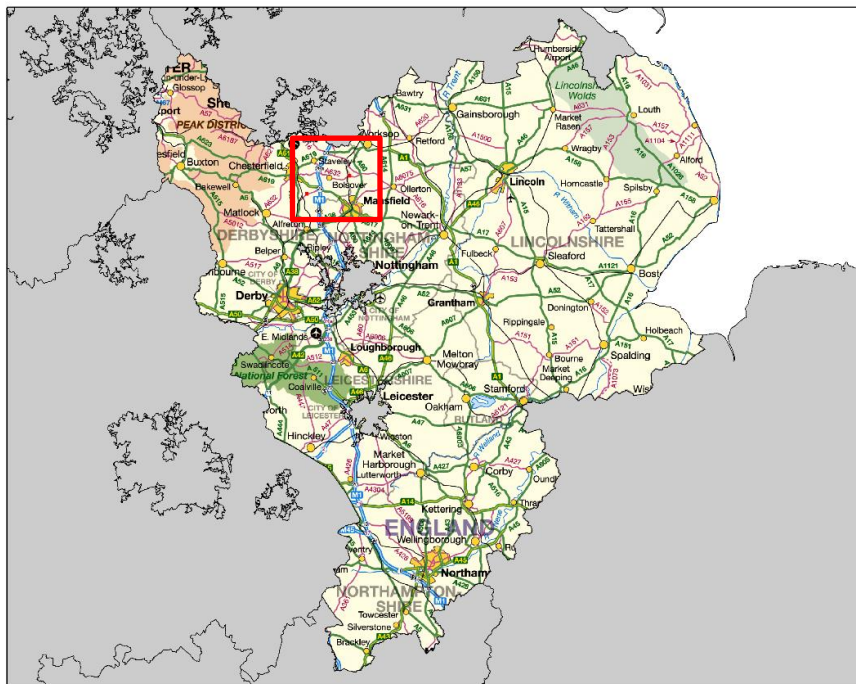
**Table 1. Area exceeding B[a]P target value in 2014 and associated population for East Midlands zone UK0032**

Zone code	Zone Name	Area exceeding TV (km <sup>2</sup> )	Population exceeding TV
UK0032	East Midlands	2	3376

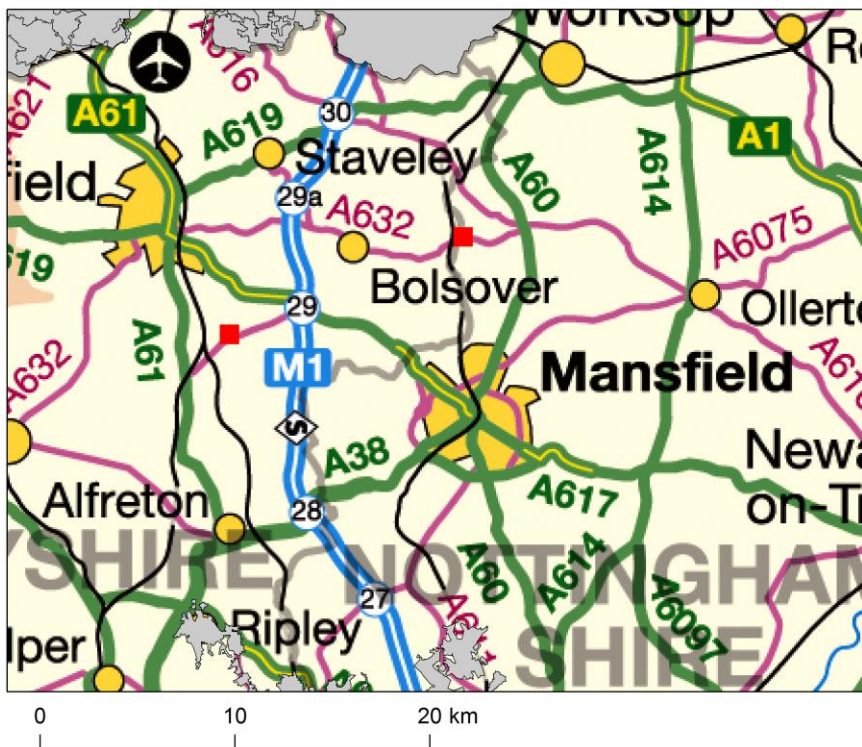
Figure 1a shows the locations of the exceedances in the context of the zone as a whole. Figure 1b shows the part of the zone including the exceedances in more detail.

**Figure 1. Location of exceedance of the B[a]P target value on 2014 in East Midlands zone UK0032. Areas of the zone in exceeding grid squares are marked red.**

**a) The whole zone**



b) The exceedance locations at higher spatial resolution



An initial source apportionment was carried out and this analysis identified one exceedance situation within this zone

- East Midlands [B[a]P\_UK0032\_2014\_1] related to domestic emissions (area of exceedance 2 km<sup>2</sup>)

This report includes a description of the exceedance situation, including maps, information on source apportionment and a list of measures already taken or to be taken. Information on measures is reported within e-Reporting dataflow K<sup>5</sup>.

<sup>5</sup> <http://cdr.eionet.europa.eu/gb/eu/aqd>

## 2 Exceedance situation East Midlands [B[a]P\_UK0032\_2014\_1] related to domestic emissions

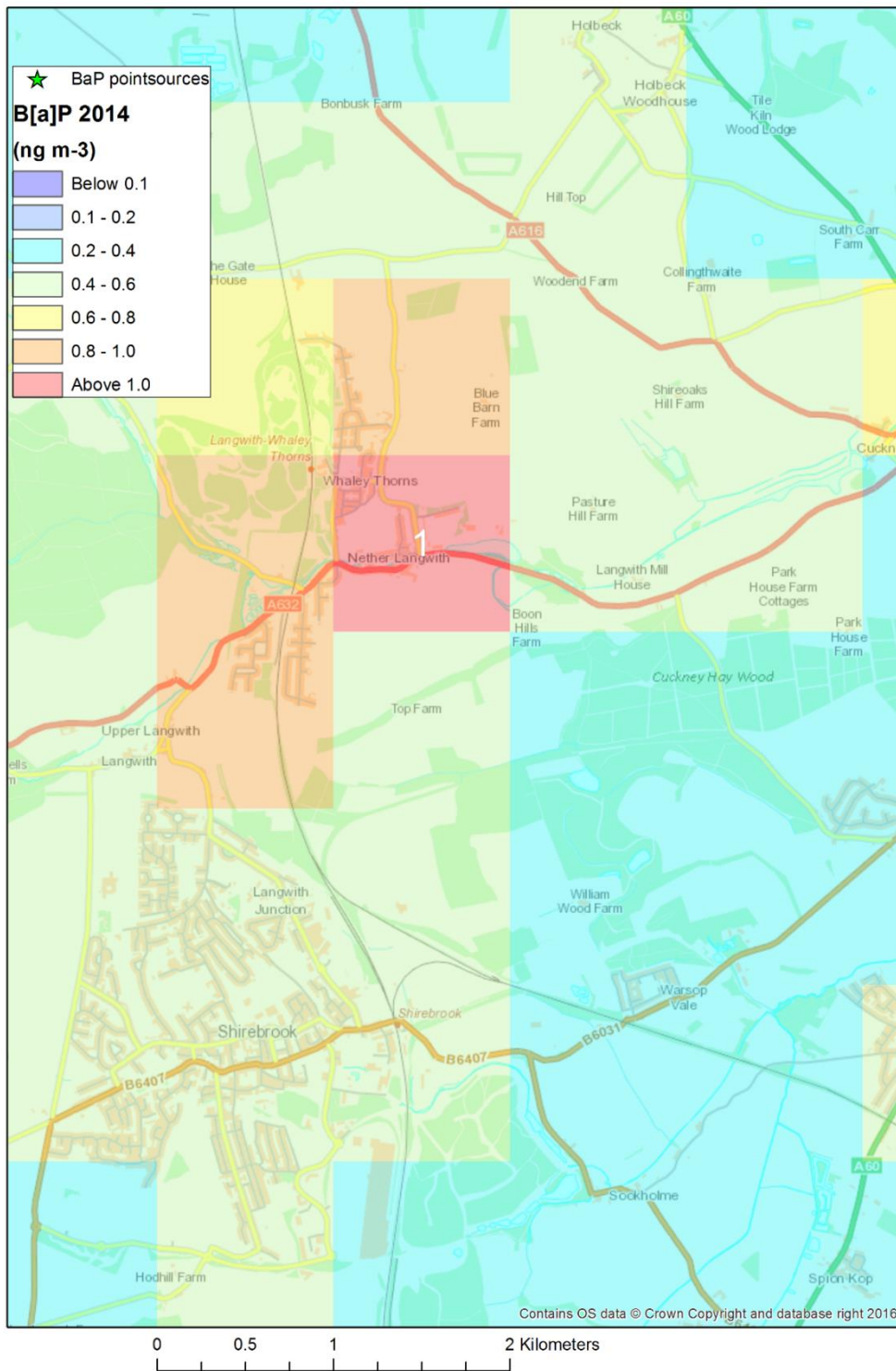
### 2.1 Description of exceedance

This exceedance situation has an area of 2 km<sup>2</sup> and has a resident population of 3,376 and consists of two individual grid squares. Figures 2a and 2b show the locations of the exceedance situation in detail. The exceeding grid squares are numbered in these figures and in subsequent tables for easy reference. The exceeding grid squares are:

- 1 km<sup>2</sup> in Nether Langwith, near Mansfield on the border between Nottinghamshire and Derbyshire (numbered exceeding grid square 1 ) with a resident population of 1,070
- 1 km<sup>2</sup> in North Wingfield, near Chesterfield in Derbyshire (numbered exceeding grid square 2 ) with a resident population of 2,306

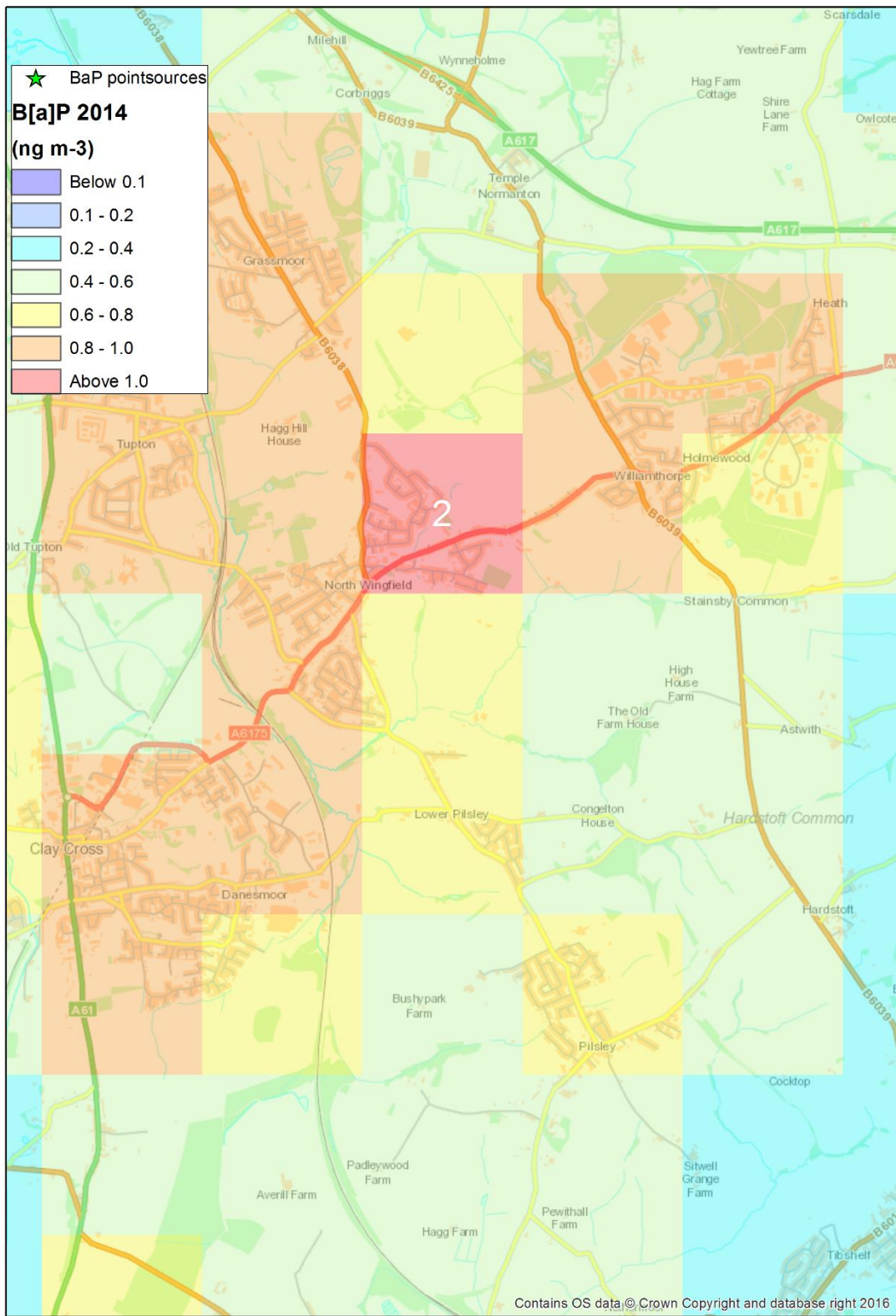
Figure 2 Exceedance situation East Midlands [B[a]P\_UK0032\_2014\_1]. Exceeding grid squares are marked red.

a) Nether Langwith





## b) North Wingfield



## 2.2 Source apportionment

Table 2 provides a breakdown of the main emission sources (source apportionment) that have contributed to the grid squares in this exceedance situation, highlighting the significant contribution from commercial and residential sources. The penultimate column is the total from all emission sources. The values in this column have been rounded to 1 decimal place for consistency with the values used in the compliance assessment. The values in the other columns have not been rounded. The other shaded columns are the subtotals for the regional, urban background and local contributions. Detailed source apportionment analysis shows that domestic coal and domestic wood combustion are the main sources contributing, sources regulated by local authorities.

**Table 2. Source apportionment for exceedance situation East Midlands [B[a]P\_UK0032\_2013\_1]. Annual mean B[a]P concentration (ngm<sup>-3</sup>)**

Grid square number	OS easting (m)	OS Northing (m)	Zone	a) Regional background: Total	b) Urban background increment: Total	Urban background increment: Traffic	Urban background increment: Industry including heat and power production	Urban background increment: commercial and residential	Urban background increment: Shipping	Urban background increment: Off road mobile machinery	Urban background increment: Other	c) Local increment: Total	Local increment: Industry including heat and power production	Total for all emission sources (a+b+c)	Resident population
1	453500	370500	32	n/a	1.096	0.004	0.011	1.002	0.000	0.001	0.077	0.003	0.003	1.1	1070
2	441500	365500	32	n/a	1.070	0.006	0.013	0.971	0.000	0.003	0.078	0.000	0.000	1.1	2307

## 2.3 Measures

### North Wingfield

North Wingfield is part of North East Derbyshire District Council. It has a smoke control area (SCA) that covers the area identified in the compliance report Air Pollution in the UK 2014 as being in exceedance. As set out in the B[a]P overview report (section 3.1), SCAs are designated as such by local authorities under the Clean Air Act (1993) and within these areas it is an offence to burn unauthorised fuels unless using an appliance that has been legally exempted for use with these fuels within an SCA. These appliances have been tested to show that they emit none or very little smoke. Those found in breach of SCA requirements can face financial criminal penalties; the level of these fines can vary depending on the extent and length of the breach.

Details of this SCA are available on the Council's web site<sup>6</sup>. This SCA was not included in the emission inventory within the model that was used for the assessment of compliance in 2014. However, as part of the improvements indicated in the overview document (section 3.1, improvements to modelling), this smoke control area will form part of the assessment in future years. As such a measure is already in place that mitigates the emissions of B[a]P from domestic coal and wood burning in this area and compliance reporting in future years will be expected to show no exceedance in this area.

North East Derbyshire District Council have confirmed that the SCA remains in place, and is a measure aimed at mitigating emissions of BaP from domestic sources. It is expected that the inclusion of the SCA in future emission inventory within the model used for assessment of compliance, should show no further exceedance in this area.

Updated information on the locations of SCA across the UK and a revised method for assigning solid fuel use to homes without central heating were included in the NAEI emissions maps for 2014 that were used for the 2015 compliance assessment for B[a]P. This assessment confirmed that there was no exceedance in this area in 2015.

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<sup>6</sup><http://www.ne-derbyshire.gov.uk/environment-planning/environmental-health/pollution/smoke-control-areas/>

## Nether Langwith

Nether Langwith in Nottinghamshire has a small modelled exceedance. Nether Langwith is within the boundaries of Bassetlaw District Council. It is not covered by a smoke control area and has traditionally been associated with domestic solid fuel burning due to its close working links in the past to the local deep coal mines, where a 'coal allowance' formed part of workers' earnings. The local demographic is now more diverse and while the burning of solid fuel is still a popular choice in the coal-towns and villages of North Nottinghamshire, the number of people who regularly receive free coal is significantly reduced. While solid fuel use has continued, in part due to the heating options available within existing housing stock, in discussions with the local authority and local coal merchants, evidence suggests that the popularity of ordinary house coal (which is more polluting) has significantly reduced as the cleanliness and convenience of smokeless solid fuel has taken over. The area is also connected to the gas grid.

Bassetlaw District Council is a member of the Nottinghamshire and Derbyshire Local Authority Energy Partnership, a non-statutory partnership of all 20 councils across Nottinghamshire and Derbyshire to achieve the requirements of the Home Energy and Conservation Act 1995. One of the aims of that partnership is to 'promote low carbon sources of heating and power'. The schemes and initiatives introduced as part of that partnership agreement covered the Nether Langwith area and many home owners have taken up the various home-improvements made available under the scheme. Further information is available on the Council's web site<sup>7</sup>.

Householders in Nether Langwith will also have been able to apply for support to make energy efficiency improvements to their homes through the Warmfront initiative that is available through energy companies and other Government schemes that have been available since 2013.

Census data from 2011 suggested that 36% of homes in Nether Langwith have solid fuel central heating. This figure was used within the emission inventory that was used in the model that identified an exceedance for B[a]P. The Local Authority Air Quality Officer has carried out investigations in the Nether Langwith area including speaking to residents and the local coal merchants. Following these discussions, the local authority is of the view that this figure is now lower – potentially below 30% - as home owners in the area have taken advantage of the heating/energy efficiency schemes available to them and the reduced reliance in the local area on the 'free coal' scheme.

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<sup>7</sup> <https://www.bassetlaw.gov.uk/media/108219/hecareport.pdf>

The modelled exceedance also assumes that ordinary house coal is used in those homes that have solid fuel heating. As set out above, discussions with the local coal merchants indicate that the burning of coal is no longer the predominant fuel amongst those with solid fuel heating.

With the changes already made through household energy improvements and the reduced reliance on coal in the area, it is expected that in future years this area will have achieved compliance with the TV.

Updated information on the locations of SCA across the UK and a revised method for assigning solid fuel use to homes without central heating were included in the NAEI emissions maps for 2014 that were used for the 2015 compliance assessment for B[a]P. This assessment confirmed that there was no exceedance in this area in 2015.