



Department
for Environment
Food & Rural Affairs

Report on measures for 2015 exceedance of the Target Value for Benzo[a]pyrene in North East non-agglomeration zone (UK0036)

December 2017



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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

With technical input from Ricardo Energy & Environment

www.gov.uk/defra

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1. Introduction

1.1 Context

Under the EU Directive 2004/107/EC¹, 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 Member 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 previously reported in 2013 and 2014 in the North East non-agglomeration zone and a report on measures was published detailing the exceedance and the measures in place².

This document reports the exceedance situation for 2015 reflecting the more recent assessment and updating the 2013 and 2014 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 North East zone identified within the 2015 UK air quality assessment. Exceedances within this zone were identified on the basis of model results providing supplementary information for the assessment in addition to the results from fixed monitoring stations. This exceedance was reported via e-Reporting dataflow G³ on attainment and Air Pollution in the UK⁴.

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

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

² https://uk-air.defra.gov.uk/assets/documents/reports/bap-nickel-measures/bap_northeast_UK0036_reportonmeasures_2014.pdf

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

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

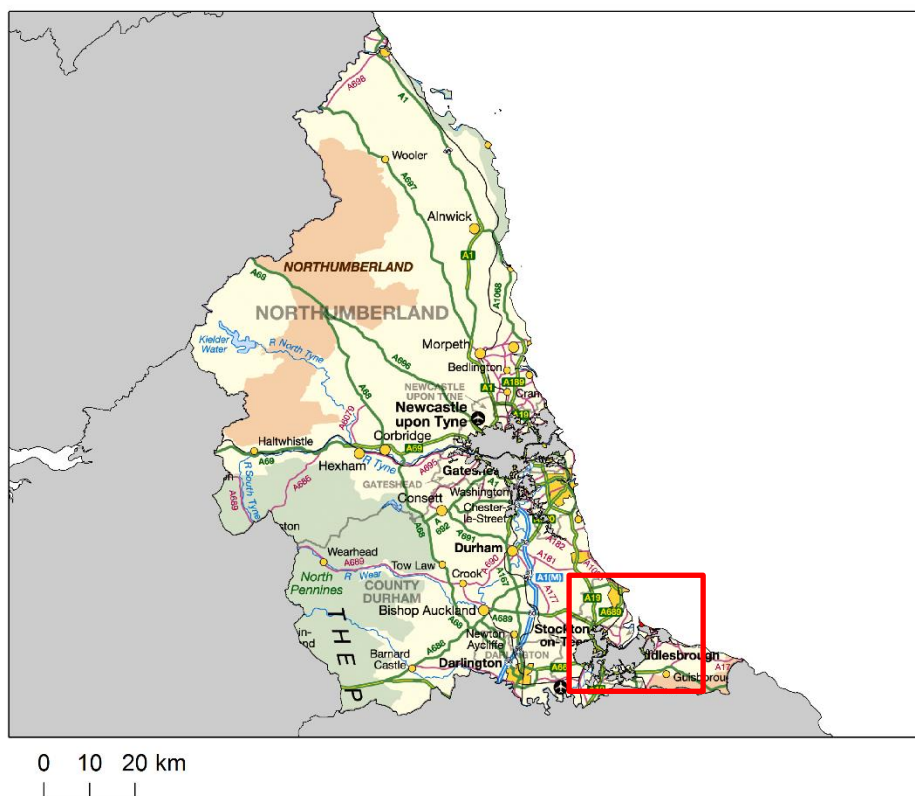
Table 1. Area exceeding B[a]P target value in 2015 and associated population for zone UK0036

Zone code	Zone Name	Area exceeding TV (km ²)	Population exceeding TV
UK0036	North East	3	2

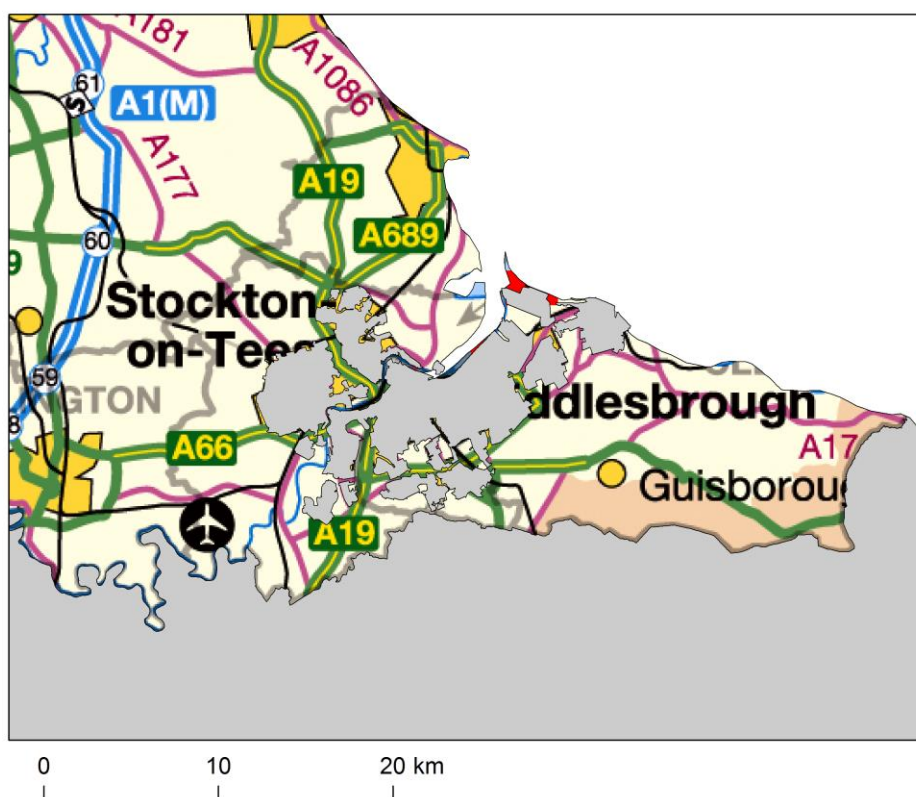
Figure 1a shows the locations of the exceedances in the context of the zone as a whole. Figure 1b shows the part of the zone including the exceedances in more detail.

Figure 1. Location of exceedance of the B[a]P target value on 2015 in zone UK0036 North East. 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 has identified a single exceedance situation in this zone:

- North East [B[a]P_UK0036_2015_1] related to industrial emissions (area of exceedance 3 km²)

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 K⁵.

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

2 Exceedance situation North East [B[a]P_UK0036_2015_1] related to industrial emissions

2.1 Description of exceedance

This exceedance situation has an area of exceedance of 3 km² and consists of grid squares adjacent to part of exceedance situation Teesside Urban Area [B[a]P_UK0013_2015_1] close to Redcar, in Redcar and Cleveland. Figure 2 shows the location of the exceedance situation in detail. The exceeding grid squares are numbered in Figure 2 and in subsequent tables for easy reference. There is no resident population in two of the grid squares, which are largely within the SSI Redcar steelworks industrial complex area or open land with no population. The grid square identified as exceeding grid square 3 has a resident population of 2 and also includes part of a golf course. Table 2 lists the exceeding grid squares and the resident population. This exceedance situation is adjacent to and shares common sources with the exceedance situation [Teesside Urban Area \[B\[a\]P_UK0013_2015_1\]](#).

Figure 2 also shows the locations of the key industrial sources. The area shown on this map includes grid squares assigned to both the Teesside Urban Area (UK0013) and North East (UK0036) zones. The grid squares assigned to the Teesside Urban Area zone are shown as hatched. Thus the hatched red grid squares correspond to exceedance situation Teesside Urban Area [B[a]P_UK0013_2015_1] and the non-hatched red grid squares correspond to exceedance situation North East [B[a]P_UK0036_2015_1]. The exceeding grid squares within this exceedance situation are numbered and the numbers correspond to those in subsequent tables.

Figure 2. Exceedance situation North East [B[a]P_UK0036_2015_1]. Exceeding grid squares are marked red. Locations of coke works at Redcar and South Bank and sinter plant at Teesside are also shown. Non-hatched grid squares are those assigned to North East Zone UK0036. Hatched grid squares are assigned to Teesside Urban Area Zone UK0013 and do not form part of this exceedance situation.

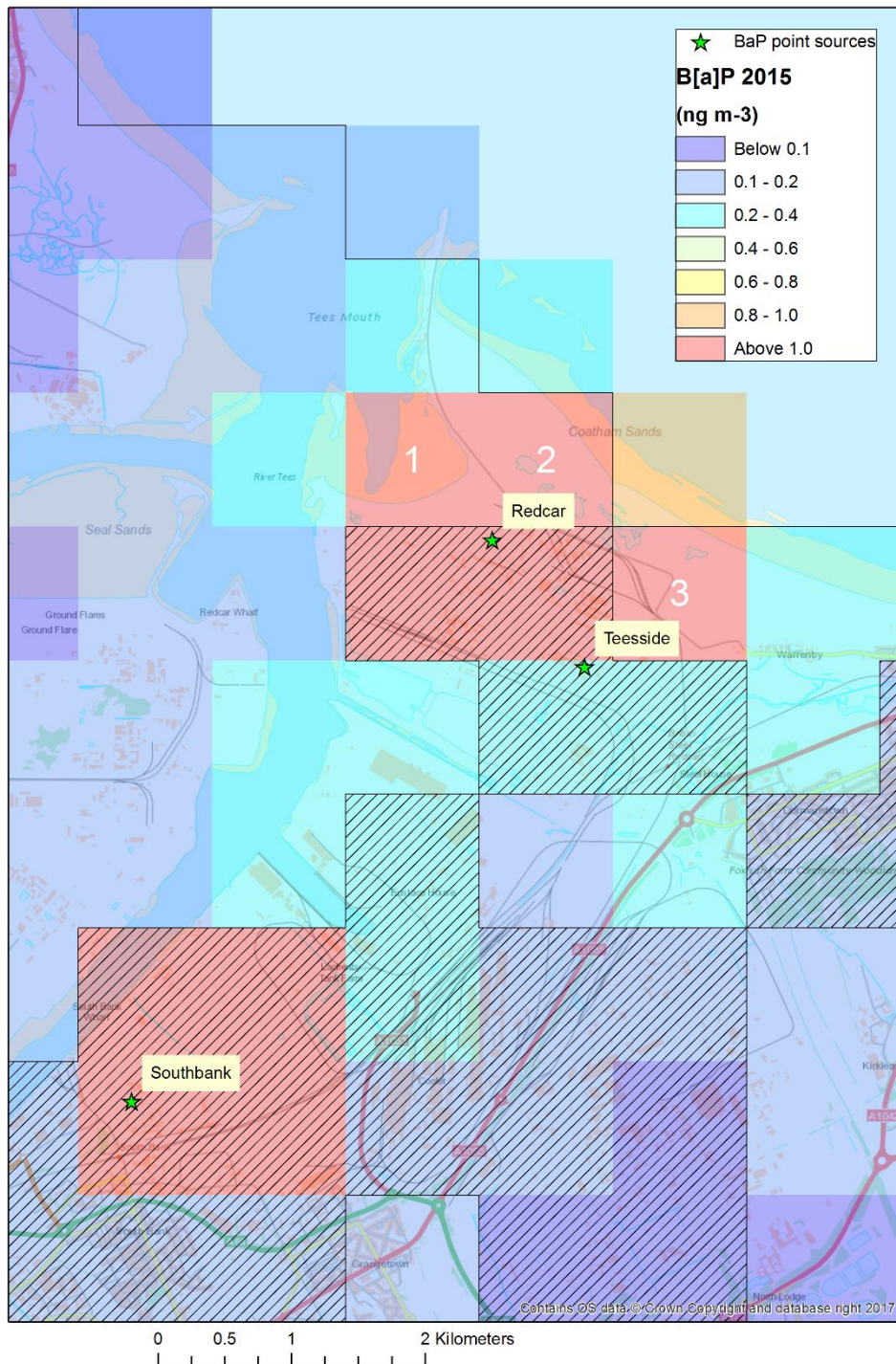


Table 2. Exceeding grid squares for exceedance situation BaP_UK0036_2015_1.

Grid square number	Resident population	Notes
1	0	Partly steelworks industrial complex
2	0	Partly steelworks industrial complex
3	2	Partly steelworks industrial complex, golf course

2.2 Source apportionment

Table 3 provides a breakdown of the main emission sources (source apportionment) that have contributed to the grid squares in this exceedance situation. It is clear that industrial sources are the main source associated with this exceedance situation. 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. Table 4 gives a more detailed source apportionment indicating how the separate industrial processes contribute to the total industrial figure and shows that the coke ovens at Redcar are the main source associated with this exceedance situation.

Table 3. Source apportionment for exceedance situation North East [B[a]P_UK0036_2015_1]. Annual mean B[a]P concentration (ngm⁻³)

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	455500	526500	36	n/a	0.016	0.001	0.003	0.004	0.002	0.000	0.005	1.708	1.708	1.7	0
2	456500	526500	36	n/a	0.019	0.001	0.006	0.005	0.001	0.001	0.006	4.857	4.857	4.9	0
3	457500	525500	36	n/a	0.032	0.001	0.020	0.004	0.001	0.001	0.005	1.343	1.343	1.4	2

Table 4. Detailed source apportionment for industrial sources only for exceedance situation North East [B[a]P_UK0036_2015_1]. Annual mean B[a]P concentration (ngm⁻³)

Grid square number	OS easting (m)	OS Northing (m)	Zone	Redcar coke ovens	South Bank coke ovens	Teesside, other plant	Local increment: Industry including heat and power production
1	455500	526500	36	1.658	0.049	0.001	1.708
2	456500	526500	36	4.802	0.055	0.001	4.857
3	457500	525500	36	1.268	0.073	0.002	1.343

Footnote to Table 3: South Bank Coke Ovens stopped production during September 2015. Redcar Coke Ovens and Teesside sinter plant stopped production during October 2015.

A revised modelling methodology incorporating a finer spatial scale for dispersion modelling of all coke ovens in the UK and revision to the emissions rate for the coke ovens at Scunthorpe have been adopted for the 2015 compliance assessment for B[a]P.

2.3 Measures

The installation relating to the identified exceedance was the Sahaviriya Steel Industries (SSI UK) owned steelworks near Redcar and its associated coke ovens. SSI UK placed the steelworks into liquidation in early October 2015 and the Official Receiver announced on 12th October 2015⁶ that the steelworks and its coke ovens would be closed down. Future modelled assessments of this zone will reflect the closure of the plant and the zone will be expected to show compliance with the TV.

The measures set out in Table 5 reflect the changes at the Teesside industrial site.

⁶ <https://www.gov.uk/government/news/redcar-coke-ovens-to-be-closed>

Table 5: Table of measures taken at Teesside industrial site

Measure code	Description	Classification	Implementation dates	Other information		Comment	
SSI1	Closure of Teesside Integrated Steel Works	Permit systems and economic instruments: other measure	Start:	2015	Source affected:	Industry including heat and power production	South Bank Coke Ovens stopped production during September 2015. Sahaviriya Steel Industry (SSI UK) near Redcar and its associated Coke Ovens and Teesside sinter plant stopped production during October 2015.
			Expected end:	2015			
			Status:	Implementation			
			Spatial scale:	Local			
			Cost:				
Indicator:							
			Target emissions reduction:				
SSI2	Variation made to permit	Permit systems and economic	2016	As above	As above	Permit now requires the installation to meet BAT AELs or	

		instruments: other measure				equivalent so major improvements required before coke ovens could be restarted
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