Department
for Environment
Food & Rural Affairs

# Report on measures for 2017 exceedance of the Target Value for Benzo[a]pyrene in South Wales non-agglomeration zone (UK0041)

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# 1. Introduction

## 1.1 Context

Under the EU Directive 2004/107/EC[1], 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 reported in 2013, 2014, 2015 and 2016 in the South Wales non-agglomeration zone and a report on measures was published detailing the exceedance and the measures in place[2].

This document reports the exceedance situation for 2017 reflecting the more recent assessment and updating the 2013, 2014, 2015 and 2016 reports 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 South Wales zone identified within the 2017 UK air quality assessment. Exceedances within this zone were identified on the basis of model results providing supplementary information. This exceedance was reported via e-Reporting dataflow G[3] on attainment and Air Pollution in the UK[4].

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/library/bap-nickel-measures
[3] http://cdr.eionet.europa.eu/gb/eu/aqd
[4] http://uk-air.defra.gov.uk/library/annualreport/index

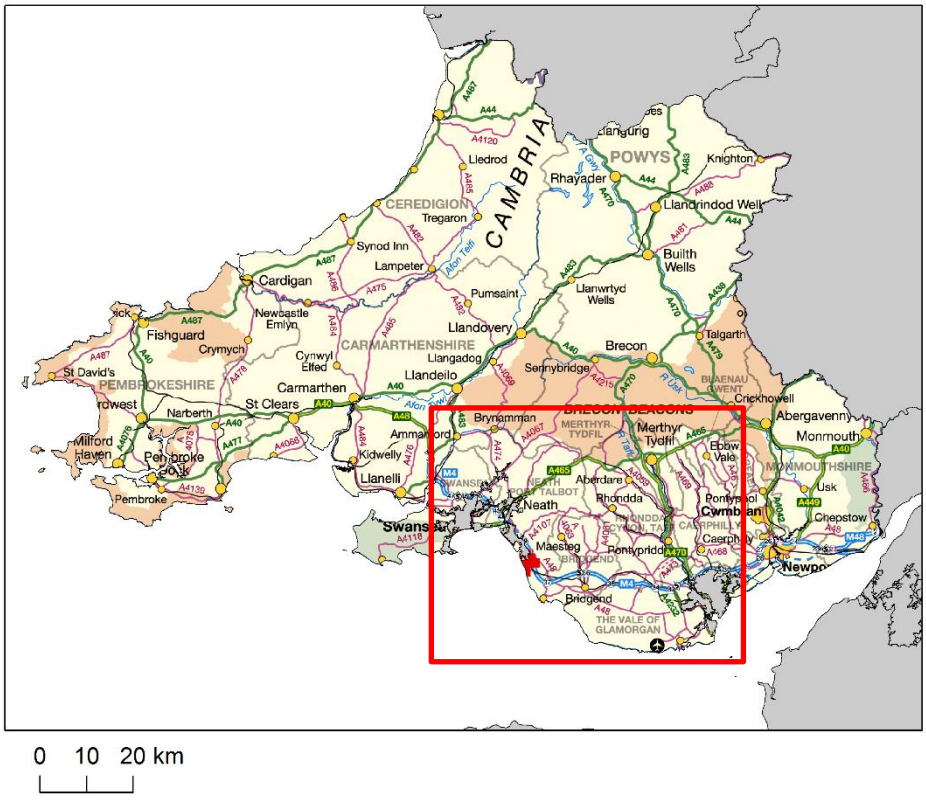
**Table 1. Area exceeding B[a]P target value in 2017 and associated population for South Wales zone UK0041**

| Zone code | Zone Name | Area exceeding TV ($km^2$) | Population exceeding TV |
|---|---|---|---|
| UK0041 | South Wales | 15 | 252 |

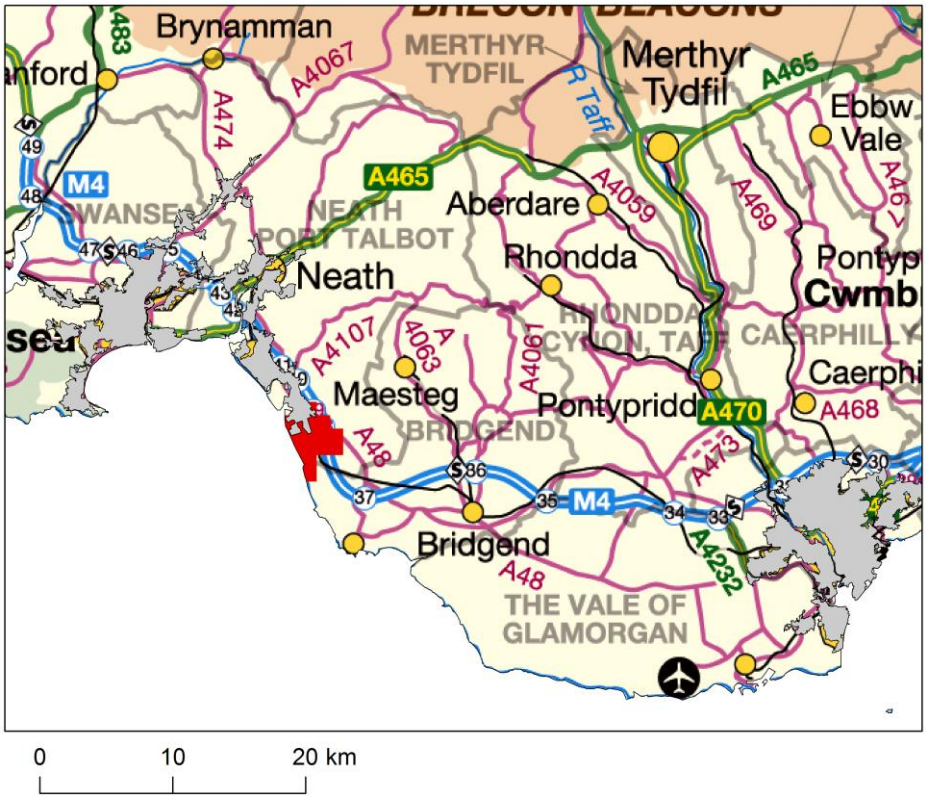
Figure 1a shows the locations of the exceedances in the context of the zone as a whole. Figure 1b shows the part of the zone including the exceedances in more detail.

**Figure 1. Location of exceedance of the B[a]P target value during 2017 in South Wales zone UK0041. 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:

- South Wales [B[a]P_UK0041_2017_1] related to industrial emissions (area of exceedance 15 km$^2$)

Following the approach developed for the previous report on measures for 2014, a subsequent more detailed modelling assessment was carried out for 2015, 2016 and 2017 using additional local data. Whereas the 2014 assessment concluded that there was unlikely to be an exceedance of the TV outside the boundary of the industrial site in 2014, the more recent assessment indicate that it was likely that there was an exceedance of the TV at locations close to the industrial site in 2015, 2016 and again in 2017. This change has been linked to the adoption of an improved assessment method for fugitive emissions which has led to a significant increase in reported coke ovens emission in recent years and is discussed later in this report. 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[5].

[5] http://cdr.eionet.europa.eu/gb/eu/aqd

# 2 Exceedance situation South Wales [B[a]P_UK0041_2017_1] related to industrial emissions

## 2.1 Description of exceedance

This exceedance situation has an area of exceedance of 15 $km^2$ in Margam in Neath Port Talbot. Figure 2 shows the location of the exceedance situation, as predicted by the national model in detail. Figure 3 shows the location of the exceedance situation in finer detail based on a more detailed, local modelling assessment. The exceeding grid squares are numbered in Figure 2 and in subsequent tables for easy reference. There is no resident population in 12 of the grid squares. The resident population associated with the exceedance situation identified by the national modelling was 252. This exceedance situation is adjacent to and shares common sources with the exceedance situation Swansea Urban Area [B[a]P UK0027_2017_1].

Figure 2 also shows the locations of the monitoring site associated with the exceedance situation (Port Talbot Margam, which is in Swansea Urban Area zone UK0027) and the locations of the key industrial sources. The area shown on this map includes grid squares assigned to both the Swansea Urban Area (UK0027) and South Wales (UK0041) zones. The grid squares assigned to the Swansea Urban Area zone and exceedance Swansea Urban Area [B[a]P_UK0027_2017_1]- are shown as hatched and the non-hatched red grid squares correspond to this exceedance situation, which is South Wales [B[a]P_UK0041_2017_1].

Table 2 lists the measured concentrations of B[a]P in this zone since 2008. The measured concentrations in this zone were below the TV in all years.  The Newport monitoring station is about 55 km from the modelled exceedance situation.

**Table 2. Measured annual mean B[a]P concentrations in South Wales zone UK0041 from 2008 to 2018 ($ngm^{-3}$). (Percentage data capture is shown in brackets).**

| Station (EoI code) | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Newport (GB0962A) | 0.34 (99) | 0.22 (89) | 0.25 (84) | 0.14 (94) | 0.23 (96) | 0.21 (97) | 0.21 (100) | 0.19 (99) | 0.25 (100) | 0.19 (61) | 0.16 (74) |

Table 3 lists the exceeding grid squares and the resident population. The grid squares also identified as exceeding in the more detailed local modelling are highlighted. The local modelling identified as exceeding 13 of the 15 grid squares identified by the national modelling.

The measurements at Port Talbot Margam were less than the TV. In modelling the spatial coverage of B[a]P concentrations, the national scale model predictions were calibrated to match the measurements. The calibrated predictions exceeded the target in the vicinity of the steelworks industrial complex in Port Talbot due to industrial emissions. 1 km grid squares have been classified as exceeding the TV if at least nine 100 m grid squares exceed the TV or at least one 100 m grid square exceeds and there is residential population in the exceeding 100 m grid squares. A concentration value was defined for each 1 km grid square from the fine scale modelling as the mean of the 100 m grid squares exceeding the TV within that 1 km grid square. Subsequent finer scale modelling that included a more detailed assessment also predicted exceedances of the TV at locations close to the industrial site in 2015, 2016 and 2017. However, a slightly smaller area of exceedance was predicted, as shown in Figure 3. This is due to the significant increase in the coke ovens emission in 2015, 2016 and 2017 due to changes in the method used to estimate fugitive emissions. The assessment is discussed in more detail in section 2.3

**Figure 2. Exceedance situation South Wales [B[a]P_UK0041_2017_1]. Exceeding grid squares are marked red. Locations of coke works at Morfa and sinter plant at Port Talbot are also shown. Non-hatched grid squares are those assigned to South Wales zone UK0041. Hatched grid squares are assigned to Swansea Urban Area zone UK0027 and do not form part of this exceedance situation.**

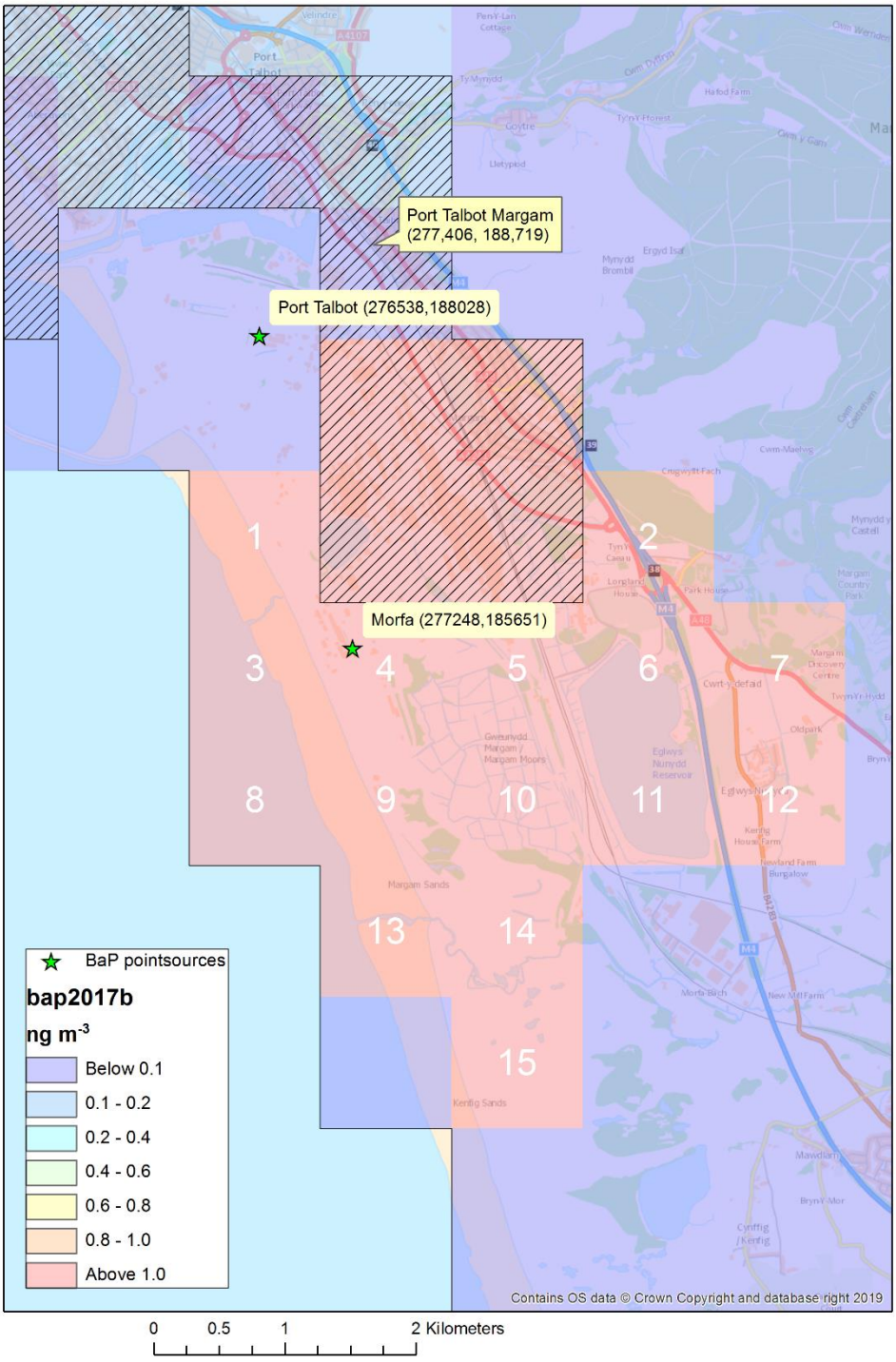


**Table 3. Exceeding grid squares for exceedance situation BaP_UK0041_2017_1. * denotes grid squares also identified as exceeding in the detailed local modelling**

| Grid square number | Resident population | Notes |
|---|---|---|
| 1* | 0 | Steelworks industrial complex |
| 2* | 71 | Margam Country Park |
| 3* | 0 | Steelworks industrial complex |
| 4* | 0 | Steelworks industrial complex |
| 5* | 0 | Steelworks industrial complex, industrial land |
| 6* | 0 | Industrial land, reservoir |
| 7 | 32 | Margam Country Park |
| 8* | 0 | Sea |
| 9* | 0 | Partly steelworks industrial complex |
| 10* | 0 | Partly steelworks industrial complex |
| 11* | 0 | Reservoir |
| 12 | 149 | St David's Park |
| 13* | 0 | Partly steelworks industrial complex |
| 14* | 0 | Partly steelworks industrial complex |
| 15* | 0 | Open land |

## 2.2 Source apportionment

Table 4 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 industrial 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. Table 5 gives a more detailed source apportionment indicating how the separate industrial processes contribute to the total industrial figure. This shows that the coke ovens at Morfa are the main sources associated with this exceedance situation.

**Table 4. Source apportionment for exceedance situation South Wales [B[a]P_UK0041_2017_1]. Annual mean B[a]P concentration (ngm$^{-3}$)**

| Grid square number | OS easting (m) | OS Northing (m) | Zone | **a) Regional background** | **b) Urban background increment:** | Urban background | Urban background | Urban background | Urban background | Urban background | Urban background | **c) Local increment: Total** | Local increment: Industry | **Total for all emission** | Resident population |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 276500 | 186500 | 41 | n/a | 0.042 | 0.000 | 0.021 | 0.018 | 0.000 | 0.000 | 0.002 | 2.528 | 2.528 | 2.570 | 0 |
| 2 | 279500 | 186500 | 41 | n/a | 0.083 | 0.001 | 0.050 | 0.025 | 0.000 | 0.002 | 0.005 | 1.257 | 1.257 | 1.341 | 71 |
| 3 | 276500 | 185500 | 41 | n/a | 0.034 | 0.000 | 0.017 | 0.015 | 0.000 | 0.000 | 0.002 | 4.630 | 4.630 | 4.664 | 0 |
| 4 | 277500 | 185500 | 41 | n/a | 0.039 | 0.000 | 0.020 | 0.016 | 0.000 | 0.000 | 0.003 | 14.363 | 14.363 | 14.402 | 0 |
| 5 | 278500 | 185500 | 41 | n/a | 0.046 | 0.000 | 0.024 | 0.017 | 0.000 | 0.000 | 0.003 | 2.250 | 2.250 | 2.295 | 0 |
| 6 | 279500 | 185500 | 41 | n/a | 0.050 | 0.001 | 0.026 | 0.019 | 0.000 | 0.001 | 0.004 | 1.213 | 1.213 | 1.264 | 0 |
| 7 | 280500 | 185500 | 41 | n/a | 0.050 | 0.001 | 0.024 | 0.020 | 0.000 | 0.000 | 0.006 | 1.090 | 1.090 | 1.140 | 32 |
| 8 | 276500 | 184500 | 41 | n/a | 0.029 | 0.000 | 0.014 | 0.013 | 0.000 | 0.000 | 0.002 | 1.610 | 1.610 | 1.639 | 0 |

| | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 9 | 277500 | 184500 | 41 | n/a | 0.031 | 0.000 | 0.015 | 0.014 | 0.000 | 0.000 | 0.002 | 3.259 | 3.259 | 3.291 | 0 |
| 10 | 278500 | 184500 | 41 | n/a | 0.035 | 0.000 | 0.017 | 0.015 | 0.000 | 0.000 | 0.004 | 1.694 | 1.694 | 1.729 | 0 |
| 11 | 279500 | 184500 | 41 | n/a | 0.040 | 0.001 | 0.019 | 0.016 | 0.000 | 0.000 | 0.003 | 1.073 | 1.073 | 1.113 | 0 |
| 12 | 280500 | 184500 | 41 | n/a | 0.051 | 0.001 | 0.024 | 0.021 | 0.000 | 0.000 | 0.005 | 1.073 | 1.073 | 1.124 | 149 |
| 13 | 277500 | 183500 | 41 | n/a | 0.027 | 0.000 | 0.013 | 0.012 | 0.000 | 0.000 | 0.002 | 1.483 | 1.483 | 1.510 | 0 |
| 14 | 278500 | 183500 | 41 | n/a | 0.030 | 0.000 | 0.014 | 0.013 | 0.000 | 0.000 | 0.002 | 1.541 | 1.541 | 1.571 | 0 |
| 15 | 278500 | 182500 | 41 | n/a | 0.027 | 0.000 | 0.013 | 0.012 | 0.000 | 0.000 | 0.002 | 1.138 | 1.138 | 1.165 | 0 |

**Table 5. Detailed source apportionment for industrial sources only for exceedance situation South Wales [B[a]P_UK0041_2017_1]. Annual mean B[a]P concentration ($ngm^{-3}$)**

| Grid square number | OS easting (m) | OS Northing (m) | Zone | Morfa coke ovens | Port Talbot, other plant | Local increment: Industry including heat and power production |
|---|---|---|---|---|---|---|
| 1 | 276500 | 186500 | 41 | 2.528 | 0.000 | 2.528 |
| 2 | 279500 | 186500 | 41 | 1.257 | 0.000 | 1.257 |
| 3 | 276500 | 185500 | 41 | 4.629 | 0.000 | 4.630 |
| 4 | 277500 | 185500 | 41 | 14.363 | 0.000 | 14.363 |
| 5 | 278500 | 185500 | 41 | 2.249 | 0.000 | 2.250 |
| 6 | 279500 | 185500 | 41 | 1.213 | 0.000 | 1.213 |
| 7 | 280500 | 185500 | 41 | 1.089 | 0.001 | 1.090 |
| 8 | 276500 | 184500 | 41 | 1.610 | 0.000 | 1.610 |
| 9 | 277500 | 184500 | 41 | 3.259 | 0.000 | 3.259 |
| 10 | 278500 | 184500 | 41 | 1.694 | 0.000 | 1.694 |
| 11 | 279500 | 184500 | 41 | 1.073 | 0.000 | 1.073 |
| 12 | 280500 | 184500 | 41 | 1.072 | 0.000 | 1.073 |
| 13 | 277500 | 183500 | 41 | 1.482 | 0.000 | 1.483 |

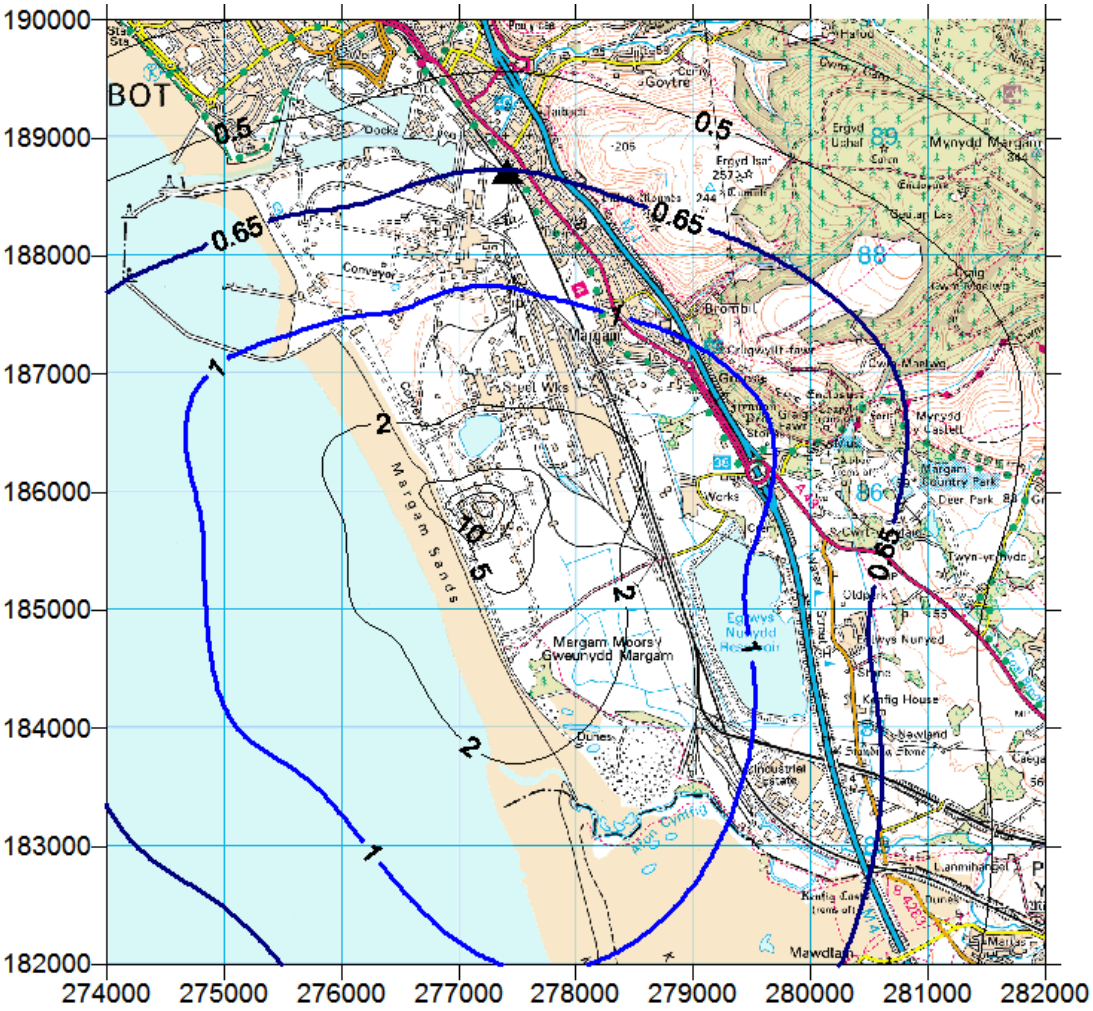
| | | | | | | |
|---|---|---|---|---|---|---|
| 14 | 278500 | 183500 | 41 | 1.540 | 0.000 | 1.541 |
| 15 | 278500 | 182500 | 41 | 1.138 | 0.000 | 1.138 |

## 2.3 A detailed local assessment

In order to assess this exceedance in more detail, a dispersion modelling assessment was undertaken following a similar approach to that taken for 2016, making use of additional local data. The background concentration for this assessment was derived from local measurements rather than from a model, as was the case for the national modelling assessment. The detailed assessment indicated that off-site concentrations of B[a]P exceeded the TV in 2015, 2016 and 2017, in contrast to the 2014 assessment, which did not predict an exceedance of the TV outside the boundaries of the industrial site. The increase in predicted B[a]P concentration is due to changes in the method for estimating emissions from the coke ovens. B[a]P emission from the coke ovens in 2017 was estimated to be 79 kg using the new assessment method. Section 2.4 provides more detail on coke oven emission sources and measures that have been, or will be, implemented to tackle them.

Figure 3 plots the sum of the process contribution, due to emissions from the steelworks complex, and the ambient B[a]P background, derived from the measurement at the Port Talbot Margam monitoring site, which is indicated as a filled black triangle. The blue contour indicates the predicted environmental concentration of 1ng/m$^3$ and shows that it is likely that the TV would have been exceeded beyond the industrial site boundary.

**Figure 3. Predicted environmental concentration (PEC) of B[a]P (ng/m$^3$) for 2017.**




## 2.4 Measures

The main overview report contains more information on how industrial sites are regulated. There are no specific Best Available Techniques (BAT) conclusions designed to reduce B[a]P under the Industrial Emissions Directive (EU Directive 2010/75/EU), in either the Coke Ovens or Sinter plant which are the main sources of this pollutant. BAT looks to control emissions in general and the techniques required will also affect B[a]P concentrations. The iron and steel BREF[6] contains stringent requirements for iron and steel works to significantly

[6] http://eippcb.jrc.ec.europa.eu/reference/BREF/IS_Adopted_03_2012.pdf

reduce their fugitive emissions, including Polycyclic Aromatic Hydrocarbons (PAH) (B[a]P is a pollutant from this chemical group). The reduction of emissions of polychlorinated dibenzodioxins/furans (PCDD/F) and polychlorinated biphenyls (PCB) by utilising lignite injection at the sinter plant will also result in a reduction of B[a]P. Monitoring and further modelling as the techniques are employed will demonstrate the scale of the reduction. The regulator is of the view that Tata will be at BAT within the timescales required by the Industrial Emissions Directive or within the periods of any agreed derogations for the Sinter Plant and the Coke Ovens.

**Reason for increases in reported coke oven emissions and next steps**

In 2015 the implementation of the BREF for Iron and Steel production, resulted in the need to improve the monitoring of fugitive emissions from the coke ovens.

The method employed prior to 2015 (BCRA method) required an estimate to be carried out every three months relied on a subjective assessment of leak severity. The industrial operator agreed a new method with the regulator (NRW) which was adapted from the US EPA methodology. This methodology requires the leaks be monitored and recorded daily and does not attribute a severity to the leaks, all leaks are treated as a priority. When both methods were assessed side by side it was clear that the BCRA method gave a favourable estimation of the fugitive emission resulting in a low estimation factor per tonne of coke. The new methodology has resulted in an increase in the estimation of B[a]P released from the coke ovens in 2015, however the actual release is likely to be similar to previous years.

The change in the methodology has meant that the operator has a better understanding of the precise sources of fugitive emissions and enabled a targeted improvement programme to be established. This improvement programme was expected to show a decrease in results in 2017 and 2018. Monitoring has shown a decrease in 2017 but a slight increase in 2018 caused by a high result in May, with subsequent months showing a return to a lowering trend that continues into 2019. The site regulator will continue to focus on better performance through regulatory work and will review the interventions following analysis of the 2018 and 2019 data.

Table 6 shows the measures taken or to be taken at the Port Talbot industrial site.

**Table 6. Table of measures taken or to be taken at Port Talbot industrial site**

| Measure code | Description | Classification | Implementation dates | Other information | Comment | Future work |
|---|---|---|---|---|---|---|
| Coke Ovens 1 | Measures to meet new fugitive BAT emission limits (BATELs) | Permit systems and economic instruments: IPPC permits | Start: 2015<br><br>Expected end: 2019<br><br>Status: Implementation | Source affected: Industry including heat and power production<br><br>Spatial scale: Local<br><br>Cost: Not available<br><br>Indicator: Emissions estimate<br><br>Target emissions reduction: Not available | Tata has adopted a modified US EPA method for fugitive release assessment. This uses a binary 'leak-no leak' assessment. This method directly compares to the BATc.<br><br>Tata has committed to coke ovens life extension expenditure worth ~£3m/year over the next three years.<br><br>Coke ovens life extension project is ongoing and there has been consistent investment in this area by Tata Steel to date.<br><br>Compliance with the new limits has been summarised below for tops, doors and charging emissions. | Fugitive releases from coke ovens are affected by the internal operating pressure of the ovens. This pressure is at its highest when ovens are initially charged with coal and there is the maximum production of coke oven gas (COG).<br>The rate of COG production gradually decreases as the contents of the oven are carbonised. Tata are investigating the feasibility of installing gas pressure controls on individual ovens to improve the overall control system and therefore minimise fugitive releases of B[a]P from its coke oven batteries.<br>As Morfa Coke Ovens moves towards the end of its extended campaign life (mid-2020s), Tata Steel will need to outline its future strategy for this asset. This strategy is likely to be linked to other critical steelworks assets approaching end of life e.g. sinter plant.<br>A replacement coke oven may require significant planning (~5yrs design & construction) and capital expenditure (>£500m). |

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| | | | | Where compliance has not been achieved, NRW will respond per its CCS compliance scheme and work with Tata to achieve the new limits.<br>NRW continues to apply CCS scores in response to any emission limit breaches.<br>Tata Steel also responded to an EPR Regulation 61 Information Notice in August 2018. The company's response included a plan with timescales outlining a pathway towards compliance.<br><br>Good progress has been made towards compliance with the doors achieving full compliance in 2018.<br><br>Compliance with all relevant emission limits achieved in February 2019. | |
| Coke Ovens 2 | Spigot improvements.<br><br>The spigot is | Permit systems and economic | Start:2015<br><br>Expected end: | Source affected: Industry including heat | Control of fugitive emissions from coke ovens will result in lower B[a]P emissions. | At Port Talbot there are two COG collection mains for each oven and four charge holes. Tata have assessed the feasibility of a single COG collection main that should halve the number of potential leak sources, |

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| | the joint between the oven and the gas main. Measures include fitting of new collars, 'repacking' existing spigot seals, fitting new seals and, shortening of ascension pipes. | instruments: IPPC permits | 2019<br><br>Status: Implementation | and power production<br><br>Spatial scale: Local<br><br>Cost: Not available<br><br>Indicator: Percentage leak rate reduced to target of 1%<br><br>Target emissions reduction: Not available | The 1% BAT-AEPL (Associated Emission Performance Level) for tops is very challenging. Leakage rate from coke oven tops - including spigots - has steadily declined to <1% (99% no leaks) and emissions have been compliant since February 2019. A programme of works is ongoing to reduce leakage, but the rate of spigot renewal is difficult to change due to the complexities of working on a live coke oven. The work must be sequenced to avoid affecting oven integrity (ovens are usually in continuous operation).<br><br>Significant effort has been applied by Tata Steel to reduce fugitive emissions from coke oven tops. Improved performance has coincided with secured capital | thereby reducing fugitive emissions from coke oven tops. An order has been placed with a third party (technology) supplier. |

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| | | | | | expenditure (coke ovens life extension project) and refinement of maintenance plans and procedures.<br><br>Tata continues to follow a rolling program of work to control leaks from coke oven tops. A full replacement 'cycle' has been completed for the spigots. Sustained compliance may become more challenging as the batteries approach the end of their campaign life.<br><br>Significant progress is being made with 97.5 % leak free performance in August 2018.<br><br>Compliance with the BAT-AEPL for tops was achieved in February 2019 and has been sustained in subsequent months. | |

| | | | | | | |
|---|---|---|---|---|---|---|
| Coke Ovens 3 | Coke Oven door improvements<br><br>Each coke oven has two sets of doors at either end. Hot coke is pushed from the 'ram side' doors through the 'coke side' doors into waiting rail cars. Doors and door frames require regular maintenance and periodic replacement to minimise fugitive emissions. | Permit systems and economic instruments: IPPC permits | Start: 2015<br><br>Expected end: 2019<br><br>Status: Implementation | Source affected: Industry including heat and power production<br><br>Spatial scale: Local<br><br>Cost: Not available<br><br>Indicator: Percentage leak rate reduced to target of 10%<br><br>Target emissions reduction: Not available | Control of fugitive emissions from coke ovens will result in lower B[a]P emissions.<br><br>BAT-AEL for doors is 10% leakage or 90% non-leaking doors.<br><br>Leakage rate from coke oven doors has declined to <10% (90% no leaks). Emissions have been compliant since August 2018.<br>Significant effort has been applied by Tata Steel to reduce fugitive emissions from coke oven doors. Improved performance has coincided with secured capital expenditure (coke ovens life extension project) and refinement of maintenance plans and procedures.<br><br>Tata continues to follow a rolling program of work to control leaks from coke oven doors. Door cleaning techniques have been critical to achieving the | Leaks from coke oven doors occur when hot gases penetrate the seals between the door and its frame. Doors and frames are routinely cleaned to ensure a tight seal. There is one small 'leveller' door on each oven that is difficult to clean manually. Tata Steel is working with a specialist supplier to design a remote-controlled cleaning device which can potentially improve the seals on these small doors.<br><br>Tata is also exploring options to retro-fit a new type of coke oven door (with tighter seals) to its existing ovens. |

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| | | | | | improved performance against the BAT-AEPL. Sustained compliance may become more challenging as the batteries approach the end of their campaign life. Tata achieved full compliance with the BAT-AEL for doors in August 2018. Since August 2018, compliance has improved further and is moving towards 95% non-leaking coke oven doors. Target achieved (<10% leakage).<br><br>BAT-AEPL has been met. Coke Ovens performance is discussed at least every quarter with Tata Steel. | |
| Coke Ovens 4 | Reduction of emissions during charging<br><br>Coke ovens are 'charged' with coal through | Permit systems and economic instruments: IPPC permits | Start: 2015<br><br>Expected end:<br><br>Status: Implementation | Source affected: Industry including heat and power production<br><br>Spatial Scale: Local | Control of fugitive emissions from coke ovens will result in lower B[a]P emissions.<br><br>BAT-AEL for charging emissions is 30 seconds as a monthly mean.<br><br>Charging performance has improved following a | |

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| | charge holes in the top of each oven. The charging nozzles, holes and lids all require regular maintenance and periodic replacement to minimise fugitive emissions. | | | Cost: Not available<br><br>Indicator: Duration of release reduced to 30 seconds as a monthly mean.<br><br>Target emissions: Not available | deterioration in performance in 2018. The key items of equipment (charge holes and the coal charging apparatus) have now all been refurbished and/or replaced. Emissions have been compliant (<30 seconds visible emissions per charge) since February 2019.<br><br>Tata continues to follow a rolling program of work to maintain the equipment used for charging coal. Sustained compliance may become more challenging as the batteries approach the end of their campaign life.<br>Tata complied with the BAT-AEL for charging emissions during July and August 2017.<br><br>Since February 2019, compliance has improved further and has been moving towards 20 seconds visible emissions per charge as a monthly average figure. Further | |

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| | | | | | improvement may be possible.<br>BAT-AEPL has been met. Coke Ovens performance is discussed at least every quarter with Tata Steel.<br><br>Target achieved (<30 seconds visible emission per charge). | |
| Sinter Plant | Improvements to Lignite Injection<br>Lignite is used in combination with lime to trap and neutralise certain pollutants present in hot flue gases. These additives are injected directly into the hot flue gases. The integrity of the | Permit systems and economic instruments: IPPC permits | Start: 2015<br><br>Expected end: 2018<br><br>Status: Implementation | Source affected: Industry including heat and power production | Lignite-lime injection forms part of several projects to ensure that the sinter plant complies with the new tighter EU (IED) standards.<br><br>The lignite-lime injection system at Port Talbot has not yet been commissioned.<br>There are no specific BATc or BAT-AELs designed to reduce B[a]P from sinter plant emissions. However, reducing overall emissions will result in lower B[a]P emissions.<br><br>Associated work and regulatory interventions | The interior of each ESP and the (waste gas) wind main system are subject to high temperatures and continual physical abrasion by entrained dust, which progressively wears away exposed surfaces and parts. Keeping pace with this degradation and maintaining an 'air-tight' system is critical to the safe commissioning of lignite-lime injection.<br><br>Tata Steel is adjusting its maintenance strategy to allow shorter stops to be taken more frequently, enabling worn parts to be replaced before they degrade completely. The engineering challenges and associated unavailability of lignite-lime injection may increase as the sinter plant ages.<br><br>Tata Steel will need to outline its future strategy for this asset. This strategy is likely to be linked to other critical steelworks assets approaching end of life e.g. coke ovens. |

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| | flues and the emissions abatement systems must be sound for lignite-lime injection to be used safely. | | | | by NRW to address persistent particulate emission limit (BAT-AEL) breaches from the sinter plant main stack should indirectly reduce B[a]P emissions from this source.<br><br>Re main stack particulate emissions: Tata Steel responded to an EPR Regulation 61 Information Notice in August 2018. The company's response included a plan with timescales outlining a pathway towards compliance.<br>Lignite-lime injection has already been approved by Tata and is still progressing. Several preparatory works must be completed over planned sinter plant stops before the system can be brought online.<br><br>The preparatory works remain incomplete but are still being pursued by Tata Steel. Air ingress issues | |

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| | | | | | must be resolved before lignite-lime can be brought online. A key performance indicator is 17% oxygen within the waste gas stream - sensors are now in place to monitor this. The valves at the base of each ESP (dust) collection hopper have also been upgraded and are subject to a rolling maintenance programme. Previously the valve seals were degrading too quickly and allowing air into the system.<br><br>Bringing lignite-lime online prematurely can result in fires starting within the main stack Electrostatic Precipitators (ESPs) as a result of lignite (fuel) + heat + oxygen.<br><br>The system is unlikely to be commissioned before 2020 because of the extended preparatory works described above. | |

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| | | | | | This project has been delayed due to problems with the performance of the electrostatic precipitators. NRW are currently working with Tata to agree new timescales for the implementation of lignite injection.<br><br>Sinter Plant performance is discussed at least every quarter with Tata Steel. NRW continues to focus on persistent particulate emission limit breaches from the main stack. Addressing the root cause(s) of these breaches should reduce air ingress into the system and allow lignite-lime to be brought online. | |