

## COMPARISON OF PLUME PLOTTER WITH “OFFICIAL” POLLUTION PREDICTIONS

Every new incinerator’s planning application includes an Environmental (Impact) Statement with an Air Quality Assessment (AQA) which predicts the ground-level air pollution, among other things. This is almost always produced using ADMS and/or AERMOD. One item that always seems to appear is a plot of the predicted annual mean concentration of nitrogen dioxide added by the proposed incinerator. In the UK this is traditionally calculated by predicting the annual mean concentration of all nitrogen oxides and then multiplying by 0.7. Another plot that always appears shows the 99.79<sup>th</sup> percentiles of nitrogen dioxide: the concentrations that are expected to be exceeded only for 18 hours per year.

If the predictions by “experts” are correct *and* Plume Plotter is correct, Plume Plotter’s predictions should be roughly similar to the “expert” ones. (They will never be identical unless they use the same source of weather data for the same year(s), which is hard to achieve.) Therefore, whenever we have obtained historical weather data, we usually produce a plot of the annual mean level of nitrogen dioxide and compare it with the “expert” equivalent. This document shows this comparison for six incinerators. Every “expert” plot uses a different scale and has contours at different intervals. To ease the comparison, we have generated plots using the same contours as the “expert” plot and have formatted the plots to the same scale.

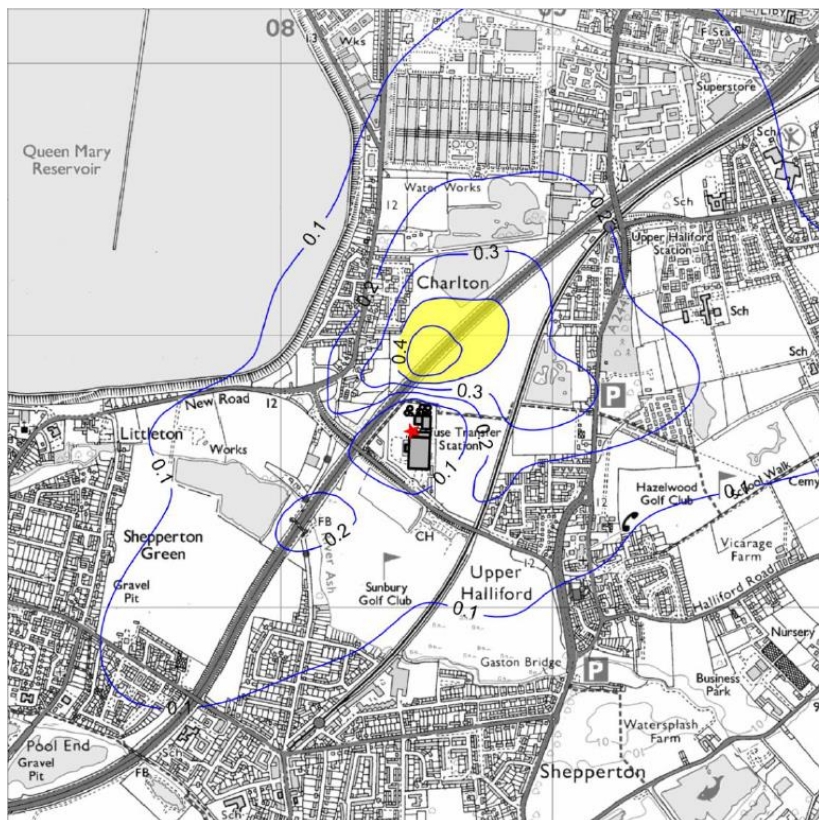
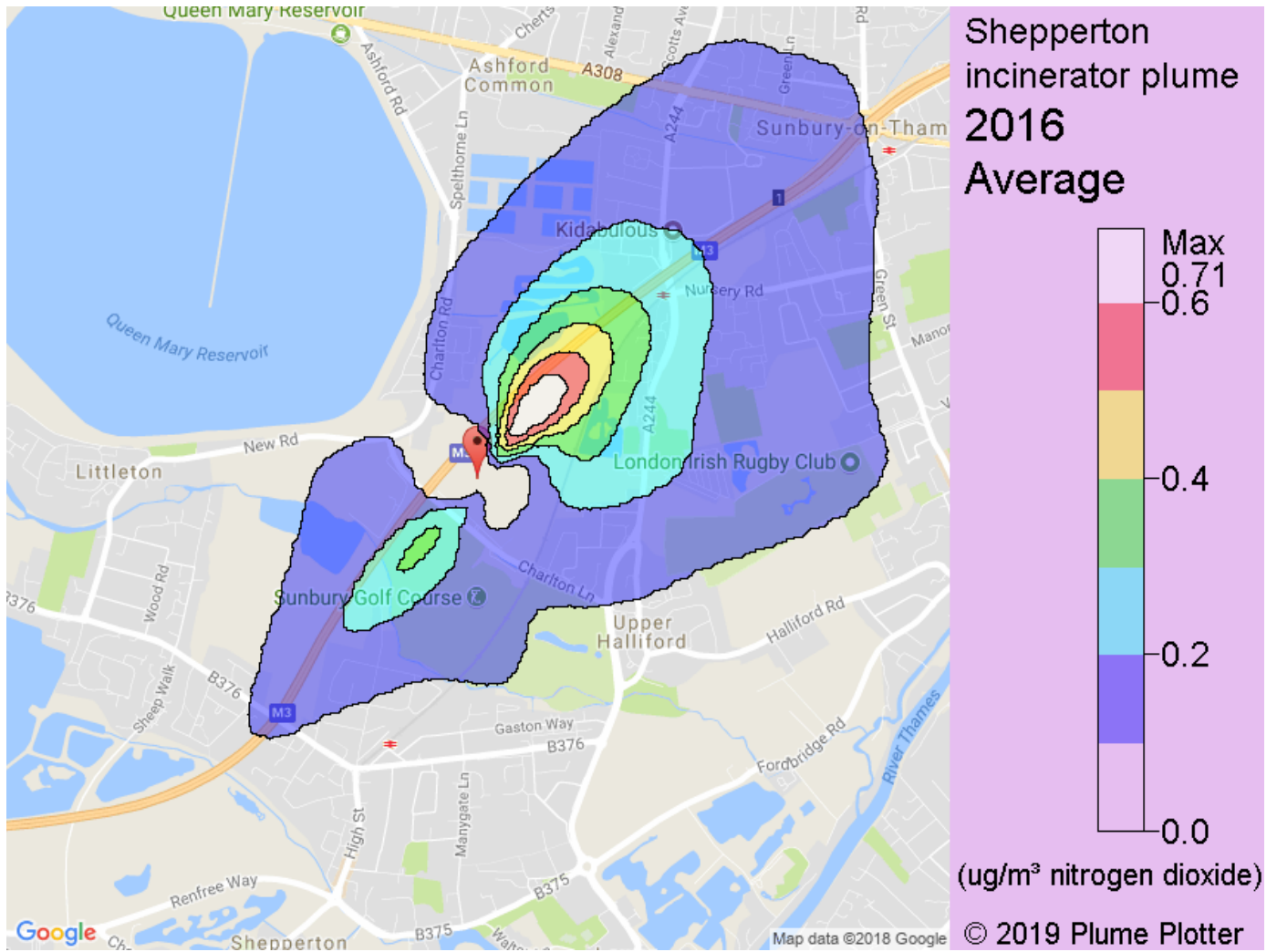
Some Plume Plotter plots use weather data from Weather Underground and some use airport METAR data.

This document compares predictions for the incinerators listed below. These are chosen because we have collected historical weather (and upper air) data for these incinerators for some other reason: usually to produce animations.

- Shepperton
- Derby
- Hoddesdon
- Horsham
- Halton
- Aberdeen
- Plymouth
- Cornwall
- South London
- Gloucestershire
- Portskewett

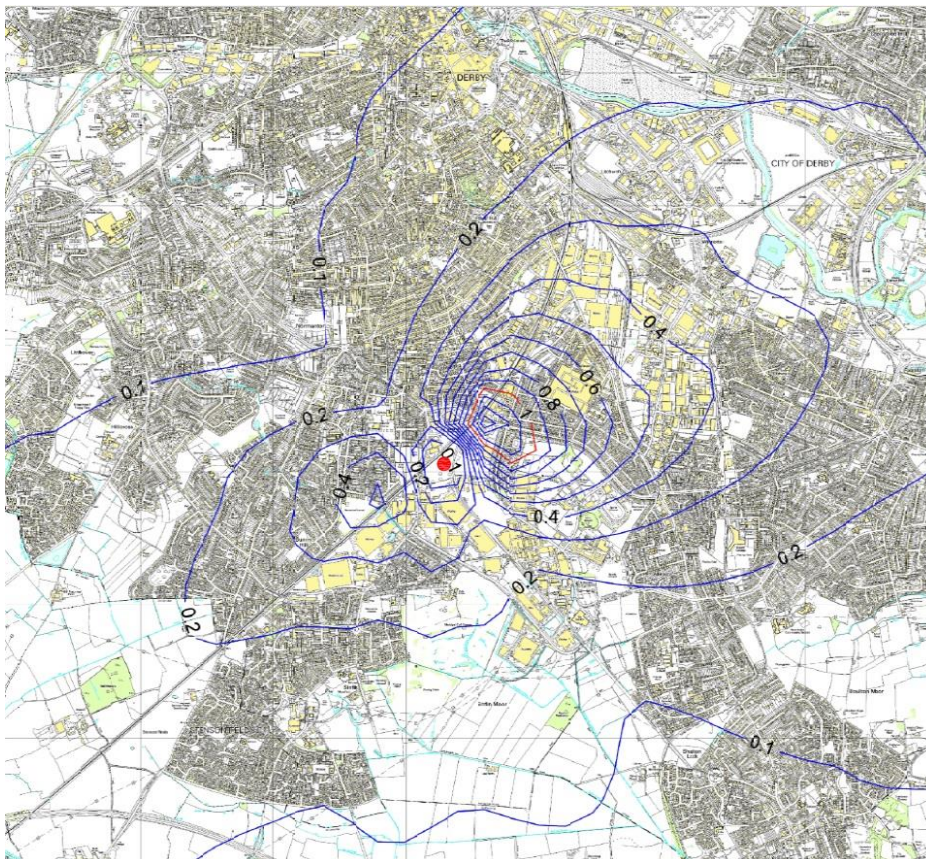
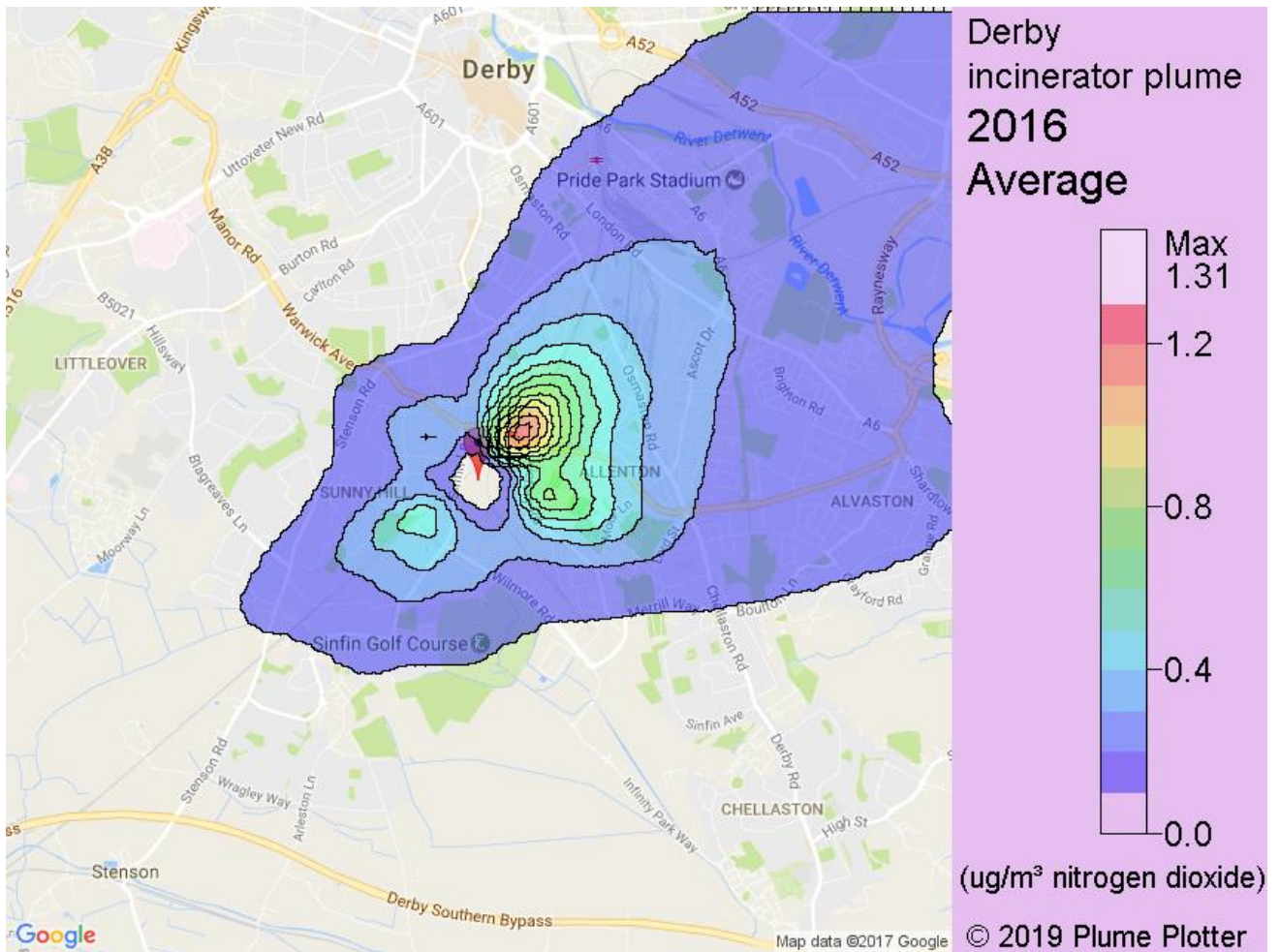
# Shepperton

Weather data PP: Heathrow airport, 2016. AQA: Heathrow airport, 2006.



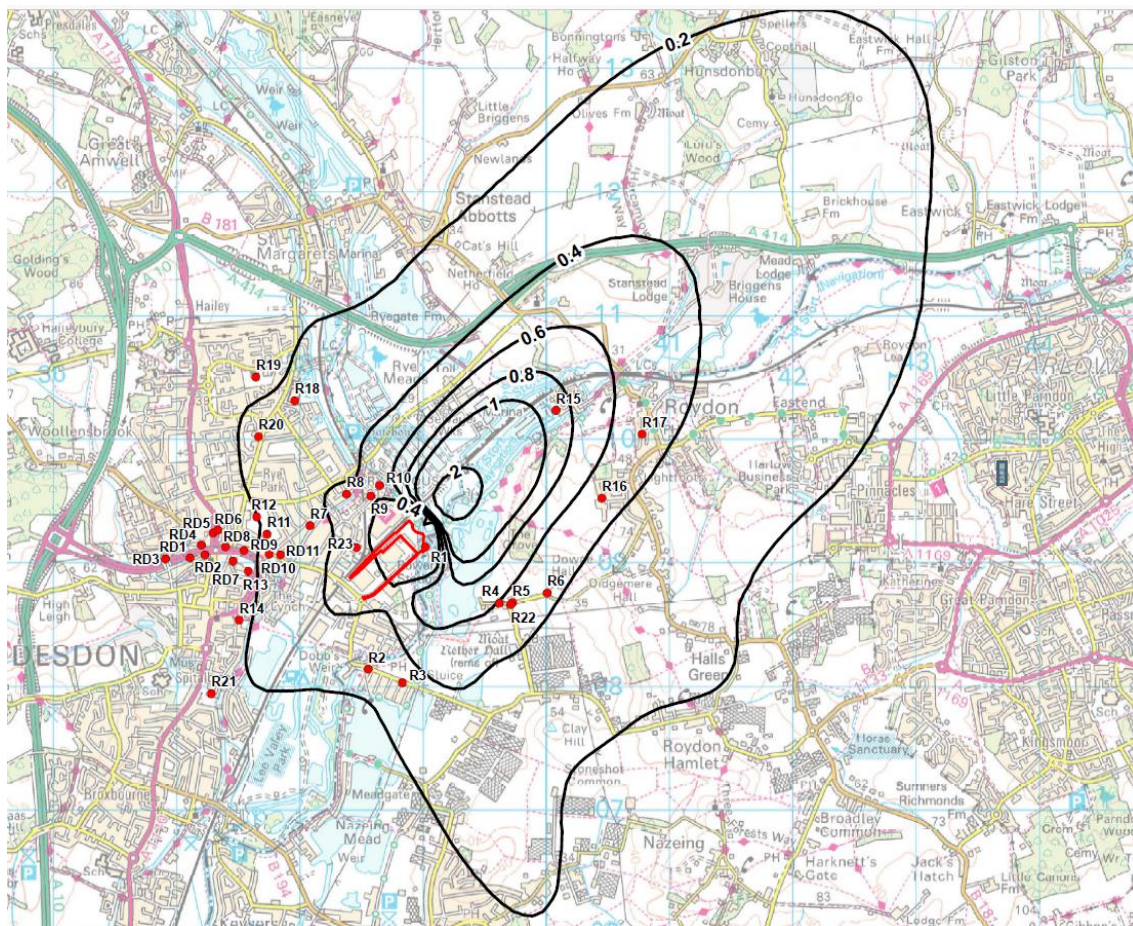
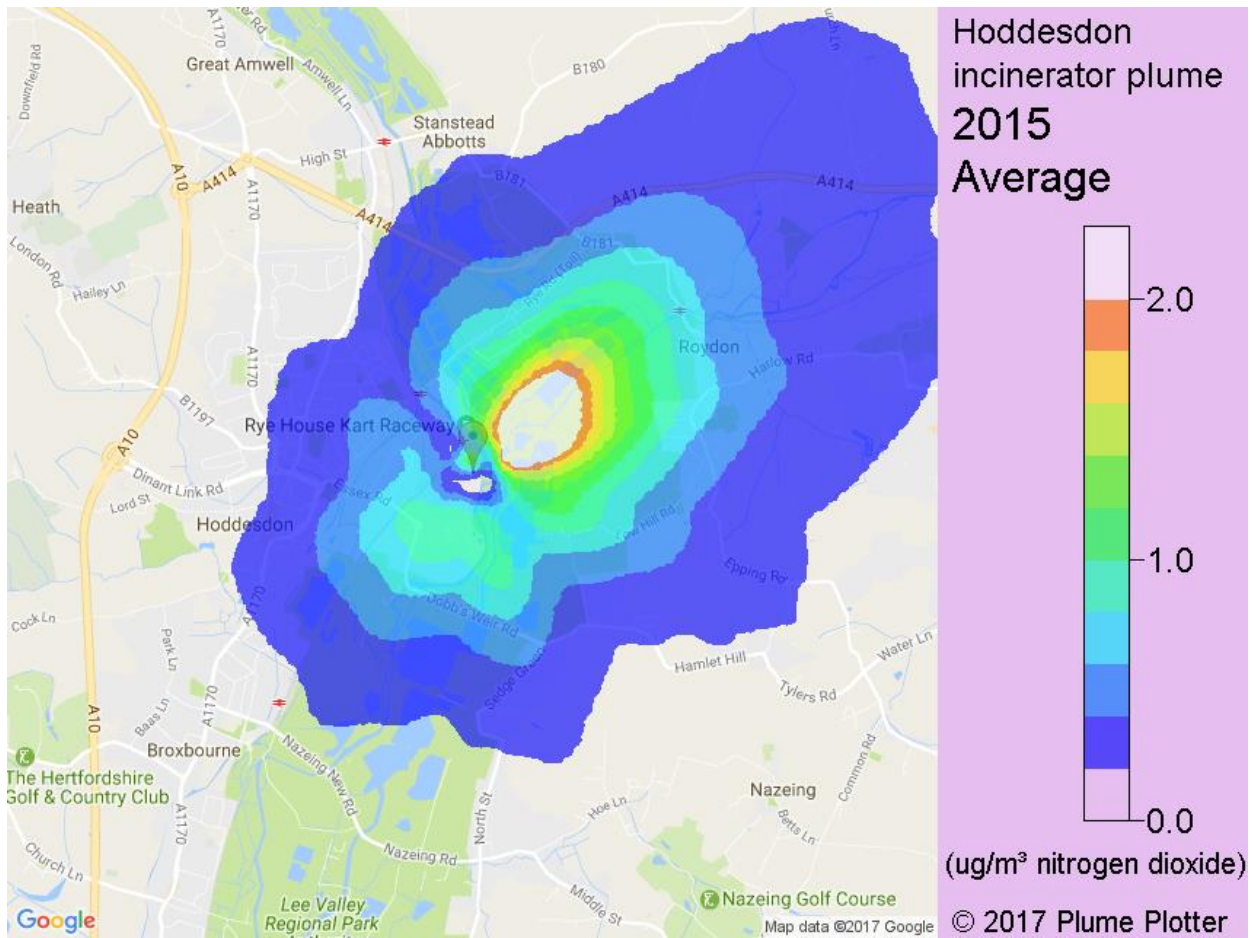
Derby, with IED emissions concentrations, as assumed in the AQA (reduced in subsequent permit)

Weather data PP: East Midlands airport, 2016. AQA: Nottingham, Unknown year.



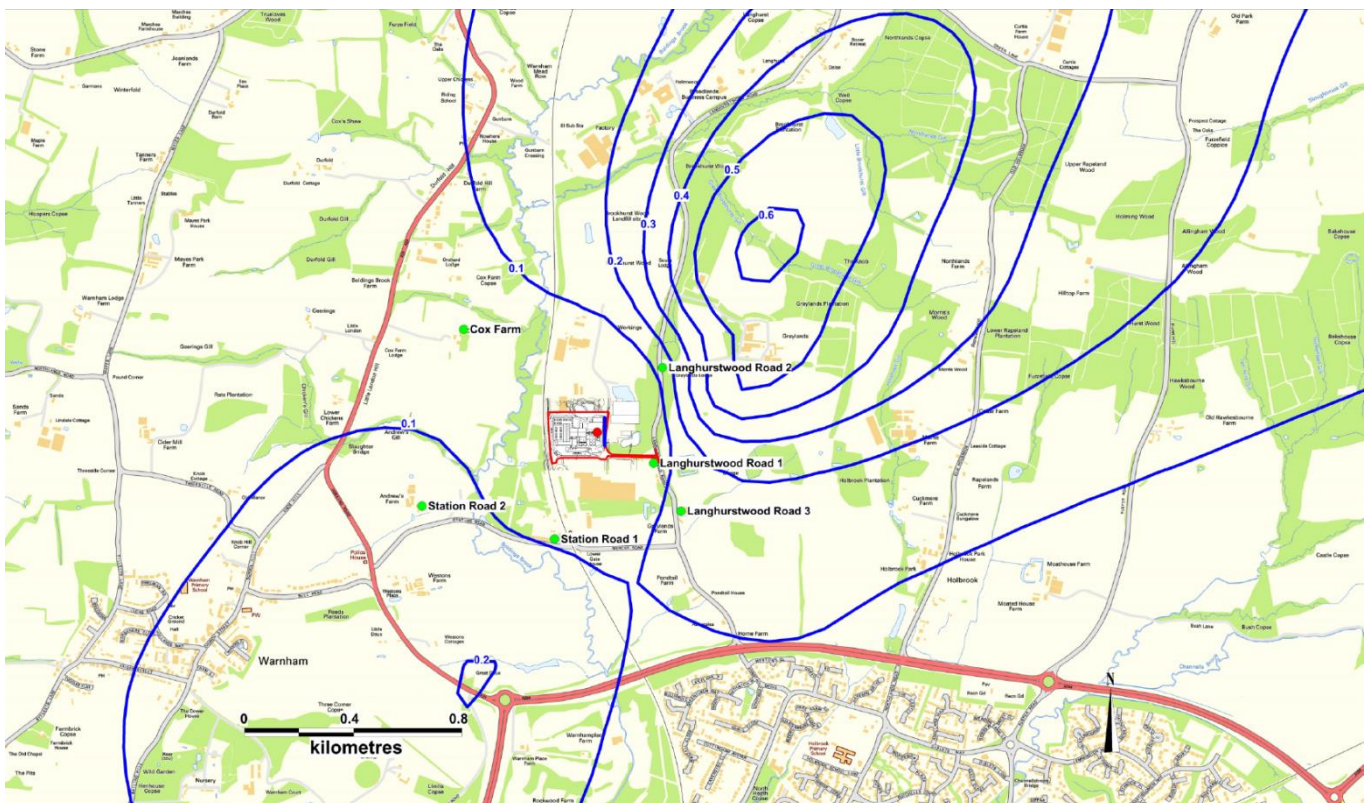
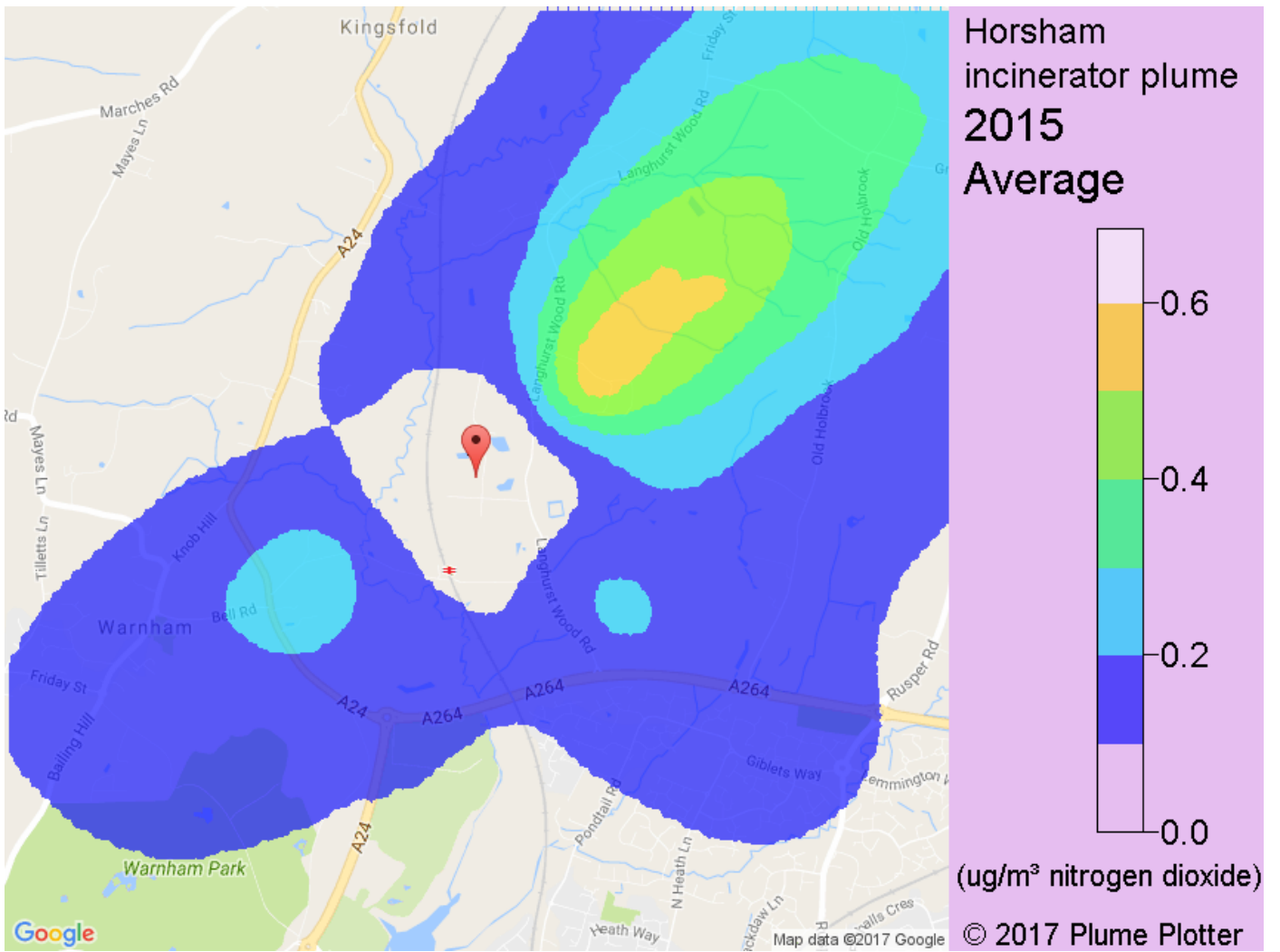
# Hoddesdon (ERF only)

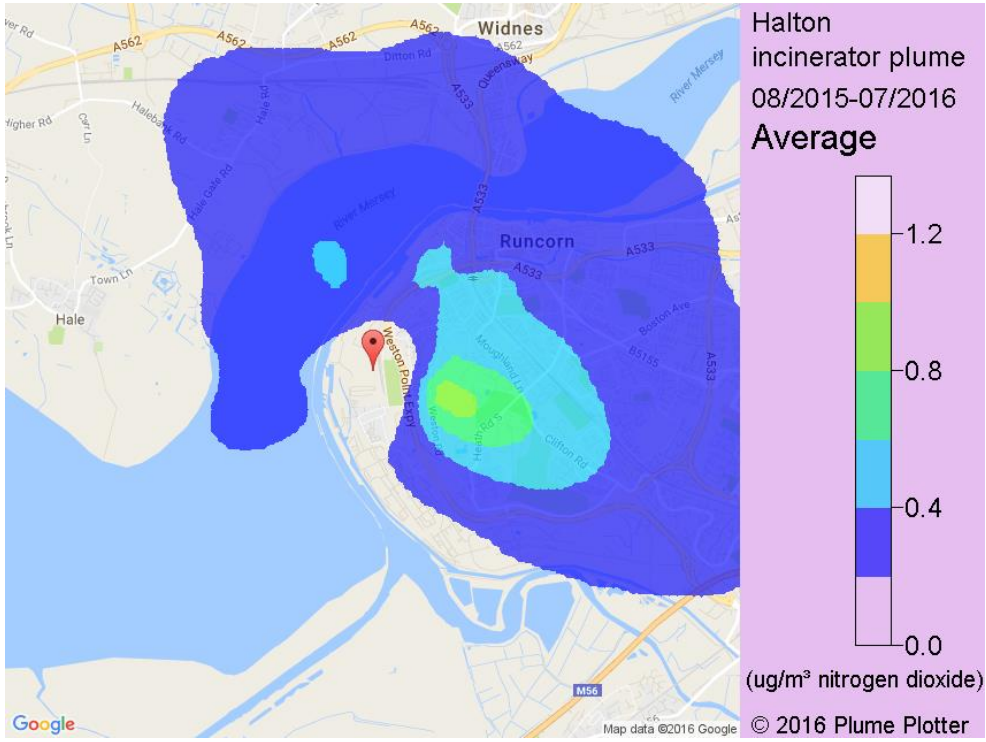
Weather data PP: Stansted airport, 2015. AQA: Stansted airport, 2015.



# Horsham

Weather data PP: Gatwick airport, 2015. AQA: Gatwick airport, Unknown year.

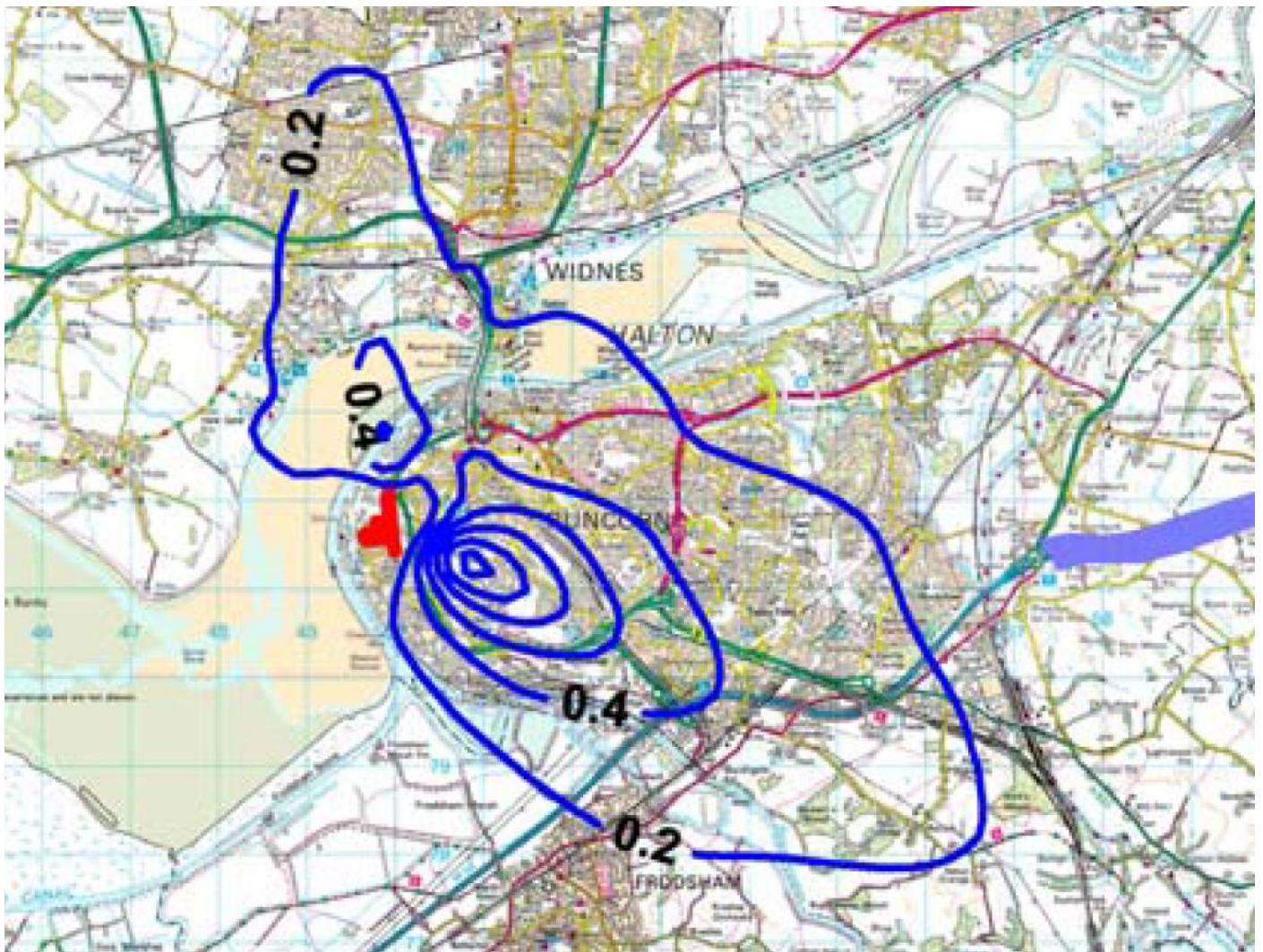




**Halton**, with a 47m high incinerator building as assumed in the AQA (actually 42m in real life).

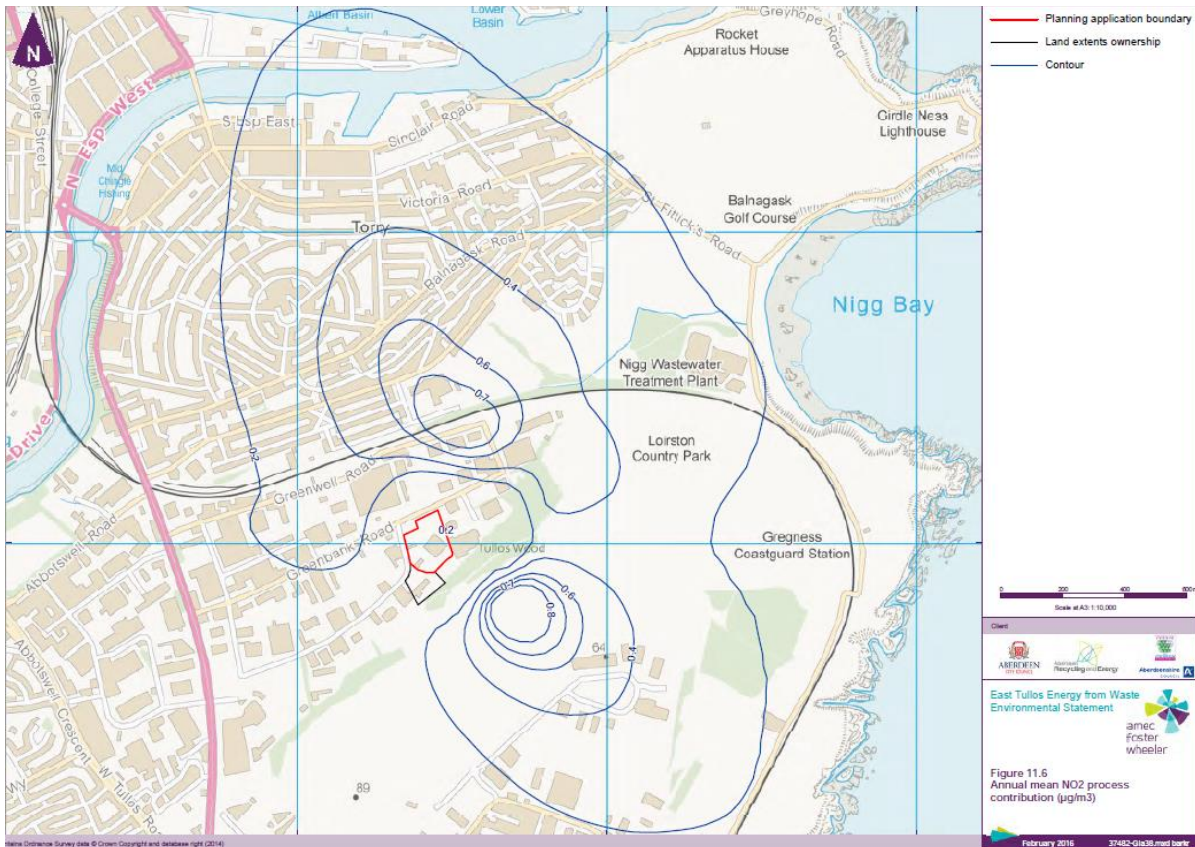
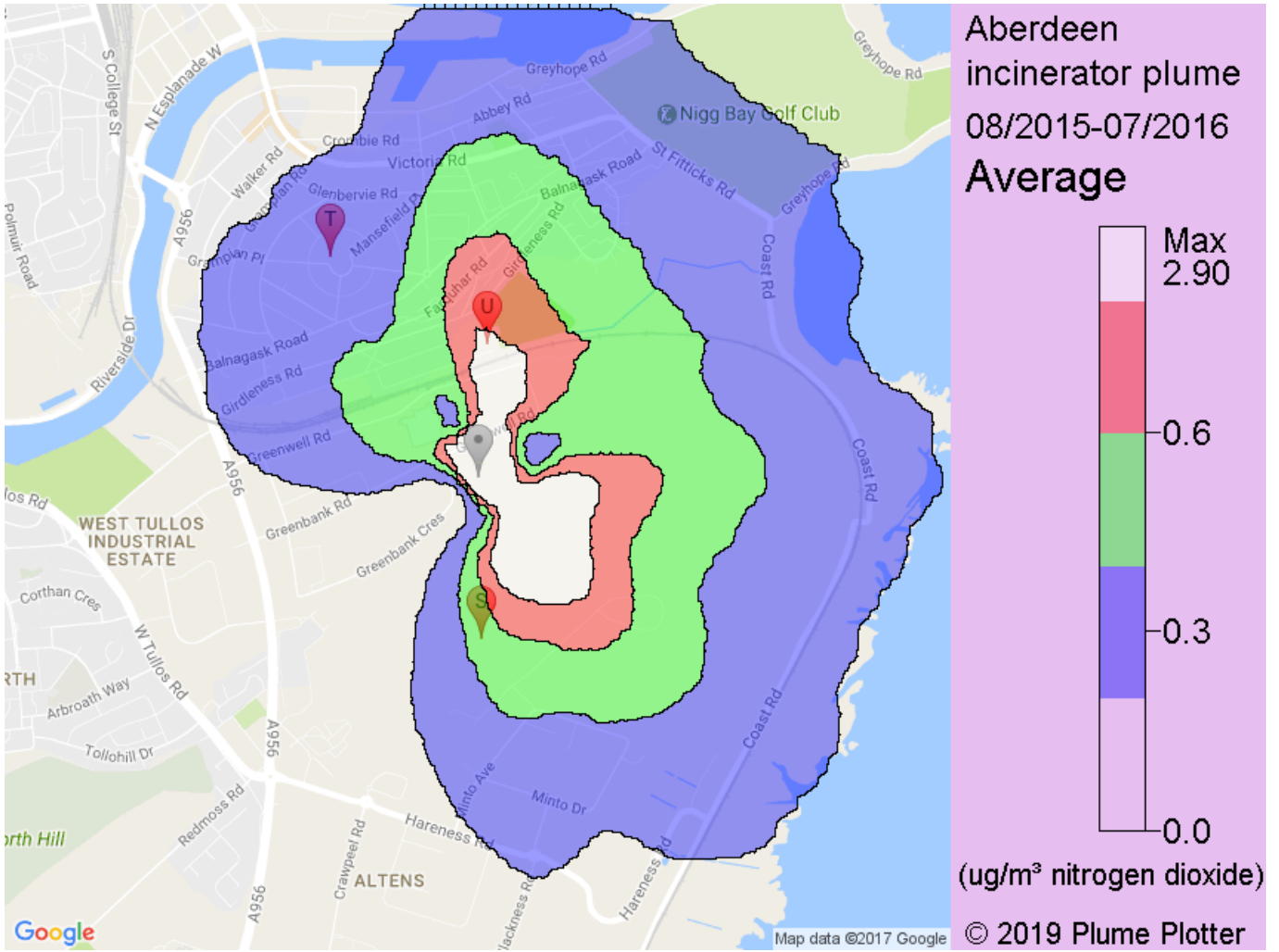
Weather data

PP: Liverpool airport, 8/2015-7/2016.  
AQA: Liverpool airport, 2004.



# Aberdeen

Weather data PP: Aberdeen airport, 8/2015-7/2016. AQA: Aberdeen airport, Unknown year.

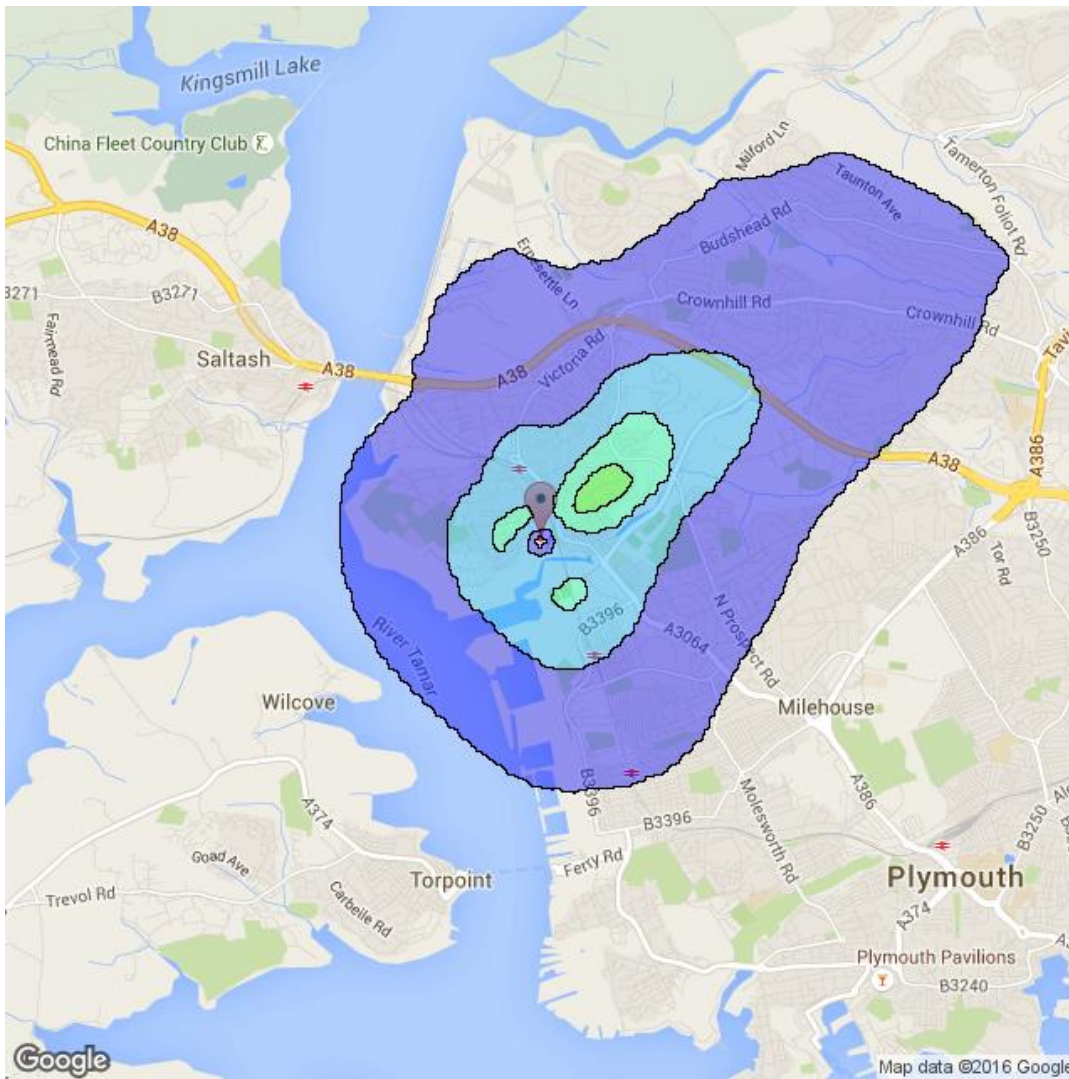


# Plymouth

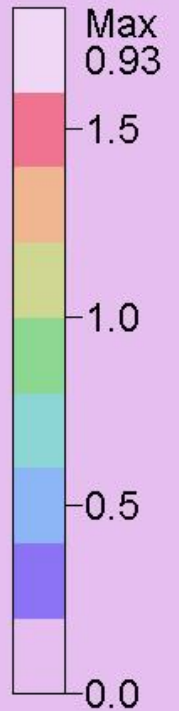
## Weather data

PP: Weather Underground IPLYMOUT6 + ERA cloud cover, 2015.

AQA: Plymouth Mountbatten, 2009.

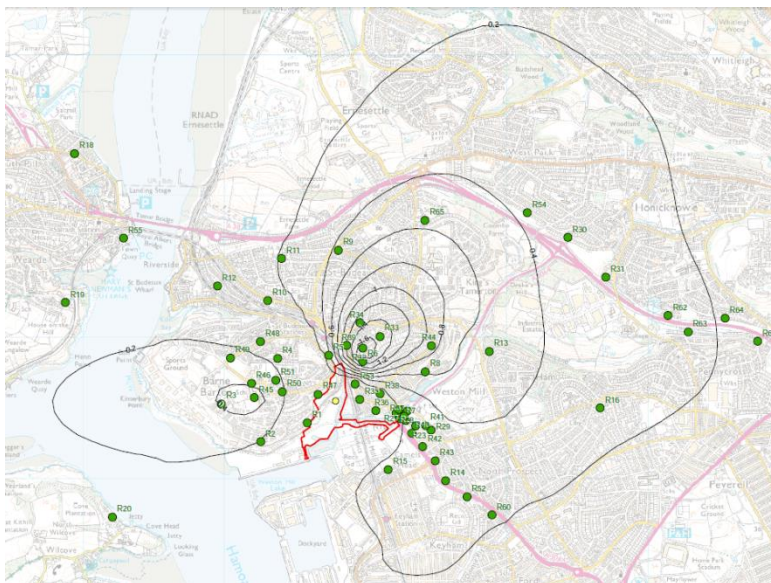


Plymouth  
incinerator plume  
2015  
Average



( $\mu\text{g}/\text{m}^3$  nitrogen dioxide)

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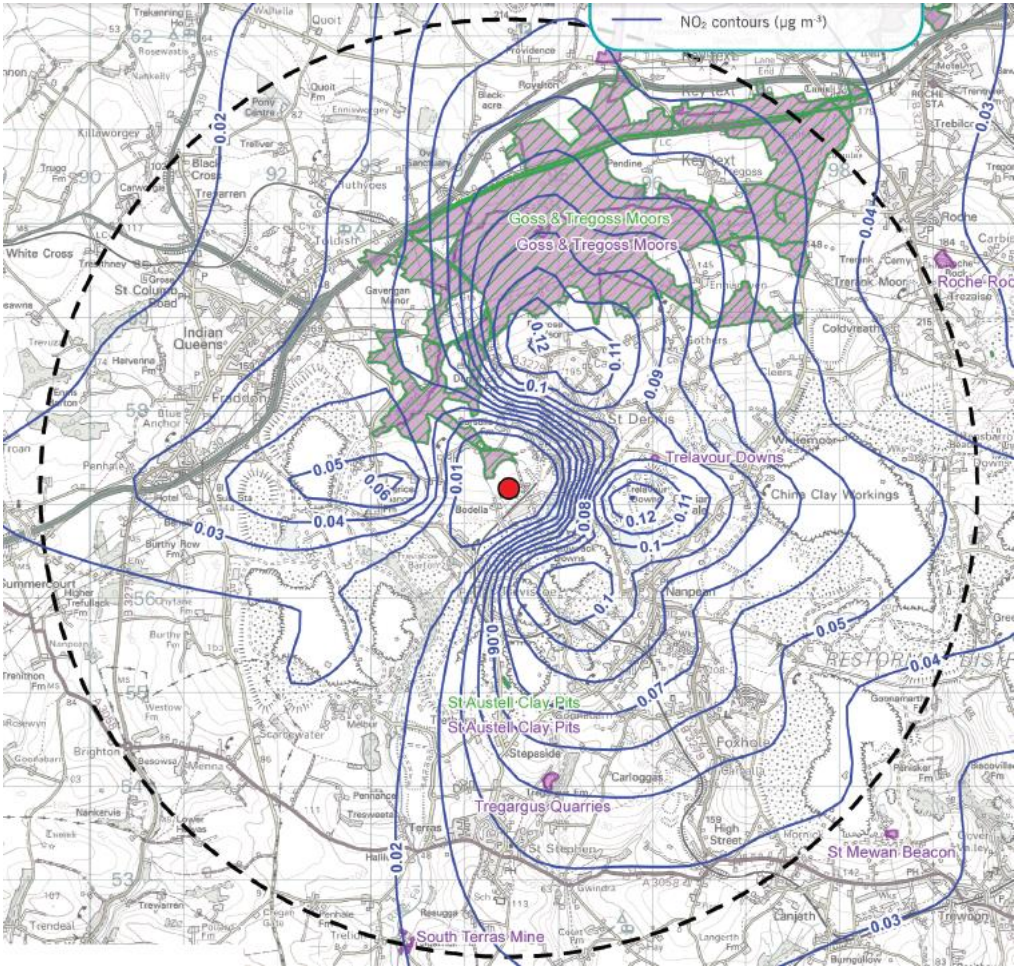
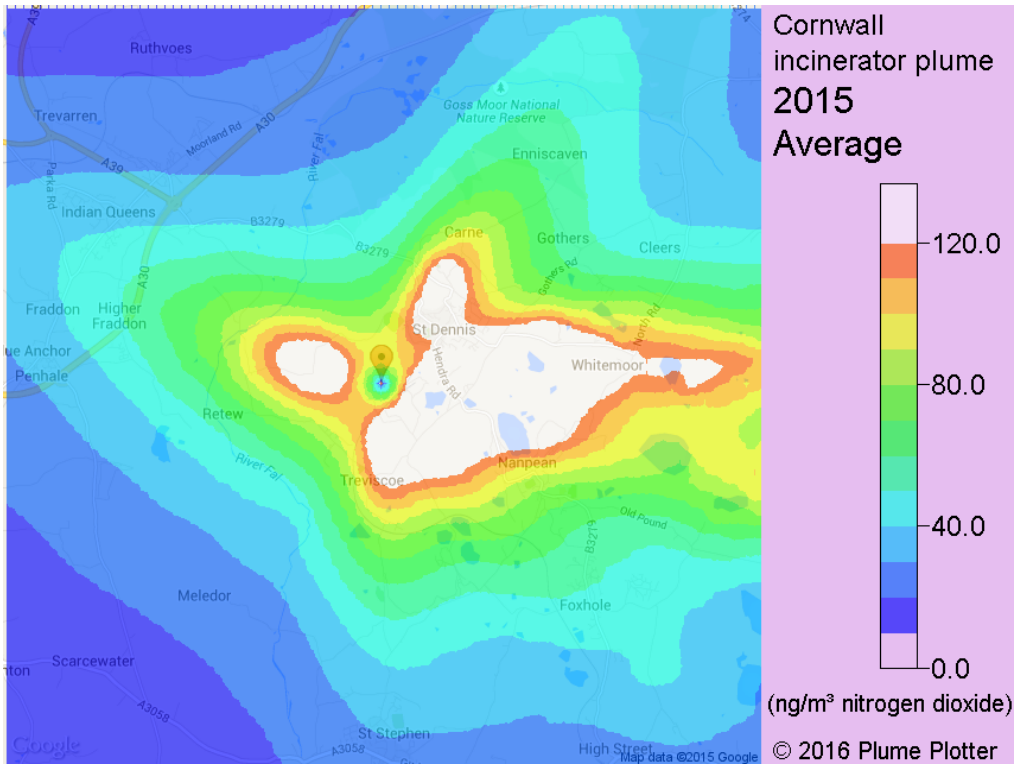


# Cornwall

## Weather data

PP: Weather Underground ICORNWAL13 + IPLYMOUT6 + ERA cloud cover, 2015.

AQA: Camborne, 2002.

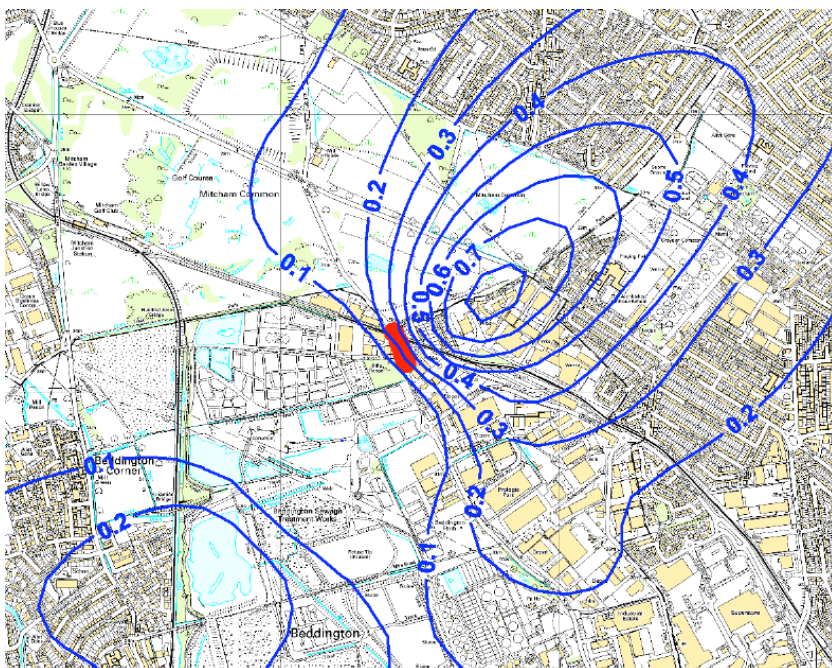
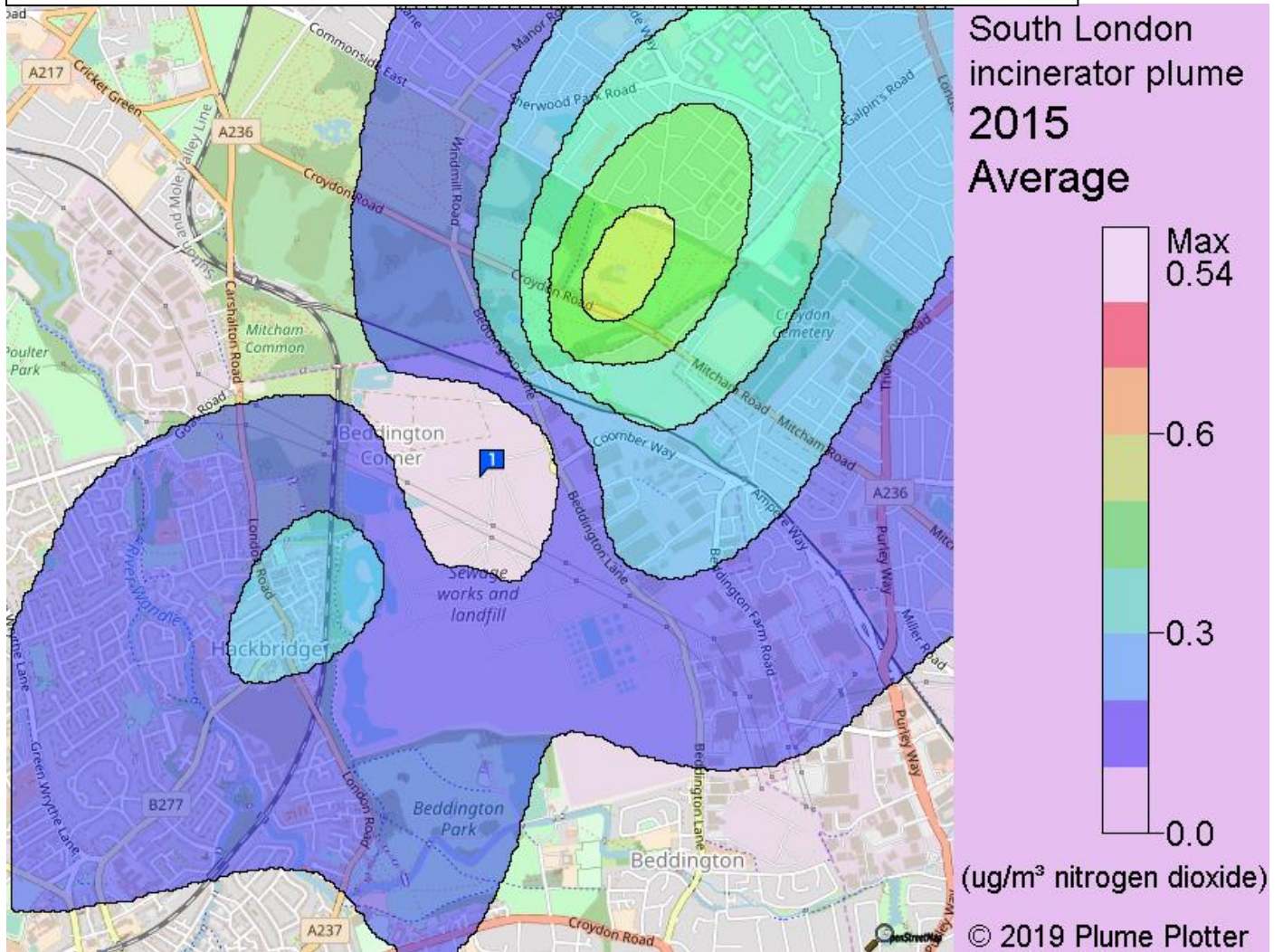


## South London

### Weather data

PP: Weather Underground IENGLAND358 + ERA cloud cover, 2015.

AQA: Gatwick airport, 2011.

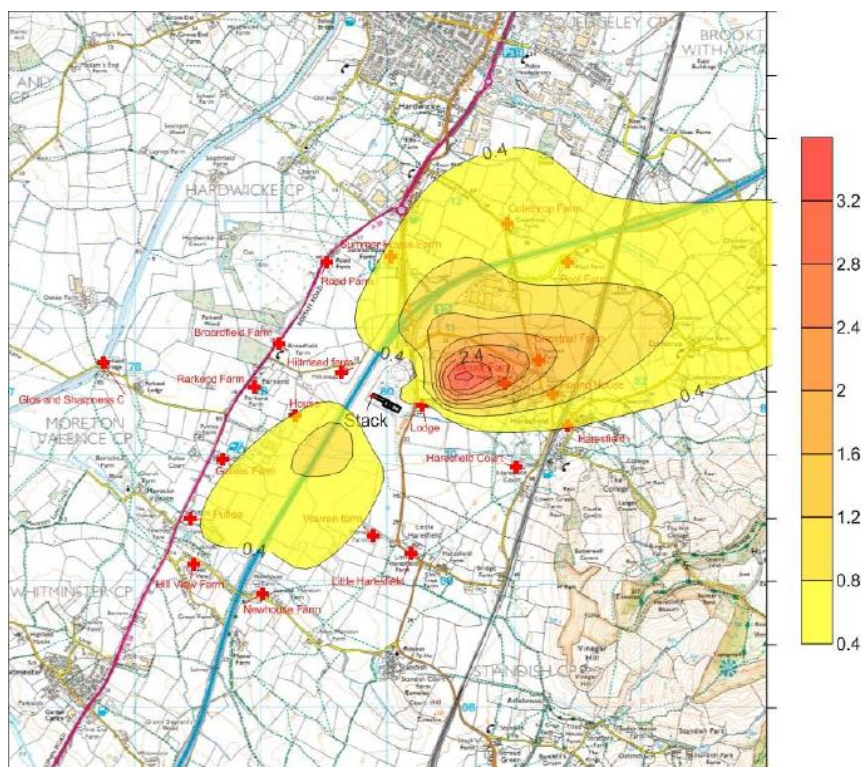
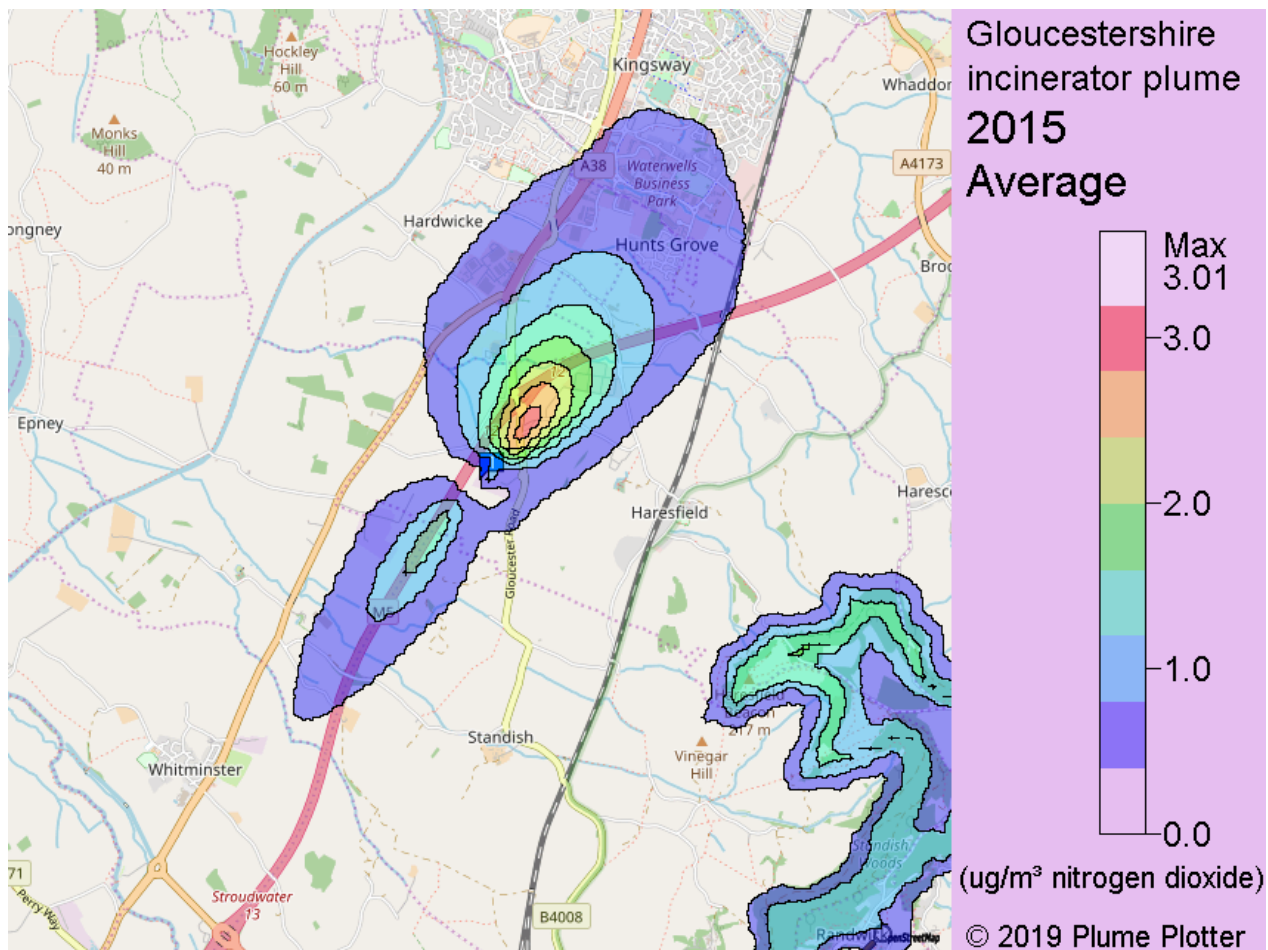


# Gloucestershire

## Weather data

PP: Weather Underground IGLOUCES43 + IGLOUCES14 + ERA cloud cover, 2015.

AQA: Filton, 2008.



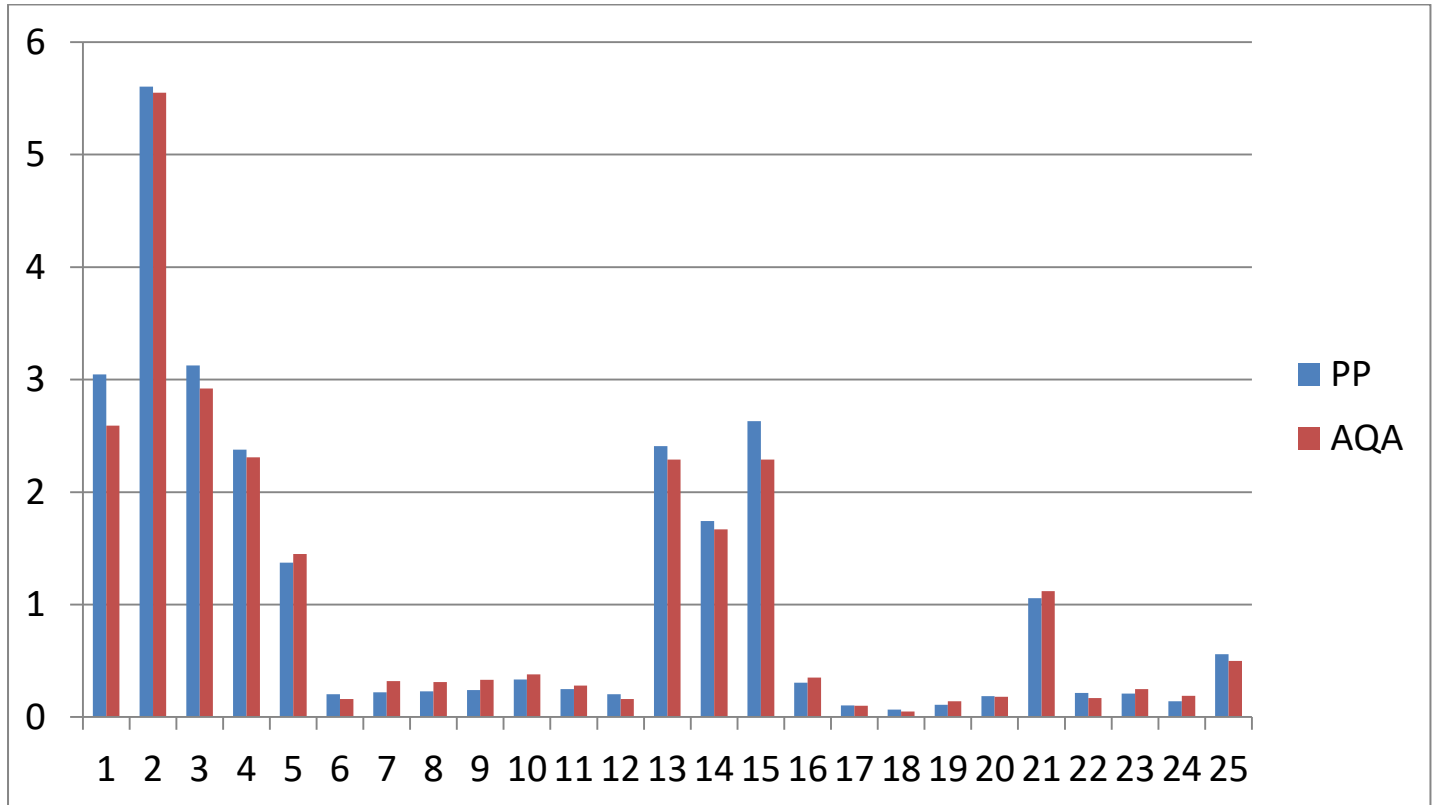
## Portskewett

### Weather data

PP: Bristol airport, 2017.

AQA: Bristol airport, unknown year.

Annual mean NO<sub>2</sub> concentration ( $\mu\text{g}/\text{m}^3$ ) at each of the AQA's 25 receptors:



Annual 99.79th percentile NO<sub>2</sub> concentration ( $\mu\text{g}/\text{m}^3$ ) at each of the AQA's 25 receptors:

