Environment Scrutiny Challenge Session

Examining up to date air quality data with recommendations

Cllr Andrew Wood

26th April 2021

Is air quality getting worse in Tower Hamlets?

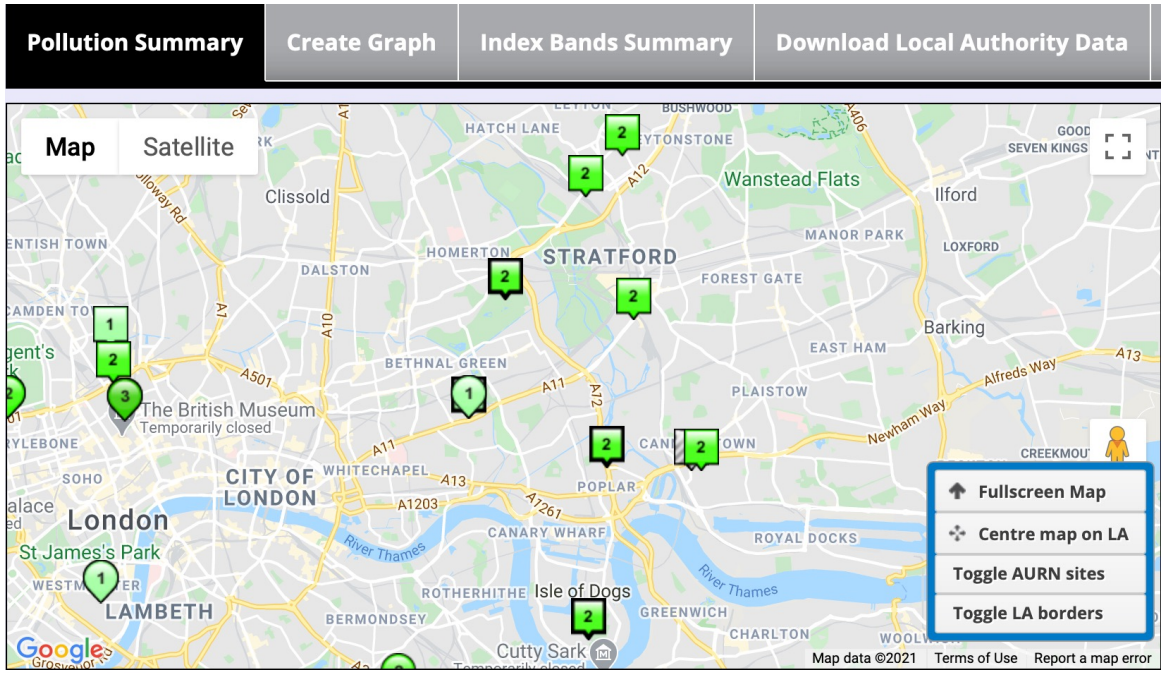
NO, it has been getting better over the last few years despite increasing traffic.
In many locations air pollution is now below World Heath Organisation set safe levels.
This data comes from Tower Hamlets Council own sensors (4 live online sensors measuring a range of pollutants and 90 glass tubes that only collect NOX data once a month).
This trend started before the introduction of ULEZ in 2019 and is driven by EU vehicle engine emissions targets reducing in stages every few years the levels of pollutants vehicle engines are allowed to produce (which ULEZ further encourages by only allowing newer vehicles to use roads)
It is possible the ULEZ expansion in October 2021 may actually bring air pollution below target levels for most places in Tower Hamlets (but a financial recession slows down new vehicle purchases).
But there are a small number of places near to busy roads and especially road tunnels which exceed the targets and we need more & better live information from those places by emplacing more live sensors in those places and putting in mitigation in those areas.
We also need to understand better the impact of construction.
The one exception to the good news maybe PM2.5 the smallest particles, we only started measuring those recently and only in a few place's so it is harder to tell whether the trend is downwards.

What do our Air Quality sensors show?

We have four permanent air quality monitoring stations in Tower Hamlets – they provide real time online measurements for a range of air pollutants:

- Two are in parks – Victoria & Millwall – background air quality in theory
- Two are by the road side – Blackwall tunnel approaches A12 & Mile End road/A11 near Stepney Green station

Online link here: https://www.airqualityengland.co.uk/local-authority/?la_id=210 you can access and download data in real time. Picture taken late March 2021.



Where 1 = low levels of pollutants to 10 = worst air quality. Green is good. They measure:

- Ozone (O3)
- Nitrogen Dioxide (NO2)
- Sulphur Dioxide (SO2)
- Particulate Matter (PM2.5)
- Particulate Matter (PM10)

But none are where people live, work or study

What do our Air Quality sensors show?

Can see a summary at different times of the day
Left midday Monday 29th March
Right Monday evening
1= low levels of pollutants 10= bad air quality – Green is good

Active local authority funded monitoring sites

Monitoring Site	Ozone (O_3)	Nitrogen Dioxide (NO_2)	Sulphur Dioxide (SO_2)	Particulate Matter ($PM_{2.5}$)	Particulate Matter (PM_{10})	Highest Pollution Band	Last Updated
Tower Hamlets - Blackwall	52 (2 Low)	28 (1 Low)	n/m	8 (1 Low)	16 (1 Low)	Low (Index 2)	29/03/2021 12:00
Tower Hamlets - Millwall Park	65 (2 Low)	8 (1 Low)	n/m	n/m	22 (2 Low)	Low (Index 2)	29/03/2021 12:00
Tower Hamlets - Roadside	n/m	n/m	n/m	10 (1 Low)	n/m	Low (Index 1)	29/03/2021 10:00
Tower Hamlets - Victoria Park	n/m	8 (1 Low)	n/m	7 (1 Low)	19 (2 Low)	Low (Index 2)	29/03/2021 12:00
Tower Hamlets Roadside	n/m	17 (1 Low)	n/m	n/m	n/m	Low (Index 1)	29/03/2021 12:00

Active local authority funded monitoring sites

Monitoring Site	Ozone (O_3)	Nitrogen Dioxide (NO_2)	Sulphur Dioxide (SO_2)	Particulate Matter ($PM_{2.5}$)	Particulate Matter (PM_{10})	Highest Pollution Band	Last Updated
Tower Hamlets - Blackwall	n/a	n/a	n/m	n/a	n/a	No Data	29/03/2021 15:00
Tower Hamlets - Millwall Park	68 (3 Low)	21 (1 Low)	n/m	n/m	21 (2 Low)	Low (Index 3)	29/03/2021 18:00
Tower Hamlets - Roadside	n/m	n/m	n/m	n/a	n/m	No Data	29/03/2021 10:00
Tower Hamlets - Victoria Park	n/m	15 (1 Low)	n/m	7 (1 Low)	21 (2 Low)	Low (Index 2)	29/03/2021 18:00
Tower Hamlets Roadside	n/m	18 (1 Low)	n/m	n/m	n/m	Low (Index 1)	29/03/2021 18:00

Both Roadsides are the same one by A11 Mile End road

What do our Air Quality sensors show?

Can see the number of days each air quality station shows pollutants in their bands
2019 left 2020 right – pretty similar despite lockdowns etc.
1= low levels of pollutants 10= bad air quality

Which one shows worst results and has highest number of days in higher bands?

London Borough of Tower Hamlets Monitoring Data

Use the tabs below to explore information about the current and historic air pollution levels in this local authority. You can select another local authority using the dropdown menu.

Local authority/customer...

Pollution Summary | Create Graph | Index Bands Summary | Download Local Authority Data | Download Data Reports

Days in each index band for London Borough of Tower Hamlets

Choose a date period below to view a summary of how many days each site had in each index band.

Switch to AURN data

Start date 01/01/2019 End date 31/12/2019 Calculate

The number of days in each index band for the following date period is shown below: **01/01/2019 - 31/12/2019**

Monitoring site	Index 1 Low	Index 2 Low	Index 3 Low	Index 4 Moderate	Index 5 Moderate	Index 6 Moderate	Index 7 High	Index 8 High	Index 9 High	Index 10 Very High
Tower Hamlets - Millwall Park (TH001) View pie chart	11	211	123	13	6	1	0	0	0	0
Tower Hamlets - Victoria Park (TH002) View pie chart	195	136	24	3	6	1	0	0	0	0
Tower Hamlets - Blackwall (TH004) View pie chart	47	276	29	3	7	2	1	0	0	0
Tower Hamlets - Roadside (TH2P) View pie chart	150	50	11	4	0	0	0	0	0	0

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Monitoring site	Index 1 Low	Index 2 Low	Index 3 Low	Index 4 Moderate	Index 5 Moderate	Index 6 Moderate	Index 7 High	Index 8 High	Index 9 High	Index 10 Very High
Tower Hamlets - Millwall Park (TH001) View pie chart	15	222	100	15	6	4	0	0	0	0
Tower Hamlets - Victoria Park (TH002) View pie chart	193	139	25	5	2	1	1	0	0	0
Tower Hamlets - Blackwall (TH004) View pie chart	36	251	60	16	2	0	0	1	0	0
Tower Hamlets - Roadside (TH2P) View pie chart	255	74	18	6	2	0	2	0	0	0

What do our Air Quality sensors show?

Same data as page before but with % added to make clearer

2020

Better air quality ← → Worse air quality

Monitoring site	Index 1 Low	Index 2 Low	Index 3 Low	Index 4 Moderate	Index 5 Moderate	Index 6 Moderate	Index 7 High	Index 8 High	Index 9 High	Index 10 Very High	Total days
Tower Hamlets - Millwall Park (TH001)	15	222	100	15	6	4	0	0	0	0	**362**
as a % of total number of days	4%	61%	28%	4%	2%	1%	0%	0%	0%	0%	**100%**
Tower Hamlets - Victoria Park (TH002)	193	139	25	5	2	1	1	0	0	0	**366**
as a % of total number of days	53%	38%	7%	1%	1%	0%	0%	0%	0%	0%	**100%**
Tower Hamlets - Blackwall (TH004)	36	251	60	16	2	0	0	1	0	0	**366**
as a % of total number of days	10%	69%	16%	4%	1%	0%	0%	0%	0%	0%	**100%**
Tower Hamlets - Roadside (TH2P)	255	74	18	6	2	0	2	0	0	0	**357**
as a % of total number of days	71%	21%	5%	2%	1%	0%	1%	0%	0%	0%	**100%**
Total all 4 sites	**499**	**686**	**203**	**42**	**12**	**5**	**3**	**1**	**0**	**0**	**1,451**
	34%	47%	14%	2.9%	0.8%	0.3%	0%	0%	0%	0%	**100%**
	95.7% of days Low Air Pollutants			**4.3% of days Moderate or High Air Pollutants**							

2019

Monitoring site	Index 1 Low	Index 2 Low	Index 3 Low	Index 4 Moderate	Index 5 Moderate	Index 6 Moderate	Index 7 High	Index 8 High	Index 9 High	Index 10 Very High	Total days
Tower Hamlets - Millwall Park (TH001)	11	211	123	13	6	1	0	0	0	0	**365**
as a % of total number of days	3%	58%	34%	4%	2%	0%	0%	0%	0%	0%	**100%**
Tower Hamlets - Victoria Park (TH002)	195	136	24	3	6	1	0	0	0	0	**365**
as a % of total number of days	53%	37%	7%	1%	2%	0%	0%	0%	0%	0%	**100%**
Tower Hamlets - Blackwall (TH004)	47	276	29	3	7	2	1	0	0	0	**365**
as a % of total number of days	13%	76%	8%	1%	2%	1%	0%	0%	0%	0%	**100%**
Tower Hamlets - Roadside (TH2P)	150	50	11	4	0	0	0	0	0	0	**215**
as a % of total number of days	70%	23%	5%	2%	0%	0%	0%	0%	0%	0%	**100%**
Total all 4 sites	**403**	**673**	**187**	**23**	**19**	**4**	**1**	**0**	**0**	**0**	**1,310**
	31%	51%	14%	1.8%	1.5%	0.3%	0%	0%	0%	0%	**100%**
	96.4% of days Low Air Pollutants			**3.6% of days Moderate or High Air Pollutants**							

Worst air quality?
It is in Millwall Park!
Do we tell people to stop visiting the park?
But this is an aggregate of different pollutants
But both years very similar despite lockdown in 2020
96% of days have low levels of air pollutants in both 2019 and 2020
Only 4 days in 2019 and 1 day in 2020 with high levels of pollutants

What are the Air Quality Targets?

TOWER HAMLETS

From the World Health Organisation (WHO) for Outside Air

https://www.who.int/news-room/fact-sheets/detail/ambient-(outdoor)-air-quality-and-health

Fine particulate matter PM2.5
10 µg/m3 annual mean
25 µg/m3 24-hour mean

Coarse particulate matter PM10
20 µg/m3 annual mean
50 µg/m3 24-hour mean

Sulphur Dioxide SO2
20 µg/m3 24-hour mean
500 µg/m3 10-minute mean

Nitrogen dioxide NO2
40 µg/m3 annual mean
200 µg/m3 1-hour mean

Ozone O3
100 µg/m3 8-hour mean

How did we perform?

On the website lots of different ways of analyzing the data, for example

Target for Ozone is 100 µg/m3 8-hour mean

TOWER HAMLETS

Tower Hamlets - Millwall Park (TH001)

Latitude: 51.489134
Longitude: -0.012977
Date Started: 06/07/2015
Inlet Height: 1.5 metres
Environment: Urban Background

Latest Data | Create Graph | **Exceedance Summary** | Download Data | Annual Statistics

Statistics

Year: 2020
Parameter: Ozone
Update Statistics: View Statistics

Monthly Statistics (monthly averages) for 2020

The monthly data below are average concentration data, followed by data capture rates (shown as a percentage of each month).

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
39.0	52.7	52.1	59.1	66.4	60.0	42.2	49.2	39.3	35.9	29.3	30.9
90%	80%	70%	80%	100%	100%	100%	100%	90%	100%	100%	100%

Annual Statistics for 2020

Annual Hourly Mean (to date)	46	µg/m^3	Ratified	91% Data capture
Max Daily Mean	102	µg/m^3	Ratified	91% Data capture
Max Hourly Mean	174	µg/m^3	Ratified	91% Data capture

Tower Hamlets - Blackwall (TH004)

Latitude: 51.515046
Longitude: -0.008418
Date Started: 08/09/2006
Inlet Height: 3.5 metres
Environment: Urban Traffic

Latest Data | Create Graph | **Exceedance Summary** | Download Data | Annual Statistics

Statistics

Year: 2020
Parameter: Ozone
Update Statistics: View Statistics

Monthly Statistics (monthly averages) for 2020

The monthly data below are average concentration data, followed by data capture rates (shown as a percentage of each month).

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
26.8	39.1	47.2	56.0	57.3	42.7	26.1	34.4	27.8	23.2	16.4	20.1
100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

Annual Statistics for 2020

Annual Hourly Mean (to date)	35	µg/m^3	Provisional	99% Data capture
Max Daily Mean	83	µg/m^3	Provisional	99% Data capture
Max Hourly Mean	141	µg/m^3	Provisional	99% Data capture

How did we perform?

NO2 Nitrogen Dioxide ugm3 from the four live sensors

NO2

	2018	2019	2020	2021 so far
Annual Hourly Mean (to date)	**Target 40 ugm3**			
Blackwall	51	47	38	42
Millwall	23	24	17	19
Victoria	26	24	17	19
Roadside Mile End	47	35	25	28

	2018	2019	2020	2021 so far
Max Daily Mean	**Target 200 ugm3 per hour**			
Blackwall	93	97	96	77
Millwall	61	87	70	47
Victoria	82	85	72	44
Roadside Mile End	85	92	71	55

Max Hourly Mean	**Target 200 ugm3**			
Blackwall	140	143	155	120
Millwall	105	123	95	71
Victoria	228	121	121	98
Roadside Mile End	197	240	138	77

Target is:
40 ugm3 annual target
200 ugm3 per hour

Red indicates exceedance

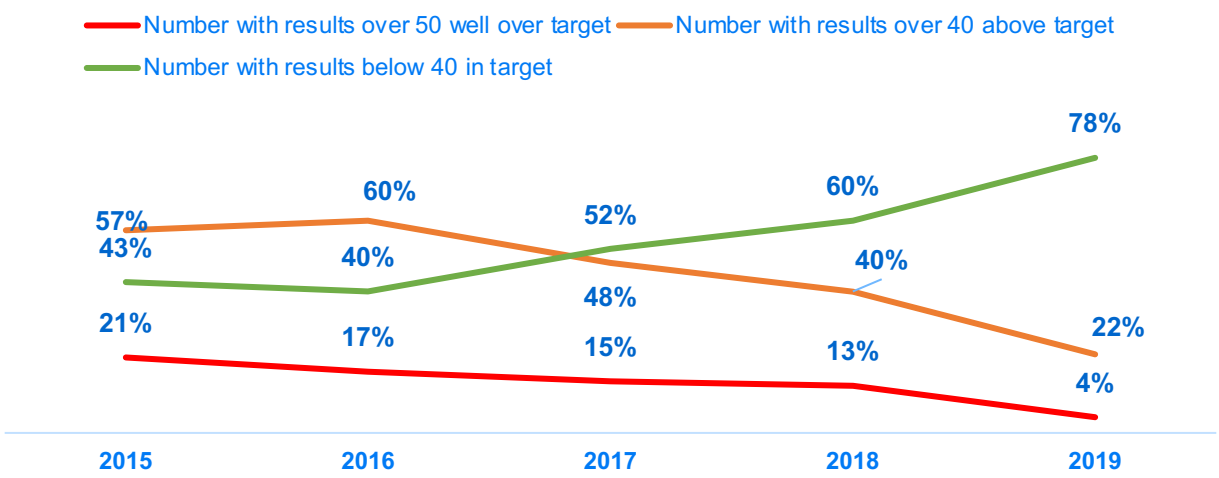
With the exception of Blackwall (by the A12), for NO2 we are below target and even Blackwall is very close to it this year so far
Even the Mile End Road has been below the annual target in recent years
Even the maximum daily mean is well below the hourly target of 200 most of the time

How did we perform?

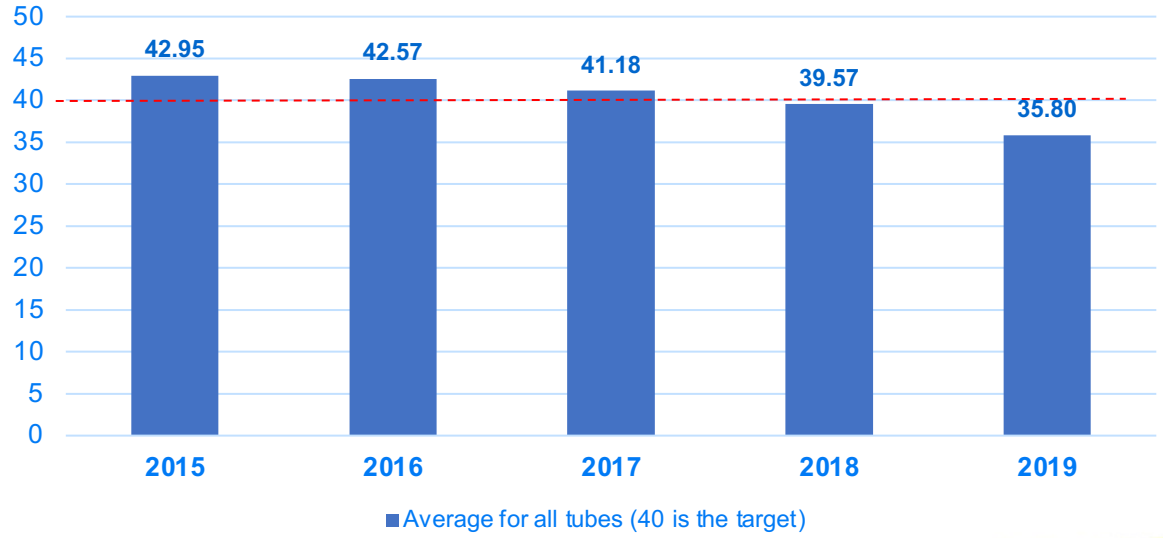
NO2 Nitrogen Dioxide ugm3 results from the Nitrogen Dioxide Diffusion Tubes (NOX tube)

Since May 2015 75 glass tubes (90 since 2018) have been placed across Tower Hamlets, they can only gather cumulative NO2 information across a whole month. They are not live or online but as so cheap can be placed in many more locations. The results match the live data. Every year from 2015 to 2019 air pollution decreased both as an average and the number of locations exceeding the 40 ugm annual target decreased. 2020 results missed 5 months due to lockdown & numbers not corrected yet so not available. See data here:
https://www.towerhamlets.gov.uk/lgnl/environment_and_waste/environmental_health/pollution/air_quality/Advanced_information_on_air_quality/Monitoring.aspx

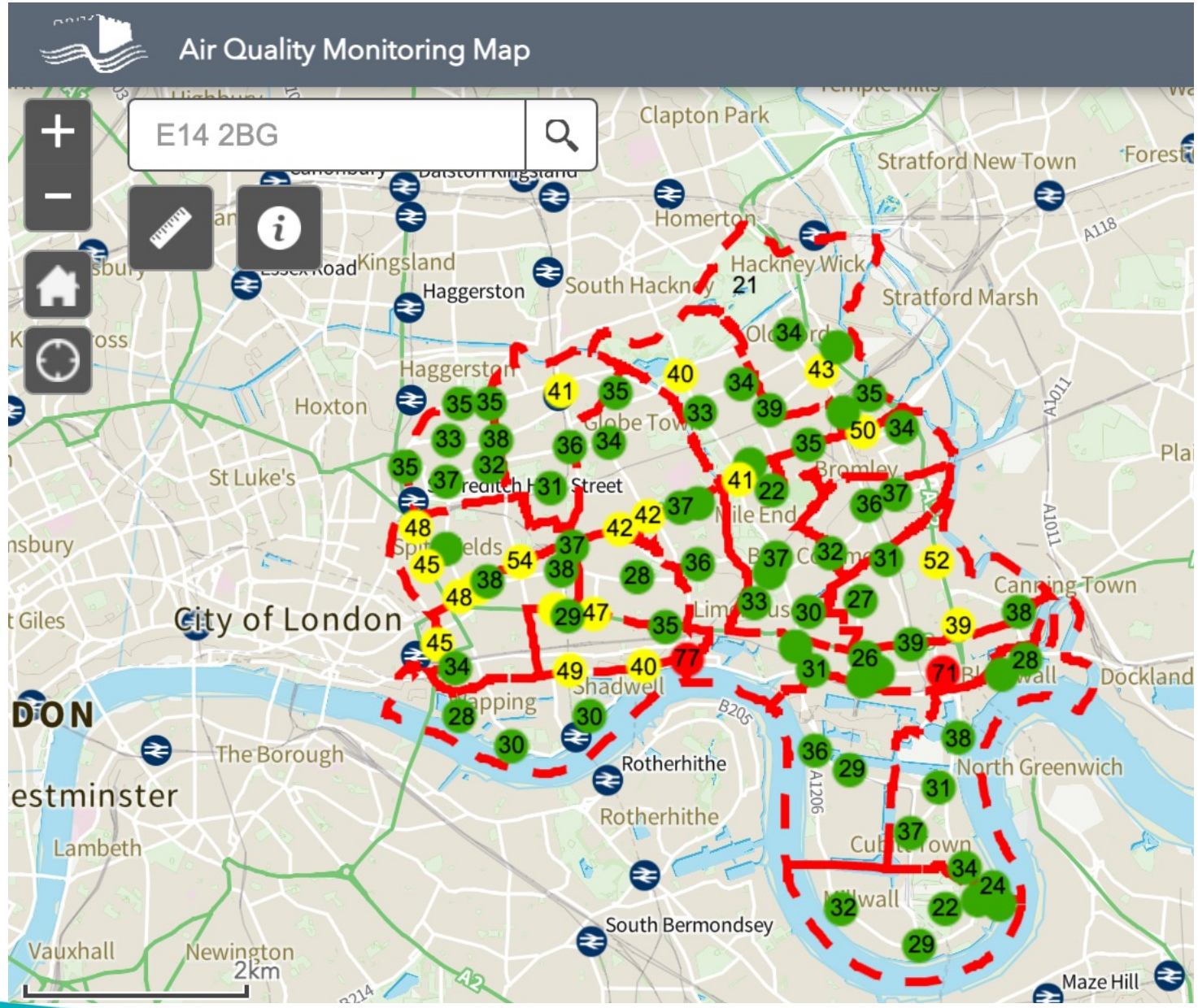
% of NOX tubes within the annual Air Quality Objective for Nitrogen Dioxide of 40µgm-3



Average results for all NOX tubes across Tower Hamlets each year since 2015 target is 40 µgm-3



78% of NOX tubes below target in 2019



How did we perform?

NO2 Nitrogen Dioxide ugm3 results from the Nitrogen Dioxide Diffusion Tubes (NOX tube)
Average for 2019 – last full year data available
Yellow & red above target
Green below target of 40 ugm3 per annum
Worst results near 3 major road tunnels and along major roads with worst traffic jams

TOWER HAMLETS

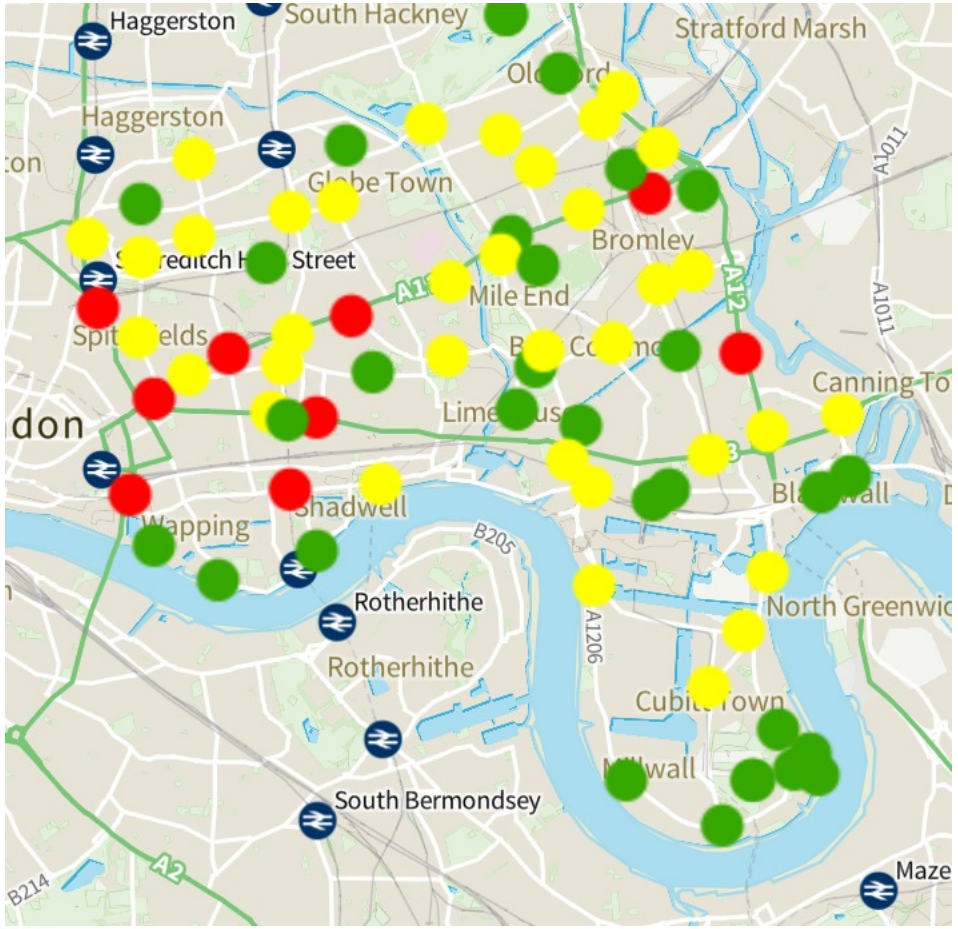
The best of London in one borough

How did we perform?

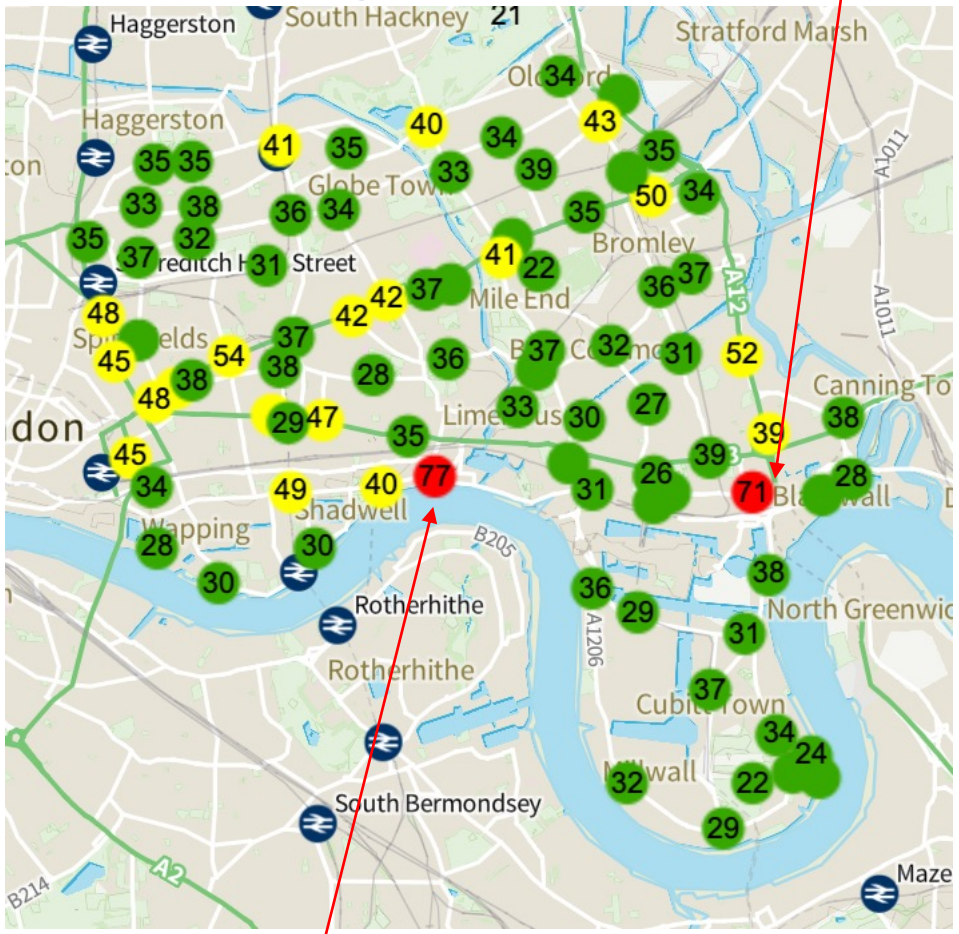
Nitrogen Dioxide Diffusion Tube results (NOX tube)

Red dot - Poplar High & Cotton Street

2015 average results



2019 average results



Red dot – exit Limehouse link west side

Air quality got better in many locations

- Green – below target
- Yellow – above target
- Red – worst results

Suggests worst results next to roads with bad traffic jams & near tunnels

Bias_Adjus

- 60 - 84 µg/m3
- 40 - 59 µg/m3
- 16 - 39 µg/m3

How did we perform?

PM10 Coarse particulate matter ugm3

	2018	2019	2020	2021 to date
Annual Hourly Mean	**Target 20 ugm3**			
Blackwall	24	20	17	18
Millwall	18	18	18	19
Victoria	26	24	17	19
Roadside Mile End	Not available			

	2018	2019	2020	2021 so far
Max Daily Mean	**Target 50 ugm3 per 24 hour**			
Blackwall	77	75	76	47
Millwall	72	67	68	55
Victoria	82	85	72	44
Roadside Mile End	Not available			

Number of days out of Low band / Number of days per year that pollution is medium or high

Blackwall	10	8	4	0
Millwall	1	7	7	1
Victoria	1	7	5	0
Roadside Mile End	Not available			

Target is:
20 ugm3 annual target
50 ugm3 per 24 hour

Red indicates exceedance

Since 2018 for PM10 we are below target except for Victoria Park in 2019
But we occasionally we go above the daily target of 50 ugm3 but this has been improving in recent years
But the number of days that we exceed low levels has been low

Interesting that Millwall Park had highest daily mean in 2021

How did we perform?

PM2.5 Fine particulate matter ugm3

	2018	2019	2020	2021 so far
Annual Hourly Mean (to date)	**Target 10 ugm3 annual mean**			
Blackwall	13	13	9	11
Millwall	Not available			
Victoria	n/a	10	12	13
Roadside Mile End	n/a	10	12	13

	2018	2019	2020	2021 so far
Max Daily Mean	**Target 25 ugm3 per 24 hour**			
Blackwall	65	54	63	41
Millwall	Not available			
Victoria	n/a	48	55	43
Roadside Mile End	n/a	41	57	49

Number of days out of Low band / Number of days per year that pollution is medium or high

Blackwall	11	13	7	2
Millwall	Not available			
Victoria	n/a	10	9	2
Roadside Mile End	n/a	4	10	2

Target is:
10 ugm3 annual target
25 ugm3 per 24 hour

Red indicates exceedance

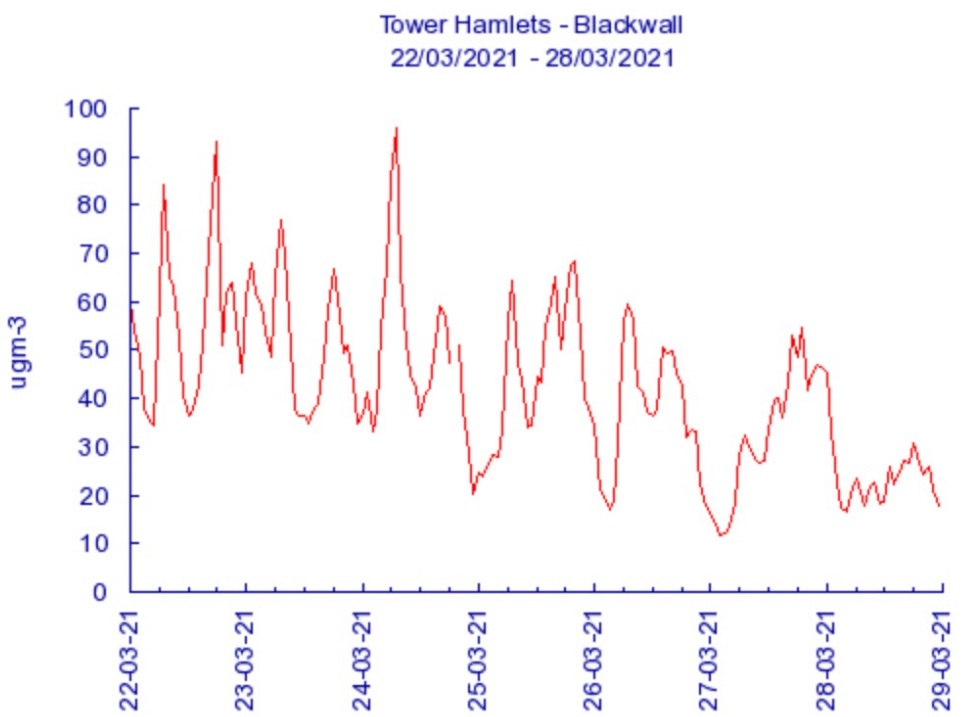
We have exceeded the annual targets for PM2.5 of 10 most years but not by large amounts and the number of days where we have exceeded low levels is also higher then for PM10 but still a low % for each year

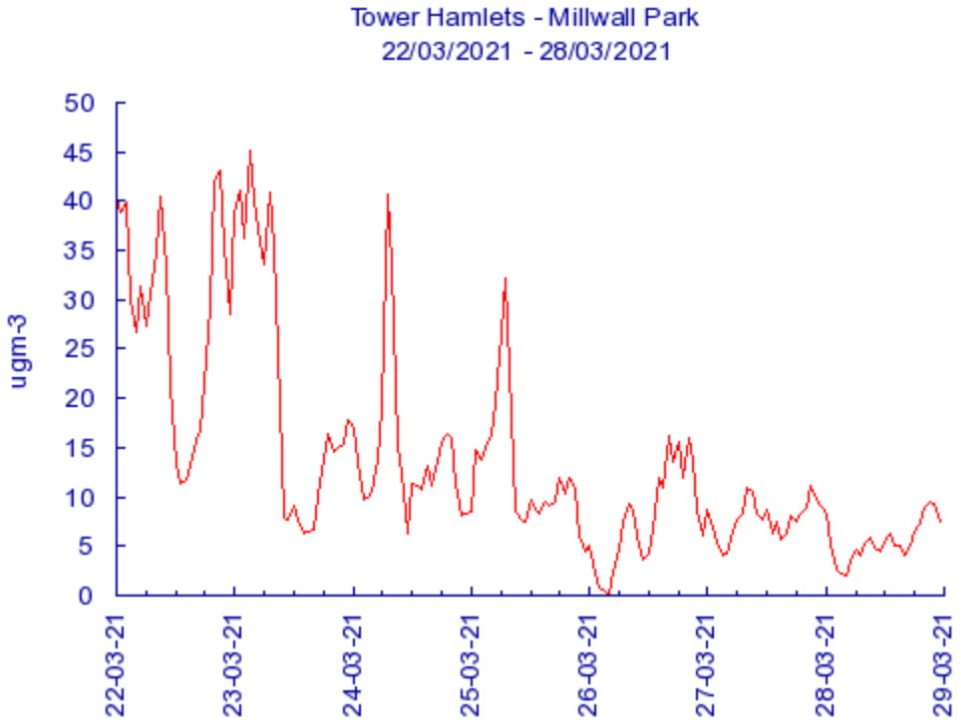
Blackwall 7 days in 2020 and 2 days in 3 months in 2021 where maximum daily mean is higher then low

But clearly the area where we have the worst results

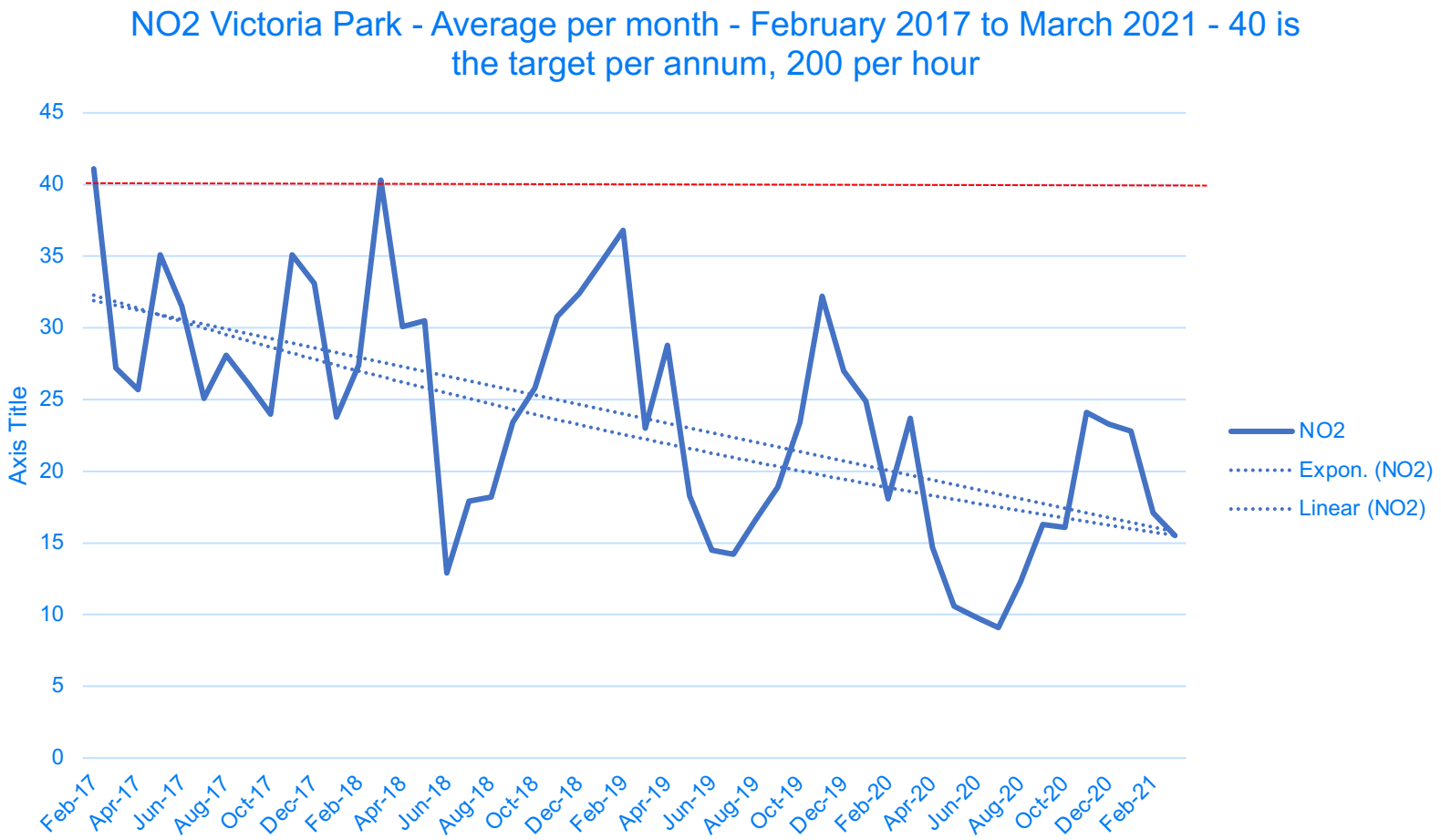
The data can move a lot

NO2 last week Monday 22nd to Sunday 29th March – hourly results
Target is: 40 ugm3 annual target 200 ugm3 per hour target
Blackwall A12 left, Millwall right – note different scales
But shows how much air quality can change over time and by location
But not always a clear link to rush hour traffic (although left hand graph does show it)





The issue with using old maps



Deleted first 3 months of data as some days missing

Air quality has been improving even before COVID and Central London ULEZ in April 2019

Added two trend lines

Target

200 per hour

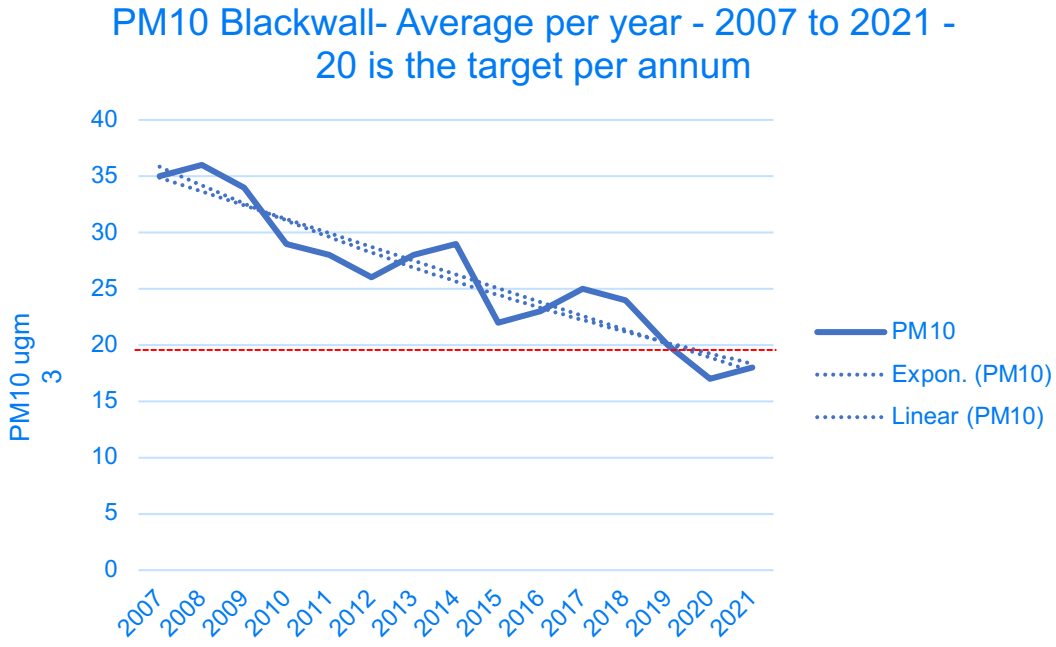
40 per annum red line

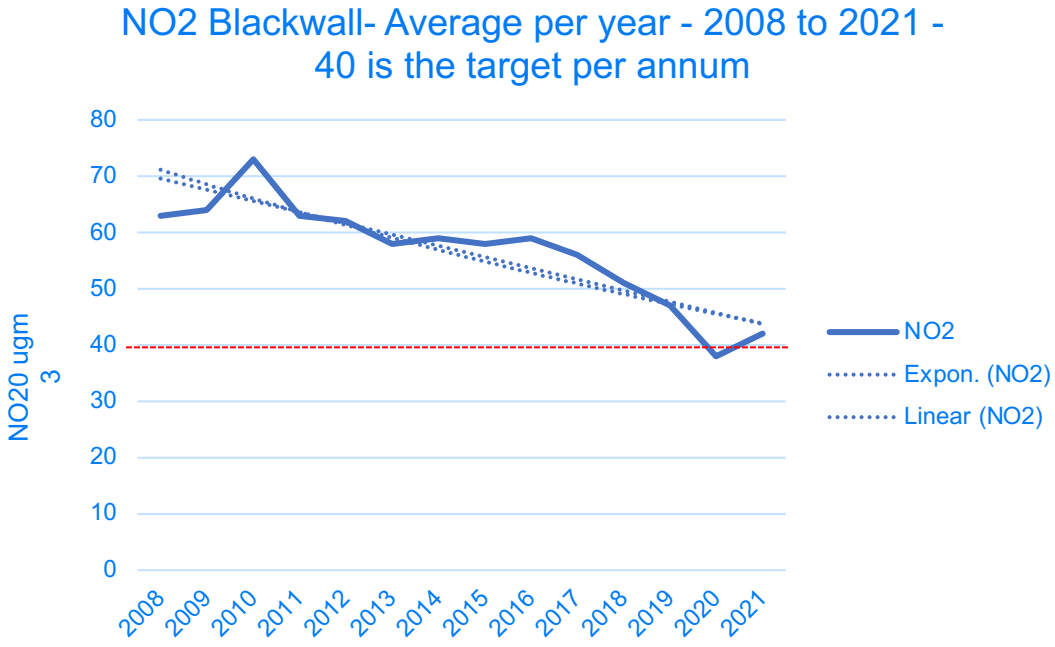
Data only available online from late 2016

The issue with using old maps

More examples from Blackwall of a long term decline in air pollutants since 2007 or 2008

I added two trend lines

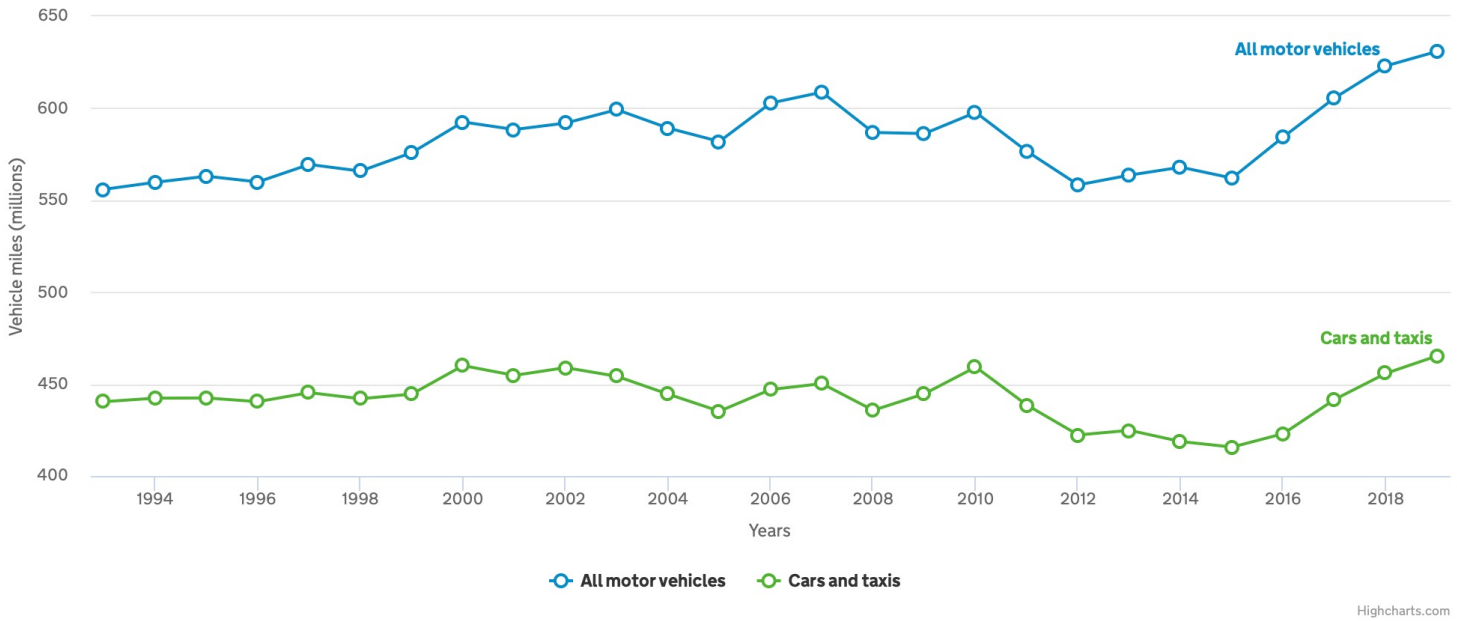




Despite motor traffic increasing

Annual traffic by vehicle type in Tower Hamlets

Traffic in Great Britain from 1993 to 2019 by vehicle type in vehicle miles (millions)



Traffic estimates for the period since 2010 have been revised to take into account the minor road benchmarking exercise. Further details available on GOV.UK: Road traffic statistics: minor road benchmarking

Source: https://roadtraffic.dft.gov.uk/local-authorities/93

Air quality has shown improvements despite increasing traffic in recent years

Not sure why recent increase?

Measured at 99 spots – need to analyse what has caused increase? But is not unique to Tower Hamlets

Uber and Ocado/ Amazon deliveries?

Why has air quality improved despite increasing traffic?

European emission standards for new vehicle engines have increased in stages over the years

European emission standards for passenger cars (Category M)*, g/km

Tier	Date (type approval)	Date (first registration)	CO	THC	VOC	NO_x	$HC+NO_x$	P	PN [#/km]
Diesel									
Euro 1†	July 1992	January 1993	2.72 (3.16)	-	-	-	0.97 (1.13)	0.14 (0.18)	-
Euro 2	January 1996	January 1997	1.0	-	-	-	0.7	0.08	-
Euro 3	January 2000	January 2001	0.66	-	-	0.50	0.56	0.05	-
Euro 4	January 2005	January 2006	0.50	-	-	0.25	0.30	0.025	-
Euro 5a	September 2009	January 2011	0.50	-	-	0.180	0.230	0.005	-
Euro 5b	September 2011	January 2013	0.50	-	-	0.180	0.230	0.0045	6×10^{11}
Euro 6b	September 2014	September 2015	0.50	-	-	0.080	0.170	0.0045	6×10^{11}
Euro 6c	-	September 2018	0.50	-	-	0.080	0.170	0.0045	6×10^{11}
Euro 6d-Temp	September 2017	September 2019	0.50	-	-	0.080	0.170	0.0045	6×10^{11}
Euro 6d	January 2020	January 2021	0.50	-	-	0.080	0.170	0.0045	6×10^{11}
Petrol (Gasoline)									
Euro 1†	July 1992	January 1993	2.72 (3.16)	-	-	-	0.97 (1.13)	-	-
Euro 2	January 1996	January 1997	2.2	-	-	-	0.5	-	-
Euro 3	January 2000	January 2001	2.3	0.20	-	0.15	-	-	-
Euro 4	January 2005	January 2006	1.0	0.10	-	0.08	-	-	-
Euro 5a	September 2009	January 2011	1.0	0.10	0.068	0.060	-	0.005**	-
Euro 5b	September 2011	January 2013	1.0	0.10	0.068	0.060	-	0.0045**	-
Euro 6b	September 2014	September 2015	1.0	0.10	0.068	0.060	-	0.0045**	6×10^{11}***
Euro 6c	-	September 2018	1.0	0.10	0.068	0.060	-	0.0045**	6×10^{11}
Euro 6d-Temp	September 2017	September 2019	1.0	0.10	0.068	0.060	-	0.0045**	6×10^{11}
Euro 6d	January 2020	January 2021	1.0	0.10	0.068	0.060	-	0.0045**	6×10^{11}

New cars are less polluting and more fuel efficient + hybrids + electric vehicles now becoming more common

European emission standards have increased over the years i.e. Euro4 in 2005, Euro5 in 2009 and Euro6 in 2014

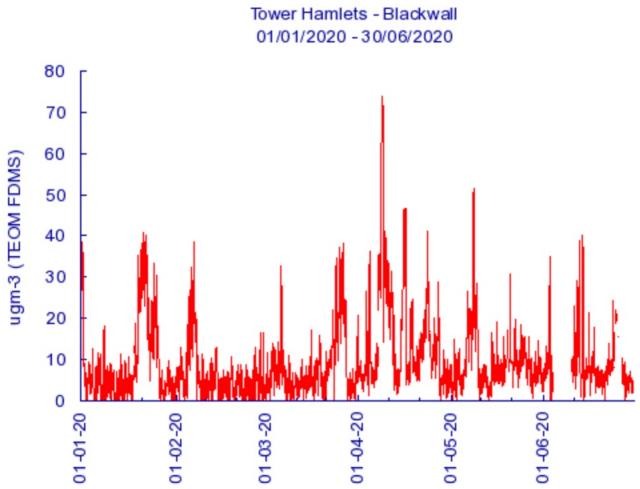
Average age of a car in the UK in 2019 = 8.3 years – meaning more then half vehicles have Euro5 or better engines – this will improve every year

ULEZ from October 2021

- Petrol: Euro 4 – petrol cars generally registered after 2005 allowed
- Diesel: Euro 6 – diesel cars generally registered after September 2015 allowed

Summary

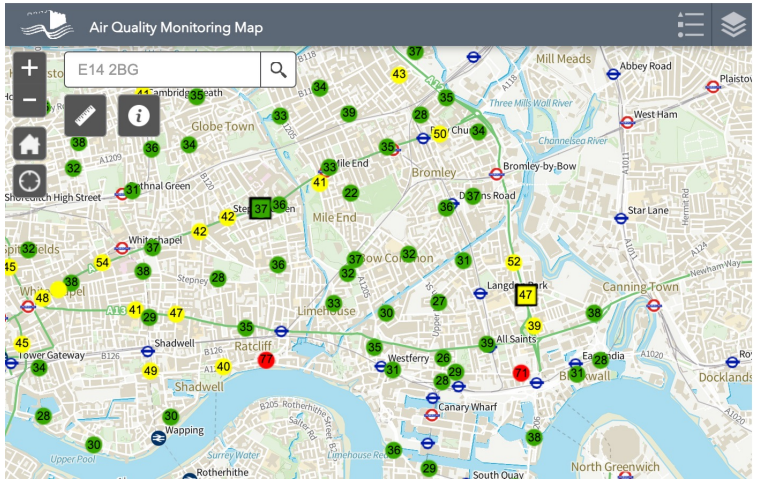
- When you actually look at the data you see things that you do not expect & which contradict old maps
- The website provides some excellent summaries but a lot of data to understand and manipulate - and sometimes results make little sense e.g. PM2.5 went up last April after lockdown started at Blackwall !
- Only four stations – two background in parks, two by roadside - none near schools, none near construction sites, none where most people live, study or work, none in markets, none in dense urban areas but NOX tubes do seem to support message that AQ improving
- Construction sites gather air quality information – not available online nor to the public
- But they do show air quality is improving and has done so for years and mostly below WHO targets except PM2.5 despite increasing traffic
- ULEZ expansion October 2021 should accelerate downward trend
- Noise is also a pollutant



Recommendations

See 2019 NOX map

- As expected, air quality worst next to major through roads
- Two worst red spot's locations in known areas for lots of traffic jams – heading for / from Blackwall tunnel on Cotton Street (not many north / south routes here) or exiting Poplar High Street or western exit from Limehouse Link by traffic lights and turn north
- Residential areas seem to be within target



- Free flowing traffic = results close to target – need to encourage free flowing traffic
- Traffic jams = results exceed target

Questions

1. Justification for air quality argument element of Livable Streets in most parts of TH if in 2019 already below target for NOX in many areas? PM2.5 need more data though.
2. How quickly does air quality improve as you move away from hot spots?
3. How can we best mitigate air quality in two worst locations for traffic jams?
4. How quickly will new cleaner vehicles be bought & switch to electric vehicles?

Answers

1. Need more data especially on PM2.5 and more detail from known problem areas
2. Focus on areas with above target air quality for mitigation – green walls etc

Recommendations

- We need more permanent online air quality monitoring stations, not just one extra on the Highway (which should be located adjacent to a primary school) especially in the west of the Borough where none now and in places where the most people live/work/study – use NOX tube data as a guide as to where
- Get construction sites air quality data online as well
- A greater focus on measuring PM2.5 as the main pollutant of concern / uncertainty
- A database that contains all of the data from the stations for easy access and analysis – should not rely on Councillor's knowledge of CSV files etc. to extract and analyse
- A greater focus on the sources of pollutants in Tower Hamlets – we have little industry but a lot of construction – what impact is that having on our air quality?
- Add noise measurement
- Get more accurate local impact then using NOX tubes – get mobile sensors to spend two weeks each at multiple locations across the Borough and share results locally
- Trial large scale use of green barriers next to major roads or other forms of barriers see Imperial College London, researchers using airflow modelling techniques to study the effects of unique roadside structures to deflect particulates away from pedestrians.
- Measure impact of LTN before and after changes

Newham results for a comparison

https://www.newham.gov.uk/public-health-safety/air-quality-newham

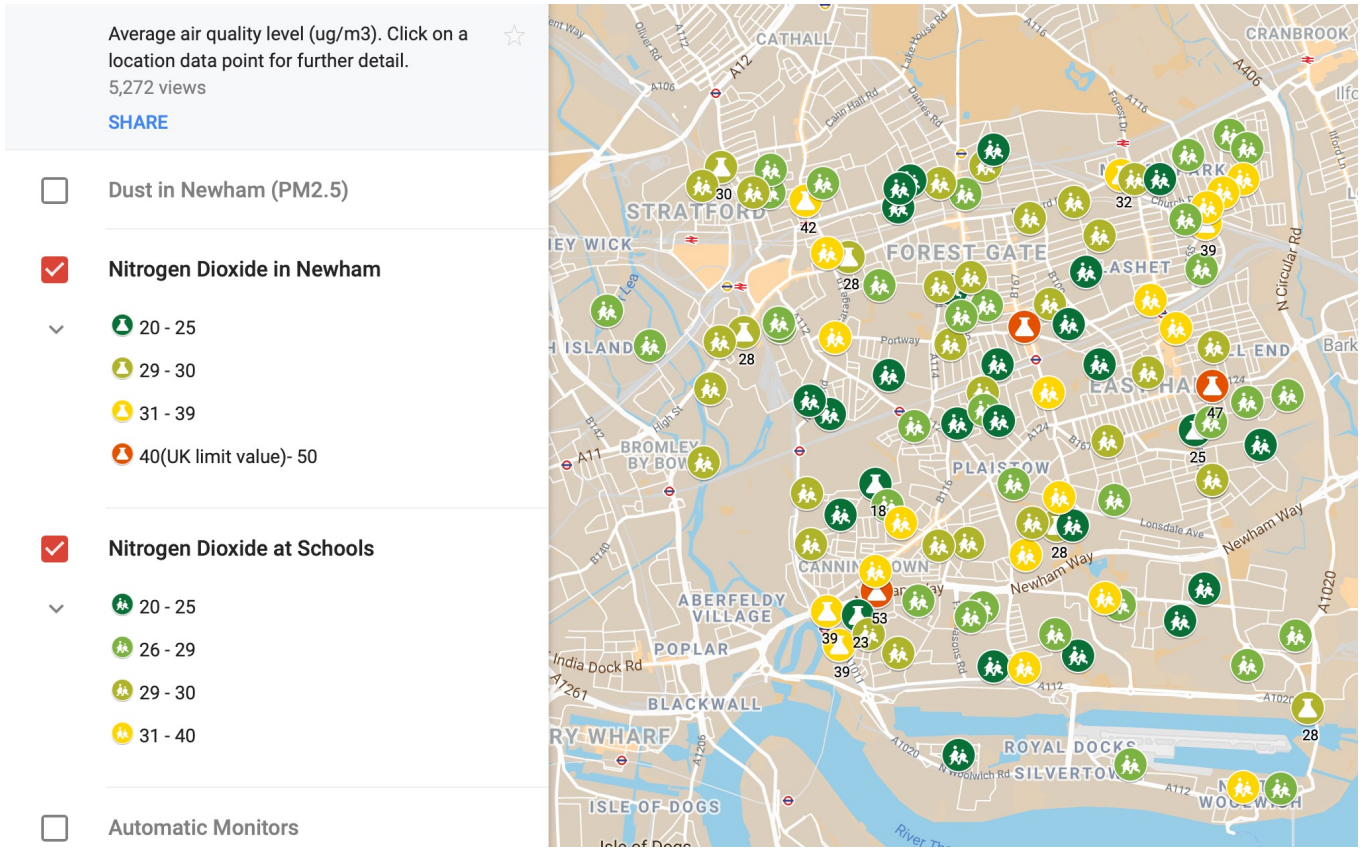
Newham map to the right shows more recent NOX data from diffusion tubes
Red = above 40 safe level
Green & yellow = below 40 safe level

Suggests most of Newham within safe levels
London City Airport has its own sensors
But Newham appear to have stopped collecting live air quality data!

Closed local authority funded monitoring sites

The following monitoring sites are no longer active in this local authority, but you can still access information about them by clicking on their names below.

Monitoring Site	Date Ended
Newham Cam Road [Closed] (NEW2)	31/03/2021
Newham Wren Close [Closed] (NEW3)	31/03/2021
Tant Avenue [Closed] (NEW1)	14/03/2003



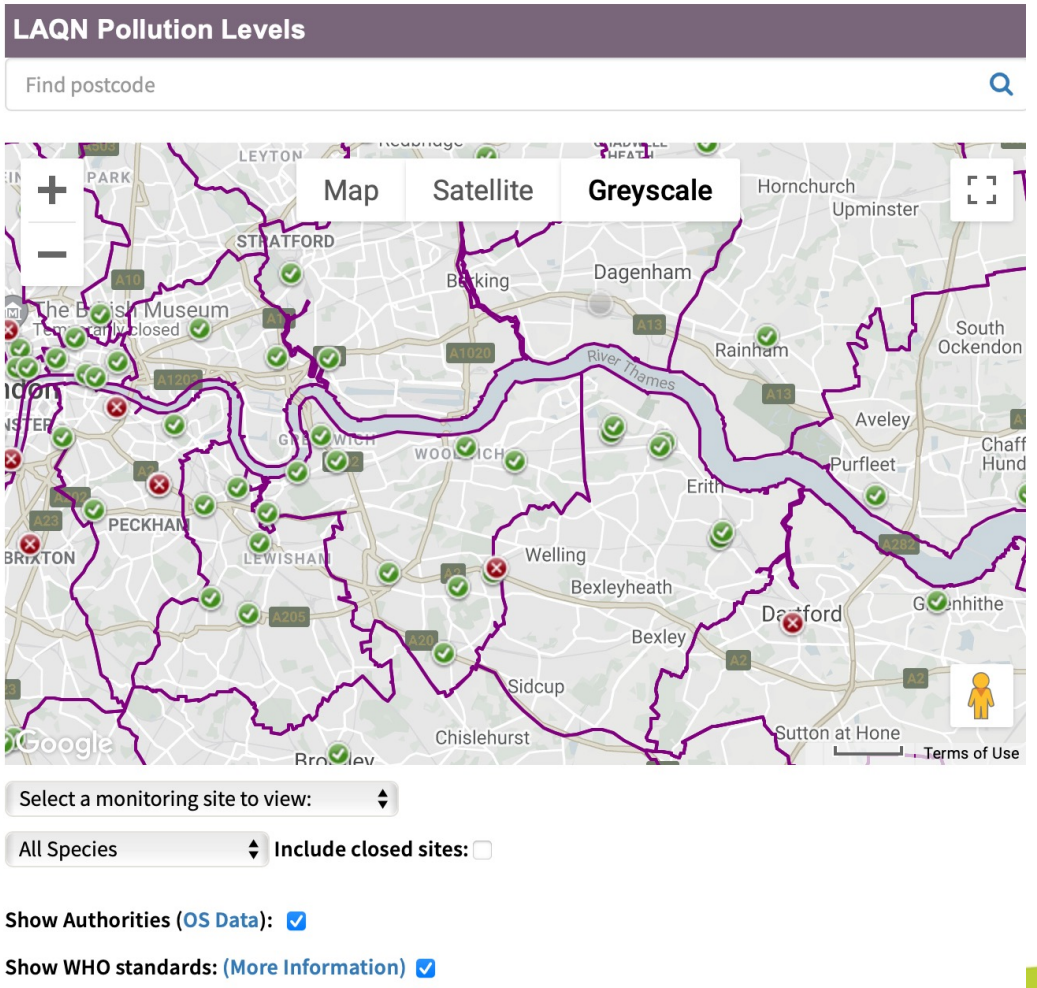
The best of London in one borough

Greenwich results for a comparison

https://www.londonair.org.uk/london/asp/publicbulletin.asp?la_id=11

Greenwich map to the right shows (for Wednesday 21st April 2021) most sites except one below WHO safe target levels (tick indicates OK, Red X above target)

Still to do historical analysis for approaches to Blackwall Tunnel but see next page for location in Greenwich Peninsula



Greenwich results for a comparison

https://www.londonair.org.uk/london/asp/publicbulletin.asp?la_id=11

John Harrison Way in Greenwich Peninsula - good for last week and last year (but more mixed for PM2.5)

TOWER HAMLETS

ROYAL borough of GREENWICH

Weekly Air Quality Report for Greenwich - John Harrison Way (seven days to 26/04/2021)

	19/04/2021	20/04/2021	21/04/2021	22/04/2021	23/04/2021	24/04/2021	25/04/2021	Week
Nitrogen Dioxide								
Hourly max (ug/m3):	77.6	74.6	72	41.5	54.4	40.1	16.9	77.6
Low hours:	24	24	24	24	24	24	24	168
Moderate hours:	0	0	0	0	0	0	0	0
High hours:	0	0	0	0	0	0	0	0
Very high hours:	0	0	0	0	0	0	0	0
Occurences of hourly mean >200ug/m3: (AQS Objective <= 18)						n/a (year to 26/04/2021)		
Mean: (AQS Objective < 40ug/m3)						n/a (year to 26/04/2021)		
PM10 Particulates								
Daily mean (ug/m3):	33.5	43	42.1	24.8	22.2	19.4	13.6	43
Low days:	1	1	1	1	1	1	1	7
Moderate days:	0	0	0	0	0	0	0	0
High days:	0	0	0	0	0	0	0	0
Very high days:	0	0	0	0	0	0	0	0
Mean: (AQS Objective < 40ug/m3)						n/a (year to 26/04/2021)		
Days where daily mean >50ug/m3: (AQS Objective <= 35)						n/a (year to 26/04/2021)		
PM2.5 Particulates								
Daily mean (ug/m3):	20	37.8	29.7	7.7	9.6	11.1	6.3	37.8
Low days:	1	0	1	1	1	1	1	6
Moderate days:	0	1	0	0	0	0	0	1
High days:	0	0	0	0	0	0	0	0
Very high days:	0	0	0	0	0	0	0	0

Warning: this report includes provisional measurements that may change as part of the ratification process.
Note: Reports starting 1st Jan 2012 or later use the new Daily Air Quality Index bandings.