Committee	Dated:
Port Health and Environmental Services	22 November 2016
Subject: Air quality annual status report	**Public**
Report of: Director of Markets and Consumer Protection	**For Decision**
Report author: Ruth Calderwood, Air Quality Manager	

Summary

The City of London Corporation's Air Quality Strategy 2015 – 2020 was approved by the Port Health and Environmental Services Committee in July 2015.

The strategy fulfils the City Corporation's statutory obligation to assist the Government and Mayor of London to meet European Limit Values for nitrogen dioxide and fine particles (PM_{10}). It also assists with the City Corporation's obligations under the Health and Social Care Act 2012 to improve the public health of its population.

The City Corporation is required to produce a statutory annual status report to demonstrate progress with actions contained within the strategy. This report summarises the progress being made. A copy of the full report is available online and via hard copy from the Members' Reading Room. The section of the report covering air quality monitoring is attached as Appendix 1.

The City Corporation has been awarded Cleaner Air Borough status by the Mayor of London as a result of its commitment to improve air quality as detailed in the 2016 annual status report.

Air quality is improving in the City of London, particularly in areas away from busy roads. This is set to continue with the work being implemented by the City Corporation and the Mayor of London's new proposals to improve air quality, on which there is currently a consultation ending on 18 December 2016.

Recommendation

Members are asked to:-

- note the report; and
- delegate authority to the Town Clerk, in consultation with the Chairman and Deputy Chairman, to respond to the Mayor of London's consultation on new proposals to improve air quality.

Main Report

Background

1. The City Corporation has a statutory duty to assist the Mayor of London and the UK government in taking action to reduce levels of air pollution so that concentrations of pollutants do not exceed set limits. The City Corporation also has a responsibility to improve public health.

2. The City of London Air Quality Strategy 2015 – 2020 outlines action that will be taken to fulfil the City Corporation's statutory responsibility for Local Air Quality Management, and for reducing the health impact of air pollution on residents and workers.

3. The City Corporation has a statutory obligation to submit an annual status report to the Mayor of London and the government. The report must outline progress with actions within the strategy and provide details of any air quality monitoring undertaken. A copy of the full report, which was submitted in July 2016, is available online and via hard copy from the Members' Reading Room. The section of the report covering air quality monitoring is attached as Appendix 1.

Air quality data

4. Background concentrations of nitrogen dioxide have been decreasing over the past few years. Levels of nitrogen dioxide at Speed House and Barts hospital site are now below the limit value. These are both background sites.

5. Roadside concentrations are more variable than background. Concentrations of nitrogen dioxide along Upper Thames Street declined by about 25% in 2015, compared to 2014. This was a result of the cycle superhighway work. Conversely, concentrations in Beech Street increased in the same year. Both sites still have levels of nitrogen dioxide greater than two times the limit value.

6. Annual average concentrations of fine particles, PM_{10}, were higher across the City in 2015 than 2014. This was largely due to weather conditions. Concentrations of PM_{10}, along Upper Thames Street were also affected by construction activity associated with the cycle superhighway works.

7. The $PM_{2.5}$ analyser in Farringdon Street recorded levels below the annual average limit value during 2015. There should be further improvements in 2016 due to the cycle superhighway. A new $PM_{2.5}$ analyser was installed in Sir John Cass playground in December 2015. Initial indications are that levels are much lower than the limit value.

Progress with actions

8. The annual status report details progress with actions in the City Corporation air quality strategy. Actions of note include:

    - Completion of a three year engagement programme with Barts Health NHS Trust. This contributed to concentrations of nitrogen dioxide at the hospital meeting the annual average limit value for the first time
    - Air quality being incorporated into the City responsible procurement strategy
    - Implementation of new controls over emissions from plant on construction sites
    - Idling engine action days with extensive media coverage
    - CityAir business air quality champions meeting the Parliamentary Under Secretary of State for water, forestry, rural affairs and resource management with the Chairman and Deputy Chairman of Port Health and Environmental Services
    - Mansell Street residents air quality monitoring programme
    - The Mayor of London, Sadiq Khan, outlining his ambitions for air quality from Sir John Cass School, following the air quality work undertaken there by the City Corporation

Funding for projects

9. Funding has been obtained from the Mayor of London for the following air quality related work during 2016 - 2019:

    - £40,000 to investigate the impact on local air quality of using standby diesel generators for short term operating reserve and triad management
    - £127,000 over three years to roll out idling engine action days to an additional 12 London Boroughs
    - £990,000 over three years to implement a Low Emission Neighbourhood

Mayor of London Consultation

10. The Mayor of London is consulting on new proposals to improve air quality. The proposals are:

    - a £10 ‘emissions surcharge’ for pre Euro 4/IV vehicles in the existing Congestion Charge Zone (CCZ)
    - bringing forward the planned Ultra Low Emission Zone (ULEZ) from 2020 to 2019. This restricts vehicles in the CCZ to Euro 6/IV for diesel and Euro 4/IV for petrol
    - tightening to London Low Emission Zone criteria for HGVs, buses and coaches to Euro VI in 2019
    - extending the planned ULEZ to the north – south circular

11. The consultation period ends on 18 December 2016. It is recommended that delegation should be granted to the Town Clerk, following consultation with the Chairman and Deputy Chairman, to respond.

Corporate & Strategic Implications

12. The work on air quality supports Key Policy Priority KPP3 of the Corporate Plan: 'Engaging with London and national government on key issues of concern to our communities such as transport, housing and public health'.

Conclusion

13. The City Corporation has submitted its annual air quality status report to the Mayor of London and government and has been awarded Clean Air Borough Status for its action to improve air quality.

14. Overall, air quality is improving in the City of London, particularly in areas away from busy roads. This is set to continue with the work being implemented by the City Corporation and the Mayor of London's new proposals to improve air quality.

Appendices

Appendix 1: Air quality monitoring section of the Annual Status Report

Background Papers: City of London Air Quality Strategy 2015 – 2020

Ruth Calderwood
Air Quality Manager

T: 020 7332 1162
E: ruth.calderwood@cityoflondon.gov.uk

Appendix 1: Air quality monitoring section of the Annual Status Report

1. Air Quality Monitoring

1.1 Locations

Table B. Details of Automatic Monitoring Sites for 2015

Site ID	Site Name	X (m)	Y (m)	Site Type	In AQMA?	Distance from monitoring site to relevant exposure (m)	Distance to kerb of nearest road (N/A if not applicable) (m)	Inlet height (m)	Pollutants monitored	Monitoring technique
CT2	Farringdon Street	531625	181201	Urban Traffic	Y	0 m	1m	1.5	$PM_{2.5}$	BAM
CT3	Sir John Cass School	533475	181179	Urban Background	Y	0 m	N/A	1.5	PM_{10}	BAM
CT3	Sir John Cass School	533475	181179	Urban Background	Y	0 m	N/A	1.5	$PM_{2.5}$	BAM
CT3	Sir John Cass School	533475	181179	Urban Background	Y	0 m	N/A	1.5	NO_2	Chemiluminescent
CT4	Beech Street	532141	181861	Urban Traffic	Y	0 m	1m	3	PM_{10}	TEOM
CT4	Beech Street	532176	181862	Urban Traffic	Y	0 m	1m	2	NO_2	Chemiluminescent
CT6	Walbrook Wharf	532528	180784	Urban Traffic	Y	0 m	1m	3	NO_2	Chemiluminescent
CT8	Upper Thames Street	532834	180691	Urban Traffic	Y	0 m	2m	1.5	PM_{10}	TEOM

Table C. Details of Non-Automatic Monitoring Sites for 2015

Site ID	Site Name	X (m)	Y (m)	Site Type	In AQMA?	Distance from monitoring site to relevant exposure (m)	Distance to kerb of nearest road (N/A if not applicable) (m)	Inlet height (m)	Pollutants monitored	Tube co-located with an automatic monitor? (Y/N)
CL5	St. Bartholomew's Hospital courtyard	531901	181571	Urban Background	Y	0 m	N/A	1.5	NO_2	N
CL38	St. Andrew's Church, Queen Victoria Street	531851	180962	Urban Traffic	Y	0 m	2m	3	NO_2	N
CL39	St. Dunstan's Church, Fleet Street	531235	181155	Urban Traffic	Y	0 m	2m	1.5	NO_2	N
CL40	Guinness Trust Estate, Mansell Street.	533791	181027	Urban Traffic	Y	0 m	3m	2	NO_2	N
CL55	Speed House, Barbican Centre	532482	181799	Urban Background	Y	0 m	N/A	0.5	NO_2	N

1.2 Comparison of Monitoring Results with AQOs

The results presented are after adjustments for "annualisation" and for distance to a location of relevant public exposure, the details of which are described in Appendix A.

Table D. Annual Mean NO_2 Ratified and Bias-adjusted Monitoring Results (µg m^{-3})

Site ID	Site type	Valid data capture for monitoring period % [a]	Valid data capture 2015 % [b]	Annual Mean Concentration (µgm^{-3})						
				2009[c]	2010[c]	2011[c]	2012[c]	2013[c]	2014[c]	2015[c]
Automatic Chemiluminescent Analysers										
CT3 (John Cass)	Urban Background	95	90	**56**	**55**	**45**	**47**	**47**	**45**	**42**
CT4 (Beech St)	Roadside	98	98	**90**	**81**	**67**	**79**	**81**	**80**	**89**
CT 6 (Walbrook)	Roadside	94	95	**131**	**118**	**103****	**115**	**122**	**122**	**98**
Diffusion tube										
CL5	Urban Centre	99	100	**43**	**42**	**45**	**43**	**42**	**43**	38
CL38	Roadside	99	100	**67**	**61**	**63**	**56**	**64**	**59**	**53**
CL39	Roadside	94	83	**102**	**87**	**98**	**93**	**87**	**80**	**85**
CL40	Roadside	97	75	**67**	**56**	**65**	**60**	**59**	**59**	**55**
CL55	Urban Background	90	92	**43**	36	38	37	37	34	32

Notes: Exceedance of the NO_2 annual mean AQO of 40 µgm^{-3} are shown in **bold**.

NO_2 annual means in excess of 60 µg m^{-3}, indicating a potential exceedance of the NO^2 hourly mean AQS objective are shown in bold and underlined.

[a] data capture for the monitoring period, in cases where monitoring was only carried out for part of the year

[b] data capture for the full calendar year (e.g. if monitoring was carried out for six months the maximum data capture for the full calendar year would be 50%)

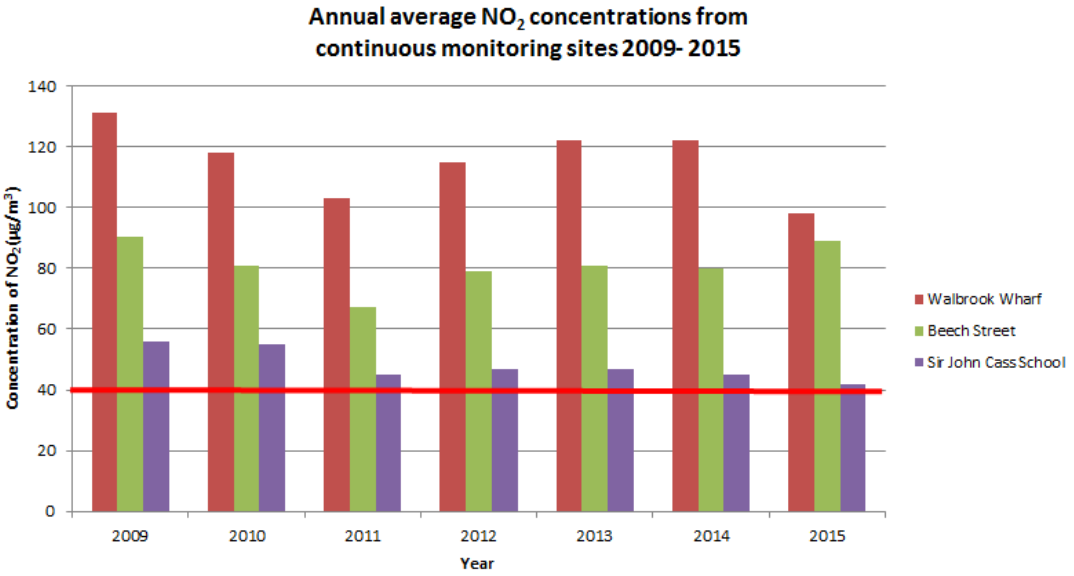
[c] Means should be "annualised" in accordance with LLAQM Technical Guidance, if valid data capture is less than 75%

** 74% data capture annualised

Narrative on the 7 year trend

Since 2009, background NO_2 sites have been decreasing, with the Speed House diffusion tube site being below to AQO since 2010 and for the first time, the St Bartholomew's diffusion tube site is below the AQO in 2015. Sir John Cass School continuous monitoring remains just above the objective at 42µgm^{-3}.

Roadside sites remain above the annual average AQO and show a greater variability over the 7 years. In 2015 Walbrook Wharf reached a 7 year low as a result of Cycle Super Highway works which reduced capacity on the road by 25%.



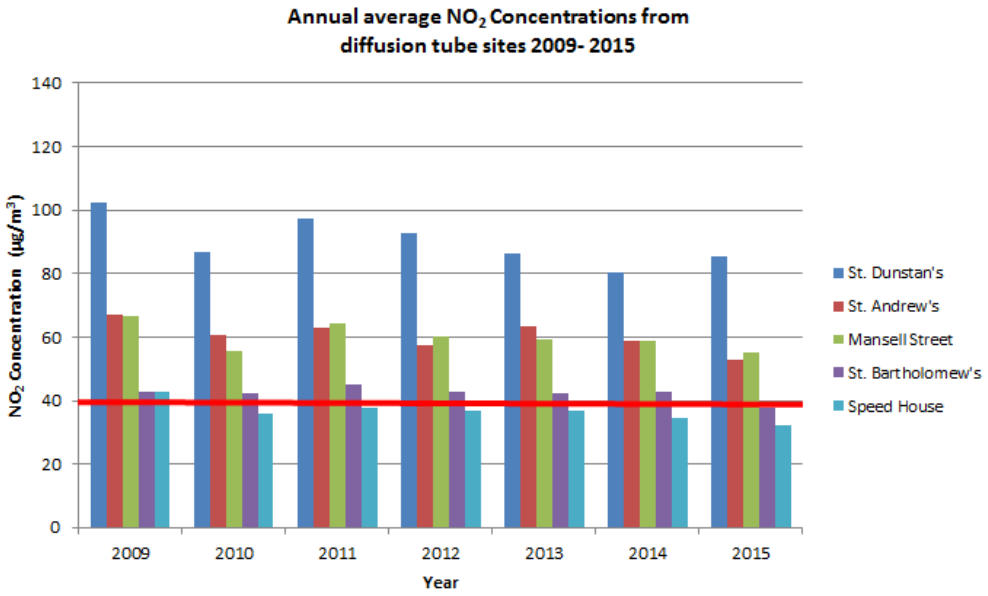


Table E. NO_2 Automatic Monitor Results: Comparison with 1-hour Mean Objective

Site ID	Valid data capture for monitoring period % [a]	Valid data capture 2015 % [b]	Number of Hourly Means > 200 µgm^{-3}						
			2009[c]	2010 [c]	2011[c]	2012 [c]	2013[c]	2014 [c]	2015 [c]
CT3 (John Cass)	95	90	2	3	0	0	0	0	0
CT4 (Beech St)	98	98	**189**	**134**	**42**	**176**	**125**	**175**	**206**
CT 6 (Walbrook)	94	95	**984**	**641**	**231****	**483**	**771**	**656**	**203**

Notes: Exceedance of the NO_2 short term AQO of 200 µgm^{-3} over the permitted 18 days per year are shown in **bold**.

[a] data capture for the monitoring period, in cases where monitoring was only carried out for part of the year

[b] data capture for the full calendar year (e.g. if monitoring was carried out for six months the maximum data capture for the full calendar year would be 50%)

[c] Means should be "annualised" in accordance with LLAQM Technical Guidance, if valid data capture is less than 75%

** 74% data capture annualised

Narrative on the 7 year trend

The background site (Sir John Cass School) hourly average for NO_2 has not exceeded 200µgm^{-3} since 2010 and has not exceeded the hourly objective in the past 7 years. Both roadside sites continue to exceed the hourly NO_2 AQO, with Beech Street reaching a 7 year high and Walbrook Wharf recording a 7 year low in 2015. This is thought to be as a result of the Cycle Super Highway Works reducing traffic capacity at Walbrook Wharf (Upper Thames St) and increased traffic at Beech St as a result of a number of road works in the locality.

Table F. Annual Mean PM_{10} Automatic Monitoring Results (µg m^{-3})

Site ID	Valid data capture for monitoring period % [a]	Valid data capture 2015 % [b]	Annual Mean Concentration (µgm^{-3})						
			2009[c]	2010 [c]	2011[c]	2012 [c]	2013[c]	2014 [c]	2015 [c]
CT3 (John Cass)	95	99	18	18	21	19	22	20	23
CT4 (Beech St)	96	88	28	30	29	28	32	25	28
Ct8 (Upper Thames St)	95	92	36	37	37	34	39	34	**41**

Notes: Exceedance of the PM_{10} annual mean AQO of 40 µgm^{-3} are shown in **bold**.

[a] data capture for the monitoring period, in cases where monitoring was only carried out for part of the year

[b] data capture for the full calendar year (e.g. if monitoring was carried out for six months the maximum data capture for the full calendar year would be 50%)

[c] Means should be "annualised" in accordance with LLAQM Technical Guidance, if valid data capture is less than 75%

Narrative on the 7 year trend

The annual PM_{10} levels across the City have historically been below the annual PM_{10} AQO. The increase in 2015 at Upper Thames Street is thought to relate to local activity from a deconstruction site and Cycle Super Highway work which were both in close proximity to the analyser.

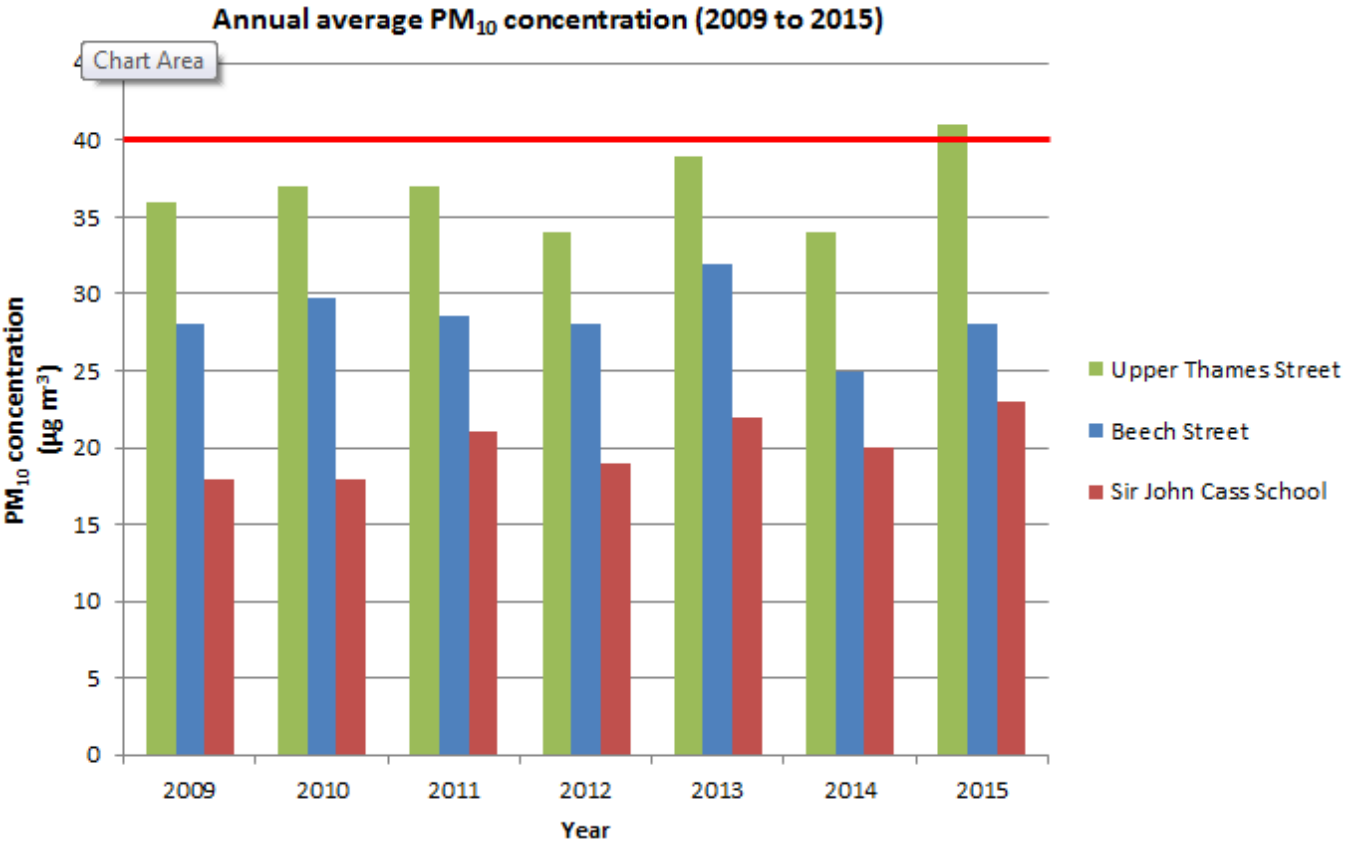


Table G. PM_{10} Automatic Monitor Results: Comparison with 24-Hour Mean Objective

Site ID	Valid data capture for monitoring period % [a]	Valid data capture 2015 % [b]	Number of Daily Means > 50 µgm^{-3}						
			2009[c]	2010 [c]	2011[c]	2012 [c]	2013[c]	2014 [c]	2015 [c]
CT3 (John Cass)	95	99	5	2	14	9	8	5	3
CT4 (Beech St)	96	88**	23	26	**35**	**42**	**35**	19	17 (41)
CT8 (Upper Thames St)	95	92	**39**	**55**	**47**	**43**	**51**	25	**72**

Notes: Exceedance of the PM_{10} short term AQO of 50 µg m^{-3} over the permitted 35 days per year or where the 90.4th percentile exceeds 50 µg m^{-3} are shown in **bold**. Where the period of valid data is less than 90% of a full year, the 90.4th percentile is shown in brackets after the number of exceedances.

[a] data capture for the monitoring period, in cases where monitoring was only carried out for part of the year

[b] data capture for the full calendar year (e.g. if monitoring was carried out for six months the maximum data capture for the full calendar year would be 50%)

[c] Means should be "annualised" in accordance with LLAQM Technical Guidance, if valid data capture is less than 75%

** reduced data capture due to repeated flooding at the site from a damaged drainpipe; matter now resolved.

Narrative on the 7 year trend

The background site at Sir John Cass (CT3) has not exceeded short term AQO of 50µgm^{-3} over the past 7 years. Upper Thames Street has exceeded it in all years (except 2014). The highest number of exceedences were recorded at Upper Thames Street in 2015 and are thought to relate a to local activity from a deconstruction site and Cycle Super Highway work which were both in close proximity to the analyser.

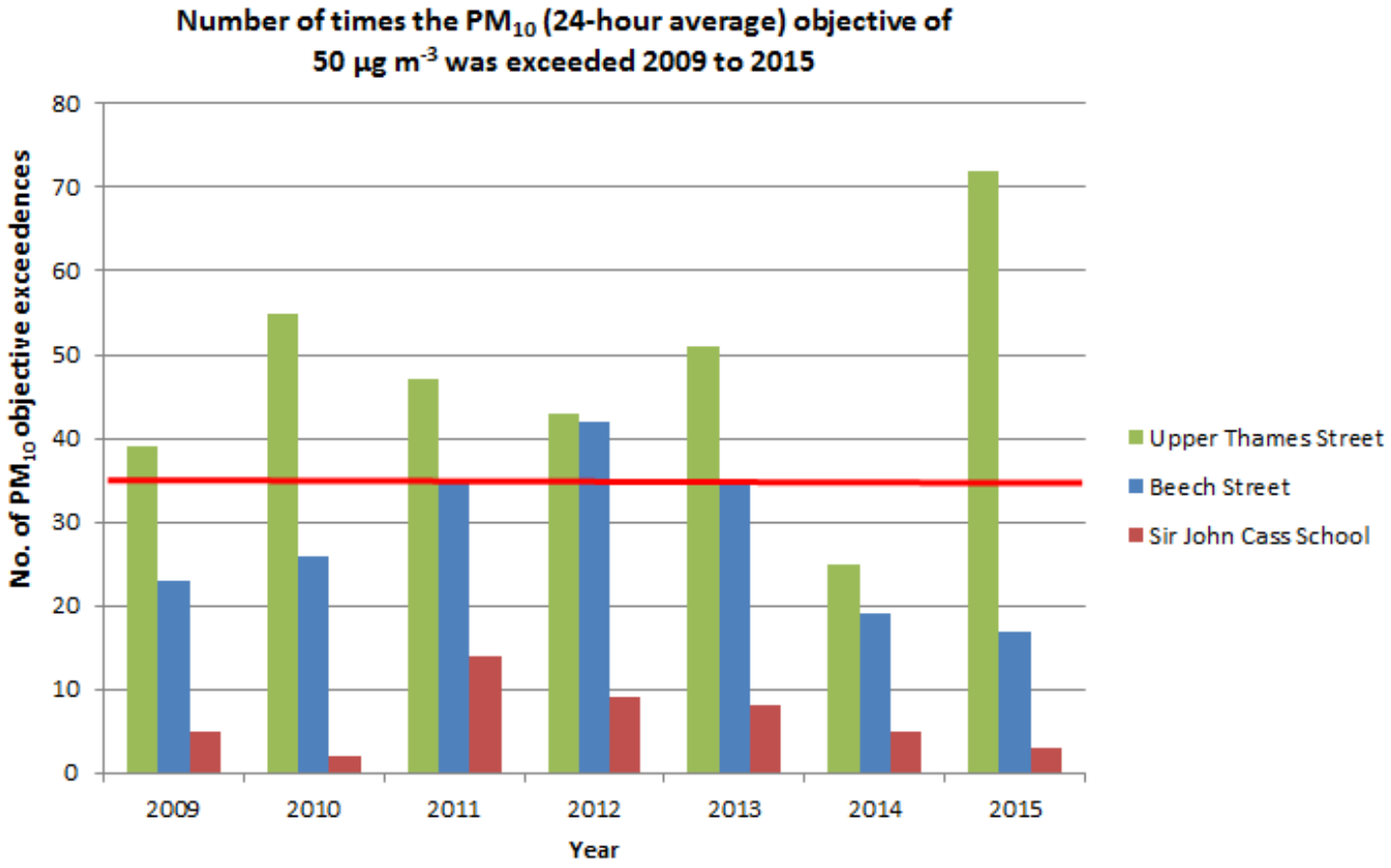


Table H. Annual Mean $PM_{2.5}$ Automatic Monitoring Results (µg m^{-3})

Site ID	Valid data capture for monitoring period % [a]	Valid data capture 2015 % [b]	Annual Mean Concentration (µgm^{-3})						
			2009[c]	2010 [c]	2011[c]	2012 [c]	2013[c]	2014 [c]	2015 [c]
CT2 Farringdon	79	47	No monitoring	No monitoring	**29**	**30**	**27**	**26**	22

Notes: Exceedance of the $PM_{2.5}$ annual mean AQS of 25 µgm^{-3} are shown in **bold**.
[a] data capture for the monitoring period, in cases where monitoring was only carried out for part of the year
[b] data capture for the full calendar year (e.g. if monitoring was carried out for six months the maximum data capture for the full calendar year would be 50%)
[c] Means should be "annualised" in accordance with LLAQM Technical Guidance, if valid data capture is less than 75%

Narrative on the 5 year trend

The kerbside site at Farringdon has exceeded the annual mean Air Quality Standard in all years prior to 2015. A new EU reference equivalent BAM was installed in August 2015, but was taken offline in October 2015 due to Cycle Super Highway Works; therefore data capture is reduced for 2015. The result has not been annualised as the data loss is too great being from August to December 2015.