

Committees: Audit and Risk Management	Dated: 13 01 2021
Port Health and Environmental Services Committee	20 01 2021
Subject: Deep Dive: CR21 Air Quality	Public
Which outcomes in the City Corporation's Corporate Plan does this proposal aim to impact directly?	2 and 11
Does this proposal require extra revenue and/or capital spending?	No
Report of Jon Averbs	For Information
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Summary

Air quality is currently an amber corporate risk, with a risk score of 12. It was initially designated a red corporate risk; however, the risk has been reduced. This is due to ongoing improvements in air quality together with the wide range of action that has been and continues to be taken by the City Corporation to mitigate the risk. The risk reflects the potential impact on the health of residents, workers and visitors to the Square Mile. It also reflects the potential reputational and financial risk to the City of London Corporation. The target is to achieve a risk score of 6.

Extensive air quality monitoring across the Square Mile demonstrates that air quality is improving. There has been a particularly marked improvement in the area of the Square Mile that meets the health-based targets for nitrogen dioxide (a product of fuel combustion). This has gone from very small patches of the Square Mile in 2016 to 30% in 2018, increasing to 67% in 2019. The impact of the response to the COVID19 pandemic led to a further reduction in nitrogen dioxide across the City during 2020. Overall, levels of nitrogen dioxide were 35 – 40% lower than in 2019, with particulate matter, PM₁₀, being around 10% lower over the same period. Once activity starts to return to near normal, levels of air pollution will increase.

Air quality targets and obligations were set out in European Directives. Now the United Kingdom has left the European Union, the government has published an Environment Bill to enact the provisions into domestic law. The Bill includes proposals for new air quality targets for fine particles PM_{2.5}, and for an additional air pollutant, which is yet to be defined. The targets are likely to be influenced by World Health Organisation Guidelines, which are tighter than those set in European Directives. The Environment Bill also includes proposals for passing more responsibility for improving air quality to local government than exists under current legislation. This renewed responsibility could pose a challenge for the City Corporation due to its size and location. A significant proportion of the pollutant PM_{2.5} measured within the Square Mile is not generated within its boundary.

Whilst increasing the obligation on local government to achieve air quality targets, the Environment Bill does not include adequate provisions for the powers that local authorities may need to reduce air pollution to an acceptable level in their area. The City Corporation has therefore developed proposals for an Emission Reduction (Local Authorities in London) Bill. The Bill, which has the support of London Councils, proposes adoptive powers for all London local authorities to reduce emissions of pollutants from a wide range of combustion plant used for heating and electricity generation. The Bill was introduced to the House of Lords as a Private Member's Bill on Monday 13th January 2020. The provisions of the Bill are being used to influence the contents of the Environment Bill as it passes through parliament.

Ongoing research into poor air quality has led to it being linked to an increasing range of diseases. Academic papers have been published suggesting a link between exposure to PM_{2.5} and the impact of COVID19 on health. However, these papers have not been peer reviewed and should be treated with caution. On December 16th, 2020, a Coroner ruled that exposure to air pollution contributed to the death of a London child. It is the first time that air pollution has been explicitly linked to a named individual's death in the United Kingdom. During 2021, close attention will be paid to the air quality risk. It is likely to evolve due to the Coroner's ruling, change in statutory obligations and ongoing research into the health effects of air pollution, which includes the forthcoming changes to World Health Organisation Air Quality Guidelines.

The City Corporation is exceeding its current statutory duty to improve air quality and is widely regarded as demonstrating leadership in this area. Air quality, particularly nitrogen dioxide, is improving year on year. However, the City Corporation must not become complacent. In order to adequately deal with the air quality risk, the City Corporation needs to remain agile and proactive in its approach and must continue to deliver a high-quality influential programme that will serve to fulfil all statutory obligations and minimise the risk of air pollution to public health.

Recommendation

Members are asked to:

- Note the report.

Main Report

Background

1. Being located at the heart of London, the Square Mile experiences some of the highest levels of air pollution in the country. Local air pollution is affected by emissions of pollutants from both within the Square Mile, and beyond its boundary. It is also affected by the weather and the size, shape and proximity of buildings, which can act to trap pollution. The pollutants of concern are nitrogen

dioxide, which is a colourless, odourless gas that is a product of fuel combustion, and fine particulate matter (PM₁₀ and PM_{2.5}), which comes from a variety of sources.

2. Air quality is currently an amber corporate risk with a risk score of 12, see Appendix 1. It was initially designated a red corporate risk, but the risk has been reduced due to ongoing improvements in air quality and the wide range of action being taken by the City Corporation to further mitigate the risk. The risk reflects the potential impact on the health of residents, workers and visitors to the Square Mile. It also reflects the potential reputational and financial risk to the City of London Corporation as an organisation. The target is a risk score of 6.
3. The impact of air pollution on health is both acute and chronic. Research into the health impacts is ongoing and it is being linked to an increasingly wide range of diseases. The main health impact is cardiovascular and cardiopulmonary disease, lung cancer and respiratory disease. It also affects lung development in children. Short term pollution episodes can lead to an increase in hospital admissions for vulnerable people. Exposure to current levels of air pollution in central London over the long term has been shown to reduce life expectancy across the whole population.
4. On December 16th, 2020, a Coroner ruled that exposure to air pollution contributed to the death of a London child. The cause of death is cited as acute respiratory failure, severe asthma and air pollution exposure. It is the first time that air pollution has been explicitly linked to a named individual's death. The Coroner has asked for submissions to be made to him by mid-January 2021 so he can prepare a 'prevention of future deaths report'. This report is likely to be relevant to the City Corporation exercising its local authority responsibilities for air quality and public health. Once further information is available, consideration will be given to the potential impact of the verdict, and associated reports, on the air quality risk.
5. Academic research papers have been published showing a potential link between exposure to air pollution, particularly fine particle matter, and the impact of COVID19 on health. However, the research is in its early stages and the papers have not yet been peer reviewed, so an element of caution is required when considering the findings. Officers will continue to follow this research closely.

Statutory Duty

6. Responsibility for improving air quality lies with local, regional and national government. To date, the statutory responsibility of local government in London has been to assist the government and Mayor of London with action to ensure that levels of air pollution are lower than limits set in European Union (EU) Directives.
7. Air quality in the UK meets the EU air quality limits for all pollutants except nitrogen dioxide (NO₂). Levels of fine particles (PM₁₀ and PM_{2.5}) in the Square Mile meet current EU limits, though they are higher than World Health

Organisation (WHO) Guidelines. Table 1 shows the difference between EU limits and WHO guidelines for nitrogen dioxide and fine particles.

8. The current responsibility for controlling levels of PM_{2.5} lies with national, not local, government. This is because it is classed as a 'regional pollutant' over which local authorities have very little control. Particulate matter can stay in the air for a very long time and move around with the wind. Local authorities have a statutory obligation under the Health and Social Care Act 2012 to improve the public health of their population. One of the indicators used to assess performance with obligations under this legislation is exposure of the population to PM_{2.5} particle pollution.
9. As levels of air pollution do not meet health-based limits in the Square Mile, the City Corporation has an obligation to produce an Air Quality Action Plan. Under current duties, the Plan must outline action that will be taken to assist the government in its obligation to improve air quality, and to help people reduce their exposure to the highest levels of air pollution.
10. The City Corporation's Action Plan has been incorporated into an Air Quality Strategy. The latest Air Quality Strategy was published in September 2019. The aims of the strategy are to:
 - a. fulfil statutory obligations for London Local Air Quality Management and improving public health
 - b. ensure that air quality in over 90% of the Square Mile meets the health-based Limit Values and World Health Organisation Guidelines for nitrogen dioxide by the beginning of 2025
 - c. support the Mayor of London to meet World Health Organisation Guidelines for particulate matter (PM₁₀ and PM_{2.5}) by 2030
11. There are 65 actions in the strategy that focus on air quality monitoring, collaborative action, demonstrating leadership, reducing emissions and raising awareness.
12. Progress with actions, together with the most recent air quality data, is reported to the Mayor of London and government each year. These are statutory reports that are presented to the Port Health & Environmental Services Committee. The latest report was presented on 21st July 2020. A summary report, which includes air quality data over seven years up to and including 2019, is attached to this report as Appendix 2.
13. The government is drawing environmental law post Brexit through the Environment Bill. This should receive Royal Assent in spring 2021. The Bill sets out a requirement for a legally binding domestic air quality target, with an additional specific target for PM_{2.5}. The World Health Organisation has set air quality guidelines for different pollutants. These are currently being reviewed with the outcome expected in 2022. The WHO guidelines are likely to be tightened and will influence the air quality targets proposed in the Environment Bill.

14. The Bill also includes provisions to reform *Local Air Quality Management*, which provides the framework for local authority statutory obligations. Local authority's obligations for improving air quality in the Environment Bill are more binding than at present as they require local authorities to prepare a Plan to ensure that air quality standards and targets are *met and maintained*. This increased statutory obligation could pose a challenge for the City Corporation as much of the pollution, particularly PM_{2.5}, measured in the Square Mile originates from outside its boundary. It is therefore not within the direct control of the City Corporation.
15. The Environment Bill proposes to amend aspects of the Clean Air Act 1993 to enable simplified enforcement of Smoke Control Areas. It does not however include proposals for additional powers to deal with the full range of combustion plant found in urban areas that are used to generate heat or electricity (boilers, generators and combined heat and power plant). The City Corporation has attempted to address this through its own Emission Reduction (Local Authorities in London) Private Members Bill, This Bill, which has the support of London Councils, proposes adoptive powers for all London local authorities to reduce emissions of pollutants from a wide range of combustion plant used for heating and electricity generation. The Bill was introduced to the House of Lords as a Private Member's Bill on Monday 13th January 2020.
16. The proposals in the Emission Reduction (Local Authorities in London) Private Members Bill are being used to influence the contents of the Environment Bill as it passes through Parliament. In March 2020, a submission was made to the Public Bill Committee promoting the benefits of the contents of the Emission Reduction (Local Authorities in London) Bill. The contents of the Bill will also be tabled when the Environment Bill is presented to the House of Lords in the New Year.

Levels of air pollution in the Square Mile

17. The City Corporation runs an extensive network of air quality monitors. The amount of air pollution in the City of London at any given time is influenced by a range of factors. The main factor affecting day to day levels of air pollution is the weather.
18. Given that weather patterns have a strong influence on air pollution, annual average data is assessed to see if air pollution is improving over time. The data collected demonstrates a clear pattern of improvement over the past few years. Table 1 shows the concentrations of pollutants measured at specific sites. This data has been extrapolated using a computer model to show that the area of the Square Mile that meets the EU and WHO health-based target for nitrogen dioxide. In 2016 only small patches of the City met the annual average nitrogen dioxide target. This increased to 30% in 2018 and 67% in 2019.
19. The reduction in activity associated with the COVID 19 pandemic has led to further improvements in air quality, albeit short term. Overall, levels of nitrogen dioxide were 35 – 40% lower in the Square Mile in 2020 than in 2019, with a marked reduction being seen during the first lockdown. Particulate matter was

around 10% lower in 2020 than 2019. Once activity starts to return to near normal, levels of pollution will increase.

20. In March 2020, an experimental traffic order was applied to Beech Street to restrict through traffic to zero emission vehicles. This, along with the impact of the COVID19 pandemic on activity in London, led to a reduction in nitrogen dioxide in Beech Street itself by over 50% when compared to 2019. PM₁₀ reduced by 18% in Beech Street over the same period. This significant reduction in both pollutants was expected as Beech Street is a covered road and any pollution emitted in the street is unable to disperse easily. Consequently, removing traffic emissions from Beech Street has a greater impact on air pollution in that street than a similar scheme would have on other roads in the City.
21. Although levels of fine particles (PM₁₀ and PM_{2.5}) are also falling across the Square Mile, the overall reduction is not as dramatic as for nitrogen dioxide. This is because particulate matter is made up of many sources, some of which travel very long distances and stay in the air for a long time.

Location	Pollutant	EU Limit value	WHO Guideline	Annual average 2018 (µg/m ³)	Annual average 2019 (µg/m ³)	Annual average 2020* (µg/m ³)
Aldgate School formerly Sir John Cass Foundation Primary School (background)	Nitrogen dioxide	40	40	32	33	22
	PM ₁₀	40	20	21	19	17
	PM _{2.5}	25	10	12	12	12
Upper Thames Street (roadside)	Nitrogen dioxide	40	40	87	74	43
	PM ₁₀	40	20	32	27	24
Beech Street (roadside)	Nitrogen dioxide	40	40	69	62	28
	PM ₁₀	40	20	25	22	18
Farringdon Street (roadside)	PM _{2.5}	25	10	16	14	12

Table 1

*Data for 2020 is provisional

Risk Mitigation

22. In order to reduce the risk associated with poor air quality in the Square Mile, the City Corporation needs to demonstrate that, at a minimum, it is fulfilling its statutory obligation and that it has taken, and will continue to take, a wide range of action to bring about improvements to air quality. The City Corporation must

also ensure that it takes necessary steps to protect the health of residents, workers and visitors to the City through the provision of appropriate information and robust and reliable data.

23. Actions to demonstrate risk mitigation are detailed in the 2019 Air Quality Strategy. Recent examples include:

- a. Reducing emissions of air pollution from its own fleet, buildings and activities.
- b. Increasing the number of pedestrianised and pedestrian priority streets.
- c. A zero-emission street pilot.
- d. Working with Barts Health NHS Trust to reduce emissions of air pollution from the energy centre
- e. Developing and disseminating guidance on minimising emissions from combustion plant in buildings
- f. Developing and disseminating guidance on minimising emissions from food premises
- g. Hosting best practice events for all London Boroughs
- h. Working with a range of partners to reduce emissions of air pollutants from the Thames river vessels
- i. Working with City businesses to encourage emission reduction from their activities
- j. Jointly leading a London Borough wide idling engine programme with the London Borough of Camden, supported by the Mayor of London
- k. Working with City schools and nurseries to develop tailored action plans to improve local air quality.
- l. Updating the free smart phone App, CityAir, which provides high pollution alerts and helps users avoid areas of poor air quality.

24. The City Corporation is recognised as the lead local authority for air quality policy across London. Officers are regularly called upon to provide expertise as part of various regional and national working groups that influence air quality policy and research.

25. There are some issues that make air quality improvements challenging in the Square Mile. For example, due to its location, the Square Mile is heavily influenced by pollution generated across London and the south east. This is recognised by the range of leadership and collaborative work undertaken by the City Corporation, such as the development of the Emission Reduction (Local Authorities in London) Private Member's Bill which would provide adoptive powers for all London Boroughs and the City Corporation.

26. There is an additional potential risk with the availability and interpretation of data. The high level of interest in air pollution has led to relatively low-cost air quality monitoring devices becoming widely available. However, measuring air quality accurately is not straight forward and requires the use of certified equipment that is subject to regular calibration, audits and a rigorous data validation process. The new generation of air quality monitors are uncertified and, when tested against certified equipment, are often shown to be inaccurate, unprecise and the data drifts over time. The City Corporation's latest Air Quality Strategy recognises the role that the authority must play in providing robust and reliable data. The strategy includes an action to test new equipment

whenever possible. The Air Quality Manager is also part of a national working group considering certification schemes for the new low-cost sensors.

Corporate & Strategic Implications

Strategic implications

27. The work on air quality directly supports two Corporate Plan outcomes:

No. 2. People enjoy good health and wellbeing

No. 11. We have clean air, land and water

28. Improving air quality is overseen by Port Health and Environmental Services Committee and is a priority for the Health and Wellbeing Board. It is also of interest to the Planning and Transportation and Streets and Walkways Committees.

29. Improving air quality is firmly embedded into a range of corporate policies and strategies such as the Transport Strategy, draft City Plan, Responsible Business Strategy and Procurement Strategy. In 2020 the City Corporation published a Climate Action Strategy. Steps taken to deliver the outcomes of this strategy, such as moving a greater use of renewable energy, will lead to further air quality improvements locally.

Financial implications

30. The Air Quality Team local risk budget in 2020/21 is £388,000. As part of the 12% savings required to remain within the Department's resource envelope following the introduction of the Target Operating Model, there may need to be a reduction in the non-staffing element of the budget for 2021/21. Although the details have not yet been confirmed, it is anticipated that the 65 actions contained within the air quality strategy can still be delivered from existing resources. External funding and grants to support projects and programmes in the Square Mile and across London are sought wherever possible.

Resource implications

31. A small team of 4 officers deliver the City Corporation's air quality programme. The team collaborates very closely with other City departments. The Air Quality Team is part of the Consumer Protection side of the current Department of Markets & Consumer Protection, which under the Target Operating Model, will be incorporated into the new Environment Department. At this time, it is not envisaged that the Target Operating Model will have an impact on the Air Quality Team's staffing resource.

Legal implications

32. The City Corporation has a statutory duty to measure air quality and develop and implement an action plan to improve air quality where targets are not met. The Environment Bill, which is currently passing through parliament, contains proposals to place increased responsibility on local authorities to meet air quality targets. Due consideration will be given to the implications of this increased statutory obligation once the Bill receives Royal Assent.
33. Consideration will also be given to the potential legal implications of the recent Coroner's ruling on the death of a London Child that died from acute respiratory failure, severe asthma and air pollution exposure.

Risk implications

34. During 2021, close attention will be paid to the air quality risk. It is likely to evolve due to the Coroner's ruling cited in paragraph 33 and the change in statutory obligations cited in paragraph 32. The outcome of the ongoing research into the health effects of air pollution, which includes any association with the impact of COVID19 on health, together with the forthcoming changes to World Health Organisation Air Quality Guidelines, will also be considered.

Equalities implications

35. A 'test of relevance equalities analysis' was undertaken for the 2019 Air Quality Strategy. Action to improve air quality has a positive impact on all sections of the population. The benefit is greatest for children and the elderly as they are more susceptible to the health impacts of air pollution. There is also a positive impact on individuals whose lives are affected by asthma and other respiratory and cardiovascular conditions.

Security implications

36. None

Conclusion

37. Air quality is currently an amber corporate risk with a risk score of 12. It was initially designated a red corporate risk; however, the risk has been reduced. This is due to ongoing improvements in air quality, together with the wide range of action that has been, and continues to be, taken by the City Corporation to further mitigate the risk. The target is a risk score of 6.
38. During 2021, close attention will be paid to the air quality risk. It is likely to evolve due to the recent Coroner's ruling on the death of a London child that died from

acute respiratory failure, severe asthma and air pollution exposure. It will also be influenced by the change in statutory obligations and ongoing research into the health effects of air pollution, which includes any association with the impact of COVID19 on health, and changes to World Health Organisation Air Quality Guidelines.

39. Air quality in the City is improving. There is, however, some way to go before the air will be classed as 'healthy to breathe' at all locations. Given the issues cited above, the City Corporation must not become complacent. It must continue to deliver a high-quality influential programme that will serve to fulfil all statutory obligations and minimise the risk of air pollution to public health.

Appendices

- Appendix 1 – Risk and Progress Summary for CR21: Air Quality
- Appendix 2 – Air Quality Annual Status Summary Report 2020

Background Papers

- Deep Dive Reports to Audit and Risk Management Committee on Air Quality 14 June 2016, 6 November 2018, 28 January 2019
- City of London Air Quality Strategy 2019 – 2025
- City of London Annual Status Report 2020
- Emission Reduction (Local Authorities in London) Bill 2019

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