
***Meeting of the Executive Member for
Neighbourhoods and Advisory Panel***

17 October 2007

Report of the Director of Neighbourhood Services

AIR QUALITY UPDATE

Summary

1. The purpose of this report is to update the executive member and advisory panel on the outcome of the recent Air Quality Support Grant (AQSG) applications made to the Department for Environment, Food and Rural Affairs (DEFRA). Three AQSG bids were made in relation to the council's ongoing Local Air Quality Management (LAQM) work. The report provides an overview of the planned expenditure of the AQSG and requires a decision to be taken on the amount of AQSG to be accepted from DEFRA. The report also provides a general update on the national approach to air quality and the progress being made at a local level.

Air Quality Support Grant

Background

2. The government supports local authorities capital expenditure on LAQM through a direct grant scheme known as the Air Quality Support Grant Programme (AQSG). Previous air quality funding from DEFRA has allowed the establishment of a comprehensive air quality monitoring network in York and the in-house operation of an air quality computer model. The scope of the monitoring network was reviewed and streamlined in 2006, with the main emphasis now on nitrogen dioxide and particulate monitoring.
3. In March 2007 officers submitted three AQSG bids to DEFRA to support the council's air quality work during 2007/2008. The amounts bid for were:

Air quality monitoring =	£173,263.59
Air quality modelling =	£120,000
Air quality action planning =	£14,500

Due to a national shortfall in the amount of grant available, York has been provisionally allocated the following amounts of AQSG for 2007/2008:

Air quality monitoring =	£30,000
Air quality modelling =	£30,000
Air quality action planning =	£9,500

A total of 99 local authorities in England have been allocated air quality grant funding for 2007/08. Of these York received the second highest level of funding. This report presents proposals for defraying the allocated amounts of AQSG and requires a decision to be taken on the amount of AQSG to be accepted.

Consultation

4. No consultation has been undertaken for the purpose of this report.

Proposed expenditure

Air quality monitoring

5. The £173,263.59 bid for air quality monitoring was to undertake the following four projects:

Project 1 : Consolidating two separate air quality monitoring (AQM) enclosures at Holgate Road into one enclosure, replacing the NO_x analyser, and upgrading the site to meet EU reference equivalence for particulates (PM₁₀)

Project 2 : Upgrading of existing AQM enclosure at Fishergate to EU reference equivalence for PM₁₀ and replacement of the NO_x analyser.

Project 3 : Upgrading of existing AQM enclosure at Bootham Hospital to EU reference equivalence for PM₁₀ and replacement analyser of the NO_x analyser.

Project 4 : Relocation of NO_x analyser and AQM enclosure from Holgate Road to Fulford Main Street to undertake detailed assessment of nitrogen dioxide (NO₂).

6. Currently all particulate (PM₁₀) monitoring in York is undertaken using Tapered Element Oscillating Microbalances (TEOMs). This method has historically been used in the national air quality monitoring network and by the majority of local authorities the UK. It is favoured above other methods because it is reliable, easy to maintain and one of the few methods capable of giving data in real time. Other methods are significantly more resource intensive and generally only provide daily averages. Although TEOMs are widely deployed throughout the UK it has been known for some time that they underestimate PM₁₀ concentrations compared to other methods of measurement.
7. To date it has been acceptable to apply a correction factor to TEOM data to make it comparable with data from other analysers. The failure of the TEOM to obtain EU reference method status has resulted in DEFRA being legally required to upgrade the national network to EU reference equivalence standard. Whilst this requirement does not currently extend to local authorities it is being encouraged by DEFRA, especially for roadside sites with elevated PM₁₀ concentrations.

8. There are currently two main ways of upgrading TEOMs. One requires retrofitting of existing equipment and the second is a complete replacement by an alternative monitoring method. The capital cost of both options is approximately the same but there are advantages and disadvantages to each method which need to be considered further before a final decision is taken on which method to employ in York.
9. The amount of AQSG funding received from DEFRA for 2007/2008 is not enough to upgrade all the existing TEOMs in York. It is therefore proposed that during 2007/2008, the allocated AQSG funding should be used to upgrade the existing site at **Holgate – Project 1**. Upgrading of this site would involve consolidating the existing two monitoring units into one. It is also the most important PM₁₀ monitoring site in the city as it has persistently shown the greatest concentrations of PM₁₀. As well as upgrading the TEOM at Holgate, it is recommended that the existing NO_x analyser be replaced at the same time.
10. The capital cost of the project is currently estimated to be around £46K. There is currently approximately £44K of AQSG funding available for the project, consisting of the £30K being offered by DEFRA for 2007/08 and £14K carried over from 2006/2007. The large carry over from 06/07 was the result of savings made by trading in redundant equipment. It is anticipated that the cost of undertaking the **Holgate Road - Project 1** project can be brought within the existing budget.
11. The long term aim remains to upgrade all PM₁₀ monitoring equipment in York. If the Holgate Road project is approved, it is recommended that further funding should be sought from DEFRA in 2008/2009 to complete works at Fishergate and Bootham (Projects 2 & 3).
12. The final project for which funding was sought (Project 4) relates to the undertaking of more detailed nitrogen dioxide monitoring on Fulford Main Street, close to the junction with Heslington Lane. Recent diffusion tube monitoring in this area indicates that the annual average nitrogen dioxide objective may be being breached at the facades of some residential properties in this area. This can only be confirmed by the undertaking of more accurate real time monitoring in the area.
13. An initial investigation into the possibility of locating real time nitrogen dioxide monitoring equipment on Fulford Road has indicated that due to space constraints and availability of suitable power supplies it will be very difficult to achieve with conventional monitoring equipment. The possibility of hiring a more specialist piece of equipment which could be mounted on a lamp post is currently being investigated, but the costs of doing this are likely to be prohibitive within this financial year. Transport planning officers are currently investigating ways of reducing congestion and pollutant concentrations in this location as part of a wider transport study of the Fulford Road Corridor.
14. Due to the shortage of monitoring funding, the difficulties in deploying real time monitoring equipment and the possibility of an imminent solution being found to

the problem, it is recommended that in the short term, monitoring should be continued on Fulford Road Main Street using diffusion tubes. If by the end of 2007 the annual average nitrogen dioxide concentrations still appear elevated, and no solution to the problem has been identified, then the possibility of real time monitoring should be re-visited and a revised air quality monitoring grant bid submitted to DEFRA in March 2008.

Air quality modelling

15. The £120,000 bid for air quality modelling work was to undertake the following projects:
 - a) Purchase of additional years of software licences and technical support for the computer modelling software
 - b) Replacement of a UPS (uninterruptible power supply unit) for the computers used to run the in-house air quality model
 - c) Support of modelling costs within the air quality section.

16. There was a £90,000 shortfall in the amount of AQSG received for modelling. It is intended to proceed with the purchase of the UPS and to renew the software licences and technical support contracts for a period of five years. The total cost of these items is approximately £12,000, leaving a surplus of £18,000. Permission is to be sought from DEFRA to try and reallocate some of this funding to monitoring activities, any remaining funding will be used to support air quality staffing costs.

Air quality action planning

17. The £14,000 air quality action planning bid was submitted with the intention of carrying out three separate projects:
 - a) Further development of the Jor-Air website
 - b) Continued awareness raising of smoke control and bonfire issues through leaflet production and local advertising.
 - c) Further work to progress local guidance for developers on planning and air quality issues.

18. There was a £4,500 shortfall in the amount of AQSG received for air quality action planning. It is intended to progress the following projects :

Project (a)

Significant progress has already been made on the development of the 'Jor-Air' website, which will supplement the limited amount of information we are able to post on the council's main website. The site is aimed mainly at school children and university students. The 'kids zone' area of the site aims to educate young people about air quality issues using a series of interactive games and competitions. The site is being developed in conjunction with a local web development firm and a research student from the University of York. In the longer term it is intended that the webpage will form the basis of a

teaching pack allowing air quality information to be disseminated directly to young people in the classroom.

The 'student' zone area of the site aims to provide more direct access to air quality data to research students, consultants and the general public. This should reduce the amount of time officers currently spend responding to individual enquiries. The site will also host a 'library' of student projects which have used air quality data from York. A new air quality data 'reporter' has been developed in house and can already be viewed at www.jorair.co.uk . It is intended to invest approximately £6K into Jor-Air during 2007/08.

In a recent nationwide review of air quality websites undertaken by the professional journal 'Air Quality', York was one of only five local authorities to receive full marks for the quality and findability of its air quality information. The Jor-air website received a very favourable review and once complete is expected to be a strong competitor for top place ranking next year.

Project (b)

The York AQAP gives a commitment to continue raising awareness about smoke control and bonfire issues. This will be achieved through leaflet dissemination and the placing of advertisements in the local press during early autumn to remind people of their obligations in relation to both smoke control areas and nuisance from bonfires. Approximately £750 will be invested in this area of work.

Project (c)

The remaining air quality action planning budget will be used to support the launch of a new air quality and planning guidance note. This guidance note is currently in draft form and subject to internal consultation. A wider external consultation will be undertaken once the draft guidance note has been approved by members. The aim of the guidance is to ensure that potential developers are fully aware of their obligations in relation to local air quality management and to ensure that they have access to all the information they need in order to submit robust and accurate air quality assessments with their planning applications. The document will also aim to formalise a system for obtaining contributions towards air quality activities through the planning system.

General Air Quality Update

National Air Quality Strategy

19. The Air Quality Strategy for England, Scotland, Wales and Northern Ireland sets out the key measures the government intends to take to improve air quality across the UK. The strategy forms the basis of the local air quality management system in the UK, and sets out the air quality standards and objectives against which local authorities are required to undertake their own air quality review and assessments. The third version of the National Air

Quality Strategy was published in July 2007. It places more emphasis on actions to improve air quality than previous versions and sets out new air quality objectives for particulate matter.

20. The new strategy states that nationally priority will be given to considering incentives for the early uptake of stricter EU vehicle emission standards and encouraging greater use of low emission vehicles. Further development work will be undertaken on a national road pricing scheme, London and other low emission zones, retrofitting of diesel particulate filters to HGVs and reducing emissions from small combustion plant.
21. The new strategy also takes into account the findings of the most recent report by the Committee on the Medical Effects of Air Pollutants (COMEAP). This report indicates that there is no recognised safe level for exposure to fine particles (PM_{2.5}) and that objectives based on achieving specified 'safe' levels in 'hotspot' areas are not appropriate for this pollutant. The new air quality strategy therefore introduces the concept of 'exposure reduction' targets whereby concentration reduction targets are set for the most heavily populated areas of the country. A new national 15% exposure reduction target has been set for urban background PM_{2.5} concentrations to be achieved between 2010 and 2020.
22. At present the new exposure reduction target for PM_{2.5} remains the responsibility of DEFRA. There are currently no proposals to set this as a mandatory objective for local authorities although it is considered likely that in future years local authorities may be required to monitor PM_{2.5} either alongside, or instead of PM₁₀. This possible change in responsibilities will be fully considered when deciding on the upgrade scheme for the existing PM₁₀ analysers as this could affect the authority's ability to switch directly from PM₁₀ monitoring to PM_{2.5} monitoring.

Rogers Review

23. In March 2007 the recommendations of the Rogers Review were published. This review set national enforcement priorities for local regulatory services. Over 60 policy areas enforced by local authorities were considered of which five were identified as national priorities. Air quality was included as one of these five national priorities re-emphasising the important role that local authorities have to play in improving and protecting air quality.
24. The need to improve and protect local air quality has historically been driven by the links between air quality and health. Poor air quality is known to impact on the health of people with existing lung and heart conditions, and some pollutants are known carcinogens. The current local air quality objectives are health based standards aimed at protecting the health of the most vulnerable members of society.
25. In 2001, COMEAP published a report on the long-term effects of particulate air pollution on mortality which suggested that 24,000 people per annum died prematurely due to the effects of air pollution. Since then, the evidence base

regarding the effects of long-term exposure to air pollutants on health has strengthened. The latest report from COMEAP suggests that air pollution has a greater effect on mortality in the UK than previously thought, with a 10 µg/m³ increase in fine particles being associated with a 6% increase in risk of death.

26. The link between local pollutants and global climate change is also becoming of increasing importance. A recent report by AQEG (Air Quality Expert Group) examines the linkages between climate change and air quality pollutants, and their potential mitigation policies. The report summarises where measures to improve local air quality can help to reduce climate change, and considers trade-offs where policy measures in the two areas can act in opposition.
27. An example of where climate change and local air quality policies can conflict arises in relation to vehicle emissions. Policies to reduce emissions of carbon dioxide CO₂ (a greenhouse gas) from vehicles can encourage the use of bio-fuels that may increase local emissions of NO_x and particulates. In comparison, energy efficiency measures within buildings to reduce gas and electricity consumption generally have positive benefits for both climate change and local air quality. There are many other examples of where local air quality and climate change policies can support or conflict with each other. The findings of the AQEG report demonstrate the importance of obtaining an appropriate balance at a local level between measures to improve local air quality and those aimed at reducing global climate change.

Local Progress

28. In April 2007 CYC submitted its second Air Quality Progress Report to DEFRA. This report provided an update on current air quality in York and progress with implementation of the measures in AQAP2. The Progress report can be viewed at <http://www.jorair.co.uk/downloads.htm>
29. Between 2002 and 2005 there was a general improvement in air quality across the city, including the area within the AQMA. However, this trend appears to have been reversed in 2006. At present it is unclear if this reversal in the trend was due to the excessive formation of 'secondary' nitrogen dioxide in the atmosphere during the hot summer of 2006, or an increase in primary nitrogen dioxide emissions from vehicles. It is known that traffic levels in the city during 2006 were higher than in previous years. Annual average nitrogen dioxide concentrations for 2007 will provide a clearer picture of the long term trend. Summer conditions during 2007 did not favour the creation of high levels of secondary nitrogen dioxide so if the 2007 results are again found to be elevated then this would strongly suggest a localised traffic related issue rather than a weather driven one.
30. Despite the general improvement in air quality across the city between 2002 and 2005 there remain a number of locations inside the AQMA where the annual average nitrogen dioxide objective is still not being met. These are located mainly within the existing 'technical breach' areas at Gillygate, Lawrence Street, Nunnery Lane, Holgate Road and Tadcaster Road. Properties in these areas are already included in the AQMA boundary.

31. Other areas of exceedance exist on Clifford Street, Bridge Street, Low Ousegate and Rougier Street. Currently there are no 'relevant' locations in these areas and properties are not included in the AQMA boundary. For nitrogen dioxide a 'relevant' location is one where members of the public may be regularly exposed to pollutants for prolonged periods of time e.g. residential properties. Officers within the environmental protection unit are working closely with the planning department to try and ensure new opportunities for exposure are not introduced into these areas.
32. Outside the current AQMA the air quality objectives are already met in most locations. The exception to this is Fulford Road Main Street at its junction with Heslington Lane. Here some elevated concentrations of nitrogen dioxide have recently been identified using diffusion tubes. If these levels are allowed to persist a further AQMA may need to be declared. As already discussed in paragraphs 13-15, options for undertaking real time monitoring in this area are currently being investigated, and a solution to the traffic congestion and air quality problems is being sort through the Fulford Road Corridor transport study.
33. To address the remaining air quality issues in the city the council published it's second Air Quality Action Plan (AQAP2) in March 2006. AQAP2 was developed in conjunction with the city's second Local Transport Plan (LTP2) and built on the measures included in the first AQAP. AQAP2 focuses on promoting sustainable transport in the city, reducing emissions from existing vehicles, improving public transport and reducing congestion through improved traffic management.
34. Progress made on implementing the measures in AQAP 2 was reported in the most recent Progress Report. In general, good progress has been made on measures aimed at reducing the need to travel, encouraging walking and cycling and encouraging the use of public transport. Progress has been slower in relation to encouraging the use of cleaner vehicles, improving traffic management/congestion and reducing emissions from HGVs and buses.
35. To ensure progress is made with implementing all measures in AQAP2, an internal officer steering group has recently been reformed to monitor and facilitate progress. This group was instrumental in the drawing up of the first AQAP but was replaced by a wider LTP2 steering group during the period that the AQAP was being integrated into LTP2. The group consists of representatives from environmental protection, sustainable development, transport planning, network management, engineering consultancy, economic development and land use planning. The group will regularly review progress made on specific AQAP2 measures and will facilitate further action on obtaining a general shift towards the use of cleaner vehicles and fuels in the city.

Interim Planning Statement for Air Quality

36. As detailed at paragraph 18 work is currently ongoing on developing an air quality planning guidance document for developers (and consultants working on behalf of developers). The guidance document is currently in draft form awaiting comment from key officers within CYC. Once these comments have been incorporated the document will be subject to a wider consultation incorporating members, developers and the LDF steering group.

Low Emission Zone (LEZ) Feasibility Study

37. As previously requested by the Executive Member work has been progressing on the undertaking of an LEZ feasibility study. Initial modelling results have indicated that a LEZ could potentially be the most effective low emission method available to the council for reducing total emissions in the city. The practicalities of such a scheme are now under investigation.
38. Early discussions with the Network Management team have indicated that the only practical area over which a conventional LEZ could work would have to involve placing entry restrictions at an outer ring road (ORR) cordon. Any vehicle wishing to enter the city past the outer ring road would be subject to the chosen environmental standard. If they could not meet the standard then they would be directed on to the Park and Ride system, or in the case of delivery vehicles, required to drop their goods at a trans-shipment centre on the outskirts of the city. If ineligible vehicles were allowed to enter any further into the city, significant problems would arise with re-routing.
39. Whilst a LEZ based on an ORR cordon could form the basis of a workable LEZ solution it would exclude a large number of people from many areas of the city where currently there are no air quality problems. It would also have significant implications for residents living both inside and outside the ORR. An alternative approach would be to allow general access to the majority of the city to all vehicles but to place an emissions based charge on some, or all, of the roads which form part of the AQMA. Vehicles meeting the chosen emission standard would be able to pass through all areas of the city free of charge, but any vehicle failing to meet the chosen emission standard would be subject to a graduated charge depending on the size, age and fuel type of the vehicle. This would be similar in approach to the proposed London LEZ and would be enforced using vehicle number plate recognition technology linked to DVLA vehicle records.
40. These possible options for an LEZ based air quality scheme will now be considered further by the internal air quality steering group and more detailed proposals drawn up. These will be subject to full air quality and traffic modelling assessments and considered in terms of their other likely impacts on the city, for example social and economic impacts. Once all the relevant information has been obtained details will be made available to members and a decision requested as to whether to proceed to public consultation on the implementation of a LEZ based scheme in York.

41. To assist in the drawing up of detailed proposals for an LEZ scheme, officers from the environmental protection unit have recently been involved in a joint project with the Institute of Transport studies at Leeds University to examine the in-situ exhaust emissions from vehicles using York's roads. This involved using a new piece of technology which can measure emissions from individual vehicles without having to stop them. Officers have also been working with a PhD student from the University of York to obtain profiles of the age, fuel type and numbers of vehicles currently using key routes around the city. Information from both these studies will be used to determine the numbers of people likely to be affected by the introduction of LEZ type controls and to decide what emission standard would be the most appropriate to enforce.

Options

42. (a) To accept air quality grants from DEFRA totalling £69,500 and allow the air quality projects outlined above to proceed.

(b) To reject some or all of the air quality grants from DEFRA and revise the planned air quality projects for 2007/2008 accordingly.

Analysis

43. Option (a) will allow the council to commence upgrading of its particulate monitoring network and make significant revenue savings over the next five years. It will also allow continued operation of the ADMS-Urban air pollution model in-house for the next five years and ensure that the Jor-air webpage is developed to its full potential. Awareness raising of air pollution issues relating to smoke control areas and bonfire night will continue and a new air quality and planning guidance document will be progressed.

Option (b) would prevent the upgrading of particulate monitoring equipment and require CYC to meet the revenue costs of the air pollution stations at Holgate Road for the next five years. Loss of in-house ADMS-Urban modelling capabilities could result in a need to contract out more transport planning and city development related work. The Jor-air webpage would not be completed and other awareness raising campaigns may have to be cancelled. Further resources would not be put into the launching of the air quality and planning guidance note.

Corporate Priorities

44. Monitoring air quality, providing information to the public about air quality, and developing strategies to improve air quality contribute towards delivering the corporate priorities on improving the health of residents and encouraging the use of public, and other environmentally friendly modes, of transport. It also contributes to the proposed new priority relating to climate change.

Financial Implications

45. No other source of funding exists for the projects outlined in this report. If the AQSGs are not accepted, alternative sources of funding will have to be identified in order to further LAQM in the city. Members should also be aware that the revenue costs of existing air quality monitors that have been funded by DEFRA grant in previous years are due to cease at the end of this year. A growth bid of £31k is to be submitted in 2008/9 to cover the ongoing repair/maintenance/calibration costs of this existing equipment. The maintenance cost of the new equipment is covered for 3 years as part of the overall cost.

Human Resources

46. There are no human resource implications.

Equalities

47. There are no equalities implications.

Legal Implications

48. The council has a statutory duty to periodically review and assess local air quality against national air quality objectives and report its findings to DEFRA. As the council has declared an AQMA and produced an AQAP it is also obliged to submit regular AQAP progress reports to DEFRA demonstrating that it has a continued commitment to improving air quality in the city. Under the provisions of the Freedom of Information Act 2000 air quality data must be made freely available to members of the public on request.

Crime and Disorder

49. There are no crime and disorder implications.

Information Technology (IT)

50. There are no IT implications.

Risk Management

51. There is some financial risk associated with purchasing multiple years of equipment maintenance contracts and software licences up front but this is currently the only way these items can be justifiably purchased with AQSG. As the companies involved are well established within the air quality field the financial risk is considered relatively small and is considered proportional to the costs which would have to be incurred by the council in future years if AQSGs are not used in this way. There are always public liability risks associated the placing of monitoring equipment in the field. These will be minimised by consulting the highways team on the best location for the equipment, using reputable electrical contractors and ensuring all equipment is covered by the council's insurance policies.

Recommendations

52. That the advisory panel advise the executive member that:

1. Option (a) at para 42 should be accepted

Reason: It represents the most appropriate way of funding the continuation of LAQM in the city. This is a statutory undertaking that contributes towards the corporate priorities on improving the health of residents and encouraging the use of public, and other environmentally friendly, modes of transport.

2. Option (b) should be rejected

Reason: No other source of funding for LAQM has been identified. Refusal to accept all, or part of, the provisional grant would limit progress on corporate priorities relating to health and transport.

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Wards Affected: *List wards or tick box to indicate all*

All

For further information please contact the author of the report

Background Papers:

None.