Belfast City Council

Subject:	Next Steps to undertaking a Detailed Air Quality Assessment for Belfast City for nitrogen dioxide and fine particulate matter ($PM_{2.5}$)
Date:	5 November 2019
Reporting Officer:	Nigel Grimshaw, Strategic Director, City & Neighbourhood Services Department
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Restricted Reports				
Is this report restricted?	**Yes**		**No**	X
If Yes, when will the report become unrestricted?				
After Committee Decision				
After Council Decision				
Sometime in the future				
Never				

Call-in				
Is the decision eligible for Call-in?	**Yes**	X	**No**	

1.0	**Purpose of Report or Summary of main Issues**
1.1	Members will recall that at the People and Communities Committee meeting of 8th October 2019, a report was presented to the Committee summarising current ambient air quality conditions and challenges across the city. The report also provided background information on the introduction of low emission zones. At the conclusion of the Committee, and having considered the content of the report, Members agreed that a report would be brought back to a future meeting of the Committee on how the council might undertake a detailed air quality assessment for the city, including measuring for $PM_{2.5}$.

1.2	This report therefore provides an overview to Members of the various requirements and components of a detailed assessment for the city for fine particulate matter ($PM_{2.5}$) and nitrogen dioxide (NO_2), based upon the requirements of the government's Local Air Quality Management Technical Guidance LAQM.TG(16) document and the various other technical guidance provided on the Defra Local Air Quality Management Support website.
1.3	This report also provides an estimate of the likely cost and duration of a detailed assessment for the city and suggests a number of elements to developing our approach to this in the recommendations.
2.0	**Recommendations**
2.1	The Committee is requested to note the contents of this report and agree to the following actions: • This committee writes to the Permanent secretary for DAERA with an invite to address committee on the strategic policy position of the emerging concerns around air quality and on the Departmental action on achieving the Program for Government target around improving air quality in light of emerging evidence on health impacts. • Recommend that BCC sets its own air quality ambitions in a new Air Quality Plan, that is due to be written in 2020 and to include the review of Air Quality Management Areas in light of evidence and emerging standards and agree that officers are tasked with looking at best practice and engage with other Local authorities who are progressing this agenda and seek some expert advice on the best and most effective way to achieve actions round improving air quality, so that we seek to inform solution based outcomes linked to the Belfast Agenda. As part of this process members would be invited to participate in a workshop with input from relevant knowledgeable / experienced speakers. • Members are requested to note the estimated costs of commissioning an appropriately experienced environmental consultancy to undertake a detailed assessment for nitrogen dioxide and fine particulate matter, to note that there are also staff resources required internally to support this, and the timescales to deliver and agree that officers are to consider all the above steps to inform how this could be managed within the revenue estimates. In light of the resource implications and

	cross cutting issues, this report will also be brought before the Strategic Policy and Resources Committee.
3.0	**Main report**
3.1	Key Issues Members will be aware that the council has a statutory requirement to complete review and assessments, updating and screening assessments and progress reports on an annual basis in order to assess ambient quality across the city and to monitor progress towards achieving ambient air quality objectives within our four Air Quality Management Areas (AQMA).
3.2	Updating and screening assessments and progress reports are undertaken in accordance with the government's policy timetable as outlined within the government's LAQM.PG(NI)09 and LAQM.TG(16) publications. These reports, covering the Belfast City Council district, provide ongoing evidence of progress towards the air quality objectives by the council and relevant authorities by comparing all new monitoring data against the various air quality objectives, evaluating the impact of road traffic and other transport sources, evaluating industrial emission sources, and assessing the impact of new commercial, domestic and fugitive sources.
3.3	Where these annual reports indicate that there is a risk of air quality objectives not being achieved (outside of existing Air Quality Management Areas (AQMAs)), the council is then required to undertake a detailed assessment. The conclusions from recent council air quality reports, including the 2019 Progress Report, have however been that the council is not required to progress towards a detailed assessment for the city. These conclusions have been formally accepted by DAERA, Defra and the government's technical assessors.
3.4	Members will be aware that the council last completed a detailed assessment in 2010 for the purposes of (i) evaluating the effectiveness of structural revisions to the M1 Motorway / A12 Westlink on ambient air quality; (ii) evaluating whether the City centre needed to be declared as a new AQMA for exceedences of the nitrogen dioxide annual mean objective; (iii) evaluating whether the Ormeau Road AQMA could be revoked and; (iv) determining whether the Cromac Street and Albertbridge Road Air Quality Management Area needed to be extended at Short Strand. At the conclusion of this detailed assessment, it was determined that the air quality management provisions in place at that time were appropriate. This conclusion was formally accepted by DoENI, Defra and the government's independent technical assessors.

3.5	Members are advised that exceedences of the nitrogen dioxide annual mean objective within the council's existing AQMAs are being addressed principally via actions proposed by partner organisations such DfI Roads, Translink, the Freight Transport Association and the Road Haulage Association, as detailed within the council's Air Quality Action 2015-2020.
3.6	It should be noted however, that under current LAQM legislative requirements, local authorities are not required to manage fine particulate matter ($PM_{2.5}$), although Members will be aware that $PM_{2.5}$ is monitored in Belfast City Centre in order to assess compliance with the standards for $PM_{2.5}$ established via Directive 2008/50/EC of 21st May 2008 on ambient air quality and cleaner air for Europe. The 2018 monitored annual mean was 10 □gm^{-3}.
3.7	Members will be aware that Scotland has already adopted the World Health Organisation $PM_{2.5}$ guideline value of 10 μgm^{-3}, monitored as an annual mean limit and to be achieved by 2020. This obligation was introduced via the Scottish government's 2015 *Cleaner Air for Scotland – the Road to a Healthier Future* Air Quality Strategy. Some of the early actions arising from the Strategy have therefore been to establish a $PM_{2.5}$ monitoring network; to design, develop and implement a two-level modelling system for regional and local scales to provide evidence for appraising and identifying potential transport and planning solutions to local air quality issues and; to undertake detailed modelling of all four major cities in Scotland, covering areas associated with highest levels of poor air quality.
3.8	Members have now instructed officers to provide a report on how the council could undertake a detailed assessment for air quality for the city for current pollutants of concern; nitrogen dioxide (NO_2) and fine particulate matter ($PM_{2.5}$) to include monitoring for $PM_{2.5}$. The concentrations of all other pollutants included within the local air quality management regime, such as carbon monoxide, sulphur dioxide and particulate matter (PM_{10}), etc. have over recent years been determined to be consistently and significantly below all health based objectives and limit values to the extent that DAERA and Defra have confirmed that ambient monitoring for these pollutants in many city locations can be discontinued. For example, monitoring for sulphur dioxide (SO_2) was discontinued in the east of the city in September 2007 and particulate matter (PM_{10}) monitoring was similarly discontinued from March 2010. Moreover, the Belfast south hydrocarbon monitoring site as discontinued in 2000 and monitoring for polycyclic aromatic hydrocarbon was terminated from January 2007.

3.9	Having regard the government's LAQM.TG(16) guidance, it is noted that for nitrogen dioxide, locations of concern include narrow congested streets with residential properties close to the kerb, roads with a high flow of buses and/or HGVs, new roads, roads with significantly changed traffic flows, junctions and bus and coach stations. These sources would need to be considered across the city as part of a detailed assessment. Other sources that would also need to be considered include airports, railways, industrial sources and domestic and / or other biomass burning. Accordingly, as part of any detailed assessment and to enable dispersion modelling to be completed for nitrogen dioxide for the city, detailed activity and emissions data would be required for all of the abovementioned sources. This data would normally be collected, validated and aggregated as part of the development of a detailed emissions inventory for the city. It is understood however, that DfI Roads does not presently have a sufficiently detailed transport model for the entire city and so traffic data for many roads across the city may have to be obtained from direct traffic counts. Typical criteria for screening road, industrial and domestic sources for nitrogen dioxide are provided in tables 7.1 and 7.3 of LAQM.TG(16). Once a detailed emissions inventory has been collated for the city, atmospheric dispersion modelling would need to be undertaken using this data in order to generate a nitrogen dioxide pollution map for the city. This map would facilitate identification of any locations of exceedances of the nitrogen dioxide objectives, together with the geographic extent of the exceedence. The modelled exceedances might however, have to be confirmed by additional monitoring, where no nearby ambient monitoring data exists.
3.10	As Northern Ireland councils are not yet required to manage $PM_{2.5}$ via the LAQM regime, it is noted that LAQM.TG(16) contains only limited information on $PM_{2.5}$ sources and interventions. LAQM.TG(16) highlights that as $PM_{2.5}$ is extremely small, it can travel for long distances and so as much as 50% of local concentrations may arise from sources outside the local authority boundary. Nonetheless, direct sources of $PM_{2.5}$ within Belfast are likely to include road vehicles, industrial emissions, biomass and domestic and commercial combustion. In addition to these direct emissions sources, $PM_{2.5}$ is also formed in the atmosphere from chemical reactions involving gases such as sulphur dioxide, and nitrogen oxides. Measures to reduce the emissions of these precursor gases are therefore often also beneficial in reducing concentrations of $PM_{2.5}$.
3.11	It is likely therefore that to undertake a detailed assessment for $PM_{2.5}$ for the city, an emissions inventory would need to be assembled for the above-mentioned $PM_{2.5}$ sources so that dispersion modelling could be undertaken for the city. It is likely also that additional

	monitoring for $PM_{2.5}$ would need to be undertaken at a number of residential and other locations across the city as part of any detailed assessment in order to assess monitored compliance with the annual mean targets for $PM_{2.5}$ and to assist with the validation and verification of the dispersion modelling. As highlighted previously, dispersion modelling would enable the locations of any exceedances of $PM_{2.5}$ targets, together with the geographic extent of the exceedance to be determined.
3.12	Members are reminded that the recent UK Environment Bill contains a clear commitment for government to set a legally binding target for $PM_{2.5}$ and that DAERA will shortly commence consultation on a Clean Air Strategy for Northern Ireland. The Clean Air Strategy and the challenge of improving ambient air are both referenced and referred in the wider Environment Strategy for Northern Ireland Public Discussion Document.
	Financial implications, timelines and options.
3.13	As previously advised, any decision to undertake a detailed assessment of air quality for the city would require significant investment in both staff resources and funding. It is anticipated that a suitability competent consultancy or consultants would need to be appointed via a competitive tender process. A detailed specification would also need to be agreed to inform the tender. At this time, we have sought an initial guide to the indicative costs of engaging this piece of work and have been advised that it would costs in the region of £145,000- £215,000, depending on the extent and quality of the monitoring and modelling deployed.
3.14	These costs are reflective of the detailed analyses that we would have to undertake for the sources highlighted in preceding paragraphs, e.g. surveys to obtain appropriate source activity data over a representative sample period, supplemented by ambient monitoring for a period of at least 12 months in order to determine compliance with annual mean targets, with this data used to inform and calibrate detailed atmospheric dispersion modelling for the city. It is anticipated that the timeframe for this project would therefore be in the order of 18-24 months, depending on the duration of the tender process. Additionally, depending on the final works specification, and on UK Brexit progress, EU procurement thresholds may apply.
3.15	Members are reminded that this project has not been budgeted for in revenue estimates for the 2019/20 period or within growth estimates for 2020/21. Members are also reminded that there is no formal requirement currently from DAERA or within UK guidance for the

	Council to undertake this study or for DAERA to provide funding towards the study. Previous funding to support detailed and updating and screening assessments has been provided via the DAERA local air quality management or Environment Fund grant schemes.
3.16	We have advised this Committee, in last month's air quality report that DAERA have prepared a draft Clean Air Quality Strategy for NI, which we believe will be reflective of the direction of travel recently articulated by Members, in that it is likely to include consideration of the assessment of fine particulate matter ($PM_{2.5}$), in line with World Health Organisation standards and the government's air quality commitments articulated within the Environment Bill. We are advised that this Strategy is likely to be released for consultation early in the new year and that it will therefore fall in line with the announcement of the Environment Bill.
3.17	It is likely that DAERA will need to consider how it might support councils in undertaking what are understood to be Annual Status Reports. The Council would lobby, in our consultation response, that DAERA must support Northern Ireland councils financially in any new undertakings around local air quality measurement and management. Members will need to consider however, whether the council should formally engage with DAERA in order to encourage the Department to accelerate the Strategy consultation and implementation process, given our interested position. The Council could also choose to lobby DAERA for specific funding to support our aspirations for a detailed assessment of ambient air quality for the city.
3.18	<u>Financial & Resource Implications</u> • Estimated costs for completion of the detailed assessments for nitrogen dioxide and fine particulate matter ($PM_{2.5}$) for the city have been obtained from an appropriately experienced environmental consultancy. The costs has been estimated to be in the range **£145,000-£215,000,** depending upon the final scope and complexity of the work undertaken. • Members are reminded that this project has not been budgeted for in revenue estimates for the 2019/20 period or within growth estimates for 2020/21. • The duration of this detailed assessment project for nitrogen dioxide and fine particulate matter is anticipated to be in the order of 18-24 months. • It is anticipated that in addition to the abovementioned financial resources, a significant staff contribution over the full duration of the study would be required from council, DfI

	Roads and DAERA staff. It is further anticipated that staff resource commitments and engagement would have to be formally obtained from these government Departments.
3.19	<u>Equality or Good Relations Implications / Rural Needs Assessments</u> None.
4.0	**Appendices – Documents Attached**
	None.