Town and Country Planning Act 1990 - Section 77

Town and Country Planning (Inquiries Procedure) (England) Rules 2000

Air Quality Rebuttal Proof of Evidence

Site:	Anglia Square including land and buildings to the north and west
Applicant:	Weston Holmes PLC and Columbia Threadneedle Investments
Local Planning Authority:	Norwich City Council
Name of witness:	Lesley Oldfield BSc
PINS reference:	APP/G2625/V/19/3225505
LPA reference:	18/00330/F
CD reference:	NCC6/1

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1 INTRODUCTION

1.1 I am Lesley Oldfield Public Protection Officer at Norwich City Council (NCC). I have worked in environmental protection at NCC for 11 years and have been leading officer for air quality for the last 3 years. As a consequence, I oversee all air quality monitoring conducted by the Council and am author of the Annual Status Report (ASR-CD10.4)) submitted to Defra. I also provide advice to the Development Management team on a range of environmental protection matters including air quality.

1.2 I hold a BSC (Hons) degree in Environmental Science from University of Southampton, a Diploma in Acoustics and the Emissions Monitoring & Air Quality (EMAQ) competency qualification in Air Quality and also in LAPPC (Local Authority Pollution Prevention & Control).

1.3 I was involved in assessing the air quality information originally submitted with the application that is the subject of this Inquiry. My comments are reflected in paragraphs 509-525 of the committee report.

1.4 I have prepared this proof in order to do two things:

(a) Address the updated Air Quality Assessment submitted by the applicant (WH8/3); and

(b) To respond to points made by Professor Stephen Peckham & Dr Ashley Mills and Dr Boswell in their proofs of evidence on behalf of the Norwich Cycling Campaign. My comments are also relevant to Dr Boswell's submission made on behalf of the Norwich Green Party and Norwich Cycling Campaign.

2 ADDITIONAL INFORMATION

2.1 I have reviewed the information contained in the proof of evidence by Melanie Hobson of Aether on behalf of the applicant. The revised Aether report – Version 3 – Nov19 (WH8-3) follows the same methodology as presented in the version 2 Aug18 report (CD7.81SEI(v)). The 2019 revision came about because of the revised timeline for proposed and completed development dates and hence presents an updated pollution model.

2.2 The ADMS-Roads pollutant modelling software was utilised to predict levels of NO2 & particulates around the proposed site, as in the previous AQA. The difference between the data input to the modelling software for the 2 AQA's includes an updated Defra background NO2 map for years 2018 & 2031; 2018 Annual Average Daily Traffic (AADT) counts; 2018 meteorological data and an updated version of the Defra Road Transport Emission Factor Toolkit (EFT- May 2019). In addition the measured diffusion tube data collected for 3 months in 2017 was superseded by the 3 NCC diffusion tube sites measured for a full 12 months in 2018, this data being considered more accurate. These annual NO2 diffusion tube averages were used to determine a pollutant model adjustment factor. NCC have historical data going back >10 years for these 3 locations. This gives confidence in the measured data, and hence the adjustment factor, and a better fit measured to modelled relationship was determined giving an RMSE of 2.88µg/m3 (as opposed to 8.91µg/m3 previously). In conclusion, it is felt a greater confidence can be given to the predicted NO2 concentrations in the revised AQA.

2.3 All modelling including the use of ADMS-Roads modelling software and DEFRA Emission Factor Toolkit, the determination of the modelled vs measured adjustment factor, the NOx to NO2 conversion and the determination of the Impact of the Development (Significance of Change descriptor) followed the industry standard for Defra Local Air Quality Management Technical Guidance 16 (LAQM TG16) & Environmental Protection UK Land Use Planning & Development Control – Planning for Air Quality. As a consequence, the AQA methodology and conclusions are considered robust.

2.4 When assessing the acceptability of the proposed development and the recommended mitigation measures, my advice previously and continues to be based on the No Policy Applied scenario. Having regards to the Nov 2019 AQA update, the No Policy applied assumes no changes in either the background pollutant concentration nor road transport emission factors between the baseline year 2018 and the expected year of full occupation in 2031. The No Policy applied scenario is already out of date, for example, as of Sept 2019 all new cars have to meet Euro 6 standard including an extended on-road emissions test (Real Driving Emissions). The No Policy scenario is therefore justifiably considered to be a worst-case scenario because not only does it not take account of this new Euro 6 regulation but neither any potential upcoming regulatory changes that could have a positive impact on air quality.

2.5 On full occupation in 2031, the No Policy applied scenario predicts an exceedance of the NO2 objective level at ground level on Edward St, Magdalen St, New Botolph St and St Augustines St. Within the development site, by definition, these exceedences only relate to Block B as only in Block B will relevant receptors be located on ground floor. As a result, for this block, I would recommend that at Reserved Matters stage measures such as siting and room layout are considered to ensure living areas are away from heavily trafficked roads and that, where necessary, mechanical ventilation is installed. All other proposed ground floor buildings fronting roadsides will be commercial and the developer has agreed will require non-opening windows and mechanical ventilation. There is not predicted to be any exceedance of the 1 hour objective for NO2 at any location and hence no mitigation measures are required for pedestrians or any members of the public who might reasonably be expected to spend 1 hour or more (ref Box 1.1 LAQM TG16). In addition, pedestrians and cyclists will be encouraged to transit through the centre of the development, being a vehicle free zone. The built frontages along the roads will also act as an effective pollution barrier thus making the thoroughfare through the development, and the public squares and seated areas within the development, a safe and pleasant environment. At all first floor levels where all other relevant receptors are located, there is no exceedance of the NO2 objective level.

2.6 The Council has a statutory duty to put measures in place to work towards achieving the objective level of 40µg/m3 for NO2. The Council is nonetheless mindful of the fact that the objective level should not be considered a final target level and, where possible, actively work towards lowering NO2 levels irrespective of the objective level. The same ethos applies for all air pollution, including particulates.

2.7 With regards to the PM10 pollutant model, in the absence of any locally measured PM10 data, it is industry standard to apply the same adjustment factor as that determined by the NO2 measured to modelled data. The PM10 model shows no exceedance of the annual average objective level of 40µg/m3. In the 2031 With Development but No Policy applied scenario, the highest ground floor level is predicted to be 18.3µg/m3 at Receptor G, the Edward St/New Botolph St junction. Hence PM10 also meets the WHO guideline level of 20µg/m3 at all locations.

2.8 There is no regulatory requirement to meet any PM2.5 objective level but there is an obligation for Local Authorities to work towards reducing emissions and concentrations of PM2.5. Both Norwich automatic monitoring sites already meet the annual average EU limit value of 25µg/m3 to be met by 2020. In 2018, the World Health Organisation recommended guideline value of 10µg/m3 was met for the first time at both Lakenfields (urban background) and Castle Meadow (urban roadside) sites. There is no reason to expect PM2.5 levels at Anglia Square to exceed a heavily trafficked urban roadside location such as Castle Meadow and hence it is expected PM2.5 levels will follow the same trends as those measured at the Norwich automatic monitoring sites. The Defra UK-Air website showed that in 2015 Norwich PM2.5 source apportionment study identified the primary contributor to be residual particulates and salt and then secondary particulates such as those resulting from busy roads. Norwich has a rural hinterland with a large agricultural industry and it is activities associated with this that are expected to potentially be the most significant contributor to PM2.5, in tandem with Norfolk having an extensive coastline.

2.9 For all the reasons given above, I am satisfied with the conclusions reached in the Aether AQA and Melanie Hobson's proof of evidence and particularly because the methodology applied accords with industry best practice. As a result, it is believed that with the recommended mitigation measures, development layout and Contractor Environmental Management Plans applied, either by way of planning condition or during Reserved Matters stages, the proposed development will offer appropriate protection from air pollution.

3 REBUTTAL

3.1 Proof of Evidence submitted on behalf of Norwich Cycling Campaign: Professor Stephen Peckham & Dr Ashley Mills (PoE-CYC/001).

I have reviewed this proof of evidence and want to make the following points. I refer to the relevant paragraph headings.

3.2 **Paragraph 4**. It is not the case that the development is at a location with the highest NO2 measurements in the whole of the AQMA. Based on Norwich City Council monitoring in the last 5 years, St Augustines NO2 levels have been below Castle Meadow (CM), the principal bus drop off and collection location within Norwich city centre, with the exception of 2017 when levels were 2.6µg/m3 above. In 2018, levels at 52 St Augustines were 10µg/m3 (2019 ASR) lower than CM. The November 2019 AQA update predicts no hourly exceedance of NO2 objective levels in the location of the application.

3.3 **Paragraph 5**. The November 2019 AQA update predicts, in 2031 with No Policy provisions, 3 ground level locations within the development site will experience increased NO2 levels by >1 but <2.1µg/m3 when compared with no development. For locations where the majority of residential development is proposed (1st floor and above) increases in NO2 levels are predicted to be <1µg/m3. The significance of this impact is rightly classed as 'Negligible' for relevant receptor locations.

3.4 Where an increase of 2.1µg/m^3 is predicted on Edward Street, Receptor A location, I would like to make the following observation. This street, compared to Magdalen Street, St Augustine's Street and Pitt Street is markedly less busy and congested. Buses do use this stretch of Edward Street, but there is only one bus stop which is not frequently used. In my opinion traffic levels are low given its city centre location, and queuing is minimal. The street is not a canyon. Both the 2018 AQA and the 2019 AQA update indicate heightened levels of NO_2 in respect of 2017/2018 baseline years (57µg/m^3 and 56.7µg/m^3). These levels exceed levels on Castle Meadow (principal bus collection and drop off location within the city centre) and St Augustine's Street (heavily trafficked street canyon). The levels on Castle Meadow and St Augustine's are reflective of the function and characteristics of these locations and are recognised hotspots within the AQMA. Given the characteristics of Edward Street and existing traffic levels, I do not consider Edward Street a potential hotspot location and therefore find it difficult to account for the baseline year NO_2 levels. I discussed this with Aether early in the planning application determination stage and I would continue to question whether these levels are representative of current conditions. In this one location, therefore, I have some reservations over the reliability of the baseline NO_2 level used in the model. Although I do accept that the impact is still likely to be substantial on Edward Street (given the level and movement of traffic generated by the development). I do however consider the predicted NO_2 levels on Edward Street probably show the air quality as being worse than it will in fact be with the proposed development in place.

3.5 I have copied below a relevant extract from the NPPF in relation to air quality

181. *Planning policies and decisions should sustain and contribute towards compliance with relevant limit values or national objectives for pollutants, taking into account the presence of Air Quality Management Areas and Clean Air Zones, and the cumulative impacts from individual sites in local areas. Opportunities to improve air quality or mitigate impacts should be identified, such as through traffic and travel management, and green infrastructure provision and enhancement. So far as possible these*

opportunities should be considered at the plan-making stage, to ensure a strategic approach and limit the need for issues to be reconsidered when determining individual applications. Planning decisions should ensure that any new development in Air Quality Management Areas and Clean Air Zones is consistent with the local air quality action plan.

3.6 In this context, the impact of the development has been shown to result, to varying degrees, in further deterioration in air quality. However, I would question how any development of this site would avoid deterioration, let alone improve air quality in this part of the AQMA where NO2 levels are predominantly associated with the strategic road network which carries commuter traffic, much of which is probably derived from outside the city, and public transport which carries passengers to northern suburbs and settlements beyond. In my view, given the site's existing characteristics and function, any viable comprehensive redevelopment of the site would result in deterioration to some degree. This opinion has been corroborated by the Proxy scenario presented in the 2019 AQA update. Of importance is the minimisation of the increase in air pollution to an acceptable level which in my opinion is achieved.

3.7 **Paragraph 6**. It is incorrect to suggest that I have not had regard to public health. I have reviewed air quality information and considered carefully the likely exposure levels of all proposed residential occupiers when both within their properties and when using proposed external amenity spaces. Furthermore I have considered the predicted air quality at street level, the operation of the development and likely conditions within squares where the public may gather and dwell. I refer to Paragraph 2.9 of this evidence for my thoughts regards this matter.

3.8 **Paragraph 8**. I agree an RMSE of 10µg/m3 for an objective level of 40µg/m3 is considered borderline acceptable. However the RMSE for the 2017 model was 8.91 and is 2.88 for the updated 2019 AQA. This is considered to be well within the tolerance allowed.

3.9 **Paragraph 9**. I am aware of the scope of the proposed mitigation and I am satisfied that it will assist in reducing the impact of the development on air pollution levels. In terms of proposed new dwellings in block B (Receptor location H/I), I am satisfied that the Reserved Matters stage provides the opportunity for a designed response to the conditions in that part of the site. In terms of street level conditions and routes for pedestrians and cyclists, I have taken account of the following- the scope for a comprehensive Construction Environment Management Plan; the two car free routes being created through the site which will be protected from the strategic road network by buildings; the setting back of Block A on Magdalen Street and the scope for planting on Pitt Street and Edward Street to partially screen pedestrians from road traffic. I have also taken account of the proposed level of cycle parking, electric vehicle charging facilities and the proposed site-wide travel plan measures which seek to reduce the number of vehicle trips generated by both the residential and commercial use of the site.

3.10 **Paragraph 10.** No doubt this proposal would reduce further the impact of air pollution but what has been currently proposed is designed to reduce impact to an acceptable level, and crucially also be viable for development.

3.11 **Paragraph 26.** the revised NO_2 model presented in the updated AQA predicts no exceedance of the 1 hour objective level.

3.12 **Paragraph 28.** In accordance with the Review and Assessment process required under the Environment Act 1995, Norwich City Council submitted the air quality Annual Status Report (ASR) to the Department for Environment, Food and Rural Affairs (DEFRA) on 3 June 2019. DEFRA provided an Appraisal Response on 4th December 2019 which gave approval of the 2019 ASR and, as normal, made comments and recommendations for the 2020 ASR. It is Norwich City Council's policy to publish the ASR only following approval by DEFRA and as such was made available on the NCC website in early December 2019.

3.13 **Paragraphs 32 & 33.** In providing a response to the Aug 2018 AQA and the Nov 2019 AQA update I have had full regard to Defra guidance and UK legislation. The pollution objective levels are what every Council in England, Wales & Northern Ireland works with and what Defra approves in the ASR's submitted each year.

3.14 **Paragraphs 34 to 35.** I understand that when Public Health England talk about attributable deaths they refer to an estimate of the increased risk of mortality in the local population attributable to long term exposure to air pollution. The figure of attributable deaths does not represent the number of individuals whose life has been shortened by air pollution but that air pollution contributes a small amount to the deaths of a larger number of individuals, equivalent to the calculated figure. It is also understood that the distribution of the mortality effect within the population is unknown.

Nevertheless, NCC do not consider the UK objective limits for air pollutants to be just a target level and I refer you to my Paragraph 2.6. It is committed to reducing the level of pollutants.

3.15 **Paragraphs 44 – 47.** It is incorrect to suggest that Norwich 'switches between using the nationally derived bias correction factor and that locally derived, depending on which is 'lowest' (paragraph 44). DEFRA LAQM TG16 Box 7.11 states that locally derived bias correction should be used "for co-location sites with 'good' precision for the diffusion tubes and with good quality chemiluminescence results ie to national AURN standards". Norwich Lakenfields is an AURN site. For 2017 data there was poor correlation between the co-located diffusion tubes on the Lakenfields site and the AURN derived data- the mean coefficient of variance (precision) being 27. It therefore would have been incorrect to use a locally derived correction that year. For the 2018 data, the calculation showed very good correlation between the two data sets - the mean coefficient of variance being 5. Hence the locally derived correction was applied. This is clearly documented and justified in the respective ASRs and in each case approved by DEFRA.

3.16 **Paragraph 48.** The previous AQA Aug18, was based on a model that was adjusted for diffusion tube data collated over a period of just 3 months. The updated AQA Nov19 applies the NCC diffusion tube data measured over a 12 month period. This gave a much higher correlation modelled to measured. The updated model predicts lower particulates & NO_2 levels and hence this statement is no longer relevant.

3.17 **Paragraph 50.** Table 10 in the November 2019 AQA update shows the impact of development when compared with no development (the site effectively left derelict). When considering relevant receptors within the application site, the descriptor determines a substantial impact on air quality outside Block B facing St Botolph St. A moderate impact is identified at 13 & 52 St Augustines. For all other relevant receptor locations in and around the application site, the impact is classified as "negligible". I have also addressed Block B in Paragraph 2.5 of my proof. In relation to St Augustines, air quality conditions are exacerbated by high traffic levels and the characteristics of the street, particularly its width. The introductory of the gyratory system in 2011 replaced two way traffic with one way traffic along St Augustines Street, thus increasing pedestrian space and improving traffic flow. Nevertheless annual average NO_2 levels continue to exceed the objective level. I am aware that Norwich City Council through their Transporting City Bid are continuing to seek funding for projects to deliver a clean and shared transport system for the city which aims to shift travel behaviour and reduce traffic levels into and around the city centre. The November 2019 AQA update includes a 'Policy Applied' scenario and factors in predicted impacts of the introduction of more electrical vehicles. I make no comment on the justification given by Melanie Hobson for this modelled scenario but, in my opinion, it would be reasonable to expect that by 2031 (full occupation of the development) there will be more electric and Euro 6+ diesel vehicles on the road. As such I note that with 'Policy Applied' the impact of the development in all locations within the development site, but also at 13 & 52 St Augustines, is 'Negligible'.

3.18 **Paragraph 54 - 55.** The development does not propose buildings which would be occupied by vulnerable groups (such as schools, nurseries and care homes). With the exception of Block B, all of the proposed housing (including external amenity space such as balconies and communal roof gardens) is located at first floor level and above. Predicted NO_2 at these levels range between 20.4 - 28.1µg/m^3 (November 2019 AQA update). By virtue of the effect of pollutant dispersal, the raising of living accommodation above street level has a similar effect as siting away from roadsides.

3.19 **Paragraph 60.** My comments in relation to Edward Street and in Paragraph 3.4 are also relevant here. The proposed street dimensions do not make this a street canyon ie where heights of buildings on both sides are greater than the road width.

3.20 **Paragraphs 72 - 76.** In my opinion planting can be an effective mitigation measure. Vegetation enhances the deposition of particulates on its surfaces and hence is likely, to some extent, to reduce pollution from particulates. In terms of NO_2, roadside planting will, to some extent, reduce pollutant dispersal by restricting air turbulence. This will benefit pedestrians on the leeside of the planting but will, by virtue of this, potentially increase pollution levels roadside. However, the design of the development is such that cyclists will be encouraged to use the development as a thoroughfare as opposed to using the neighbouring road network.

3.21 **Paragraph 77.** Figure 10. I have seen the proposed development layout plan. The proposed siting of Block A will increase the building to building interface distance. In my opinion this will reduce the existing canyon effect on this section of Magdalen Street.

4 Proof of evidence submitted on behalf of Norwich Cycling Campaign: Dr Andrew Boswell (PoE – CYC/101)

4.1 I have reviewed this proof of evidence and want to make the following points. I refer to the relevant paragraph headings. Please note - Where comments made by Dr Boswell are similar or identical to those raised by Dr Peckham, and also where the comments relate specifically to pollutant levels predicted in the 2018 AQA but which have been superseded by the 2019 AQA and hence also already addressed, so as to avoid duplication, either no comment has been made or only any additional information to that already presented has been given.

4.2 **Paragraph 7 bullet 2.** The applicant's monitoring included the location of a diffusion tube adjacent to the Anglia Square bus stop on the western side of Magdalen Street. The Sept 2018 AQA showed heightened NO_2 levels and an hourly exceedance in this location. This location does not have a relevant receptor – that is there are no existing or proposed residential 'receptors' on this frontage. The location is associated with movement and transit. NCC have a monitoring location on the opposite side of Magdalen Street with historical data going back over 10 years. This location has never measured an annual average level of NO_2 which exceeds the objective level. It is my opinion that the applicant's recorded NO_2 levels in this location identifies a 'hotspot' associated with the frequent stopping of buses for the boarding of passengers undertaking trips to the north of the city. The applicant's Nov 2019 AQA update models Receptor location B, further north on Magdalen Street. For year 2031 with development the modelling predicts an exceedance at ground floor level. No ground floor residential development is proposed at this level. First floor and above NO_2 levels are predicted to be below 29µg/m^3.

4.3 **Paragraph 7 bullet 3.** The Nov 2019 AQA update identifies five locations within the development site where the 2031 (with development) show an annual exceedance of NO_2 (or just below at location F – Pitt St/New Botolph St). Apart from location H, in all cases any residential dwellings are proposed above street level where NO_2 levels are not exceeded. The developer has committed to commercial premises frontages in these locations having an appropriate means of filtration and ventilation. In the case of location H, I would advise that any future Reserved Matters application should be informed by updated air monitoring and, *if justified,* should propose a layout which locates or orients residential frontages away from the road. With regards to St Augustines, I refer to my earlier Paragraph 3.17.

4.4 **Paragraph 70 – 75.** This suggests that the air quality section of the Committee Report was flawed and unlawfully biased. I have read this section of the Committee Report and I agree with the assessment set out in the relevant paragraphs.

4.5 **Paragraph 70(i).** I consider the existing condition of the site (extent of vacancy) to be a material consideration when considering the impact of future development on air quality. In Paragraph 524 of the Committee Report it states that "The re-development of this site is identified as a strategic priority in the JCS…". Hence it could be argued that a more realistic comparison would be comparing "With Development" with the "Proxy" scenario. Under these conditions, the Nov19 AQA predicts annual mean NO_2 to be better in the With Development scenario.

4.6 **Paragraph 70(ii).** Furthermore, I consider it relevant to give an opinion about the extent to which monitoring hotspots is likely to be indicative of wider local conditions. In addition, point source emissions of pollution can, in theory, be more easily controlled. For example, if buses servicing this area of the city were only Euro 6+, potentially pollution hotspots could be significantly reduced.

4.7 **Paragraph 70(iii).** The September 2018 AQA made no allowance for potential future changes in engine technology. I note that the Nov 2019 update AQA does model such a scenario and I have already referred to this in Paragraph 2.4 of my proof.

4.8 **Paragraph 75 bullet one.** Air quality does vary year on year and the Annual Status Report sent to Defra each year reviews pollutant trends which is justifiably more meaningful. The following is extracted from the 2019 ASR at page iii;

Overall, NO_2 concentrations within the central AQMA are falling. In 2012, 10 of the diffusion tube monitoring locations exceeded the annual mean objective of 40µg/m^3. This steadily reduced to 6 in 2015 despite an additional site being added in 2013 on Chapel Field North. In 2016 the number of locations exceeding the annual mean objective increased to 7 sites but 3 of these only by 1µg/m^3. In 2017 the number of sites dropped back down to 6. In 2018, levels fell again and quite significantly and, after DT locations having been rationalised and distance corrections applied, only 2 locations exceeded the objective level, only 1 of which representing relevant exposure - 52 St Augustines Street.

4.9 **Paragraph 75 bullet two.** Over this period although there has not been a complete transportation in the fleet some of the buses have been replaced by modern ones and others have been retro fitted. City & County Councils are working closely with the bus operators to encourage and assist this process.

5 CONCLUSIONS

5.1 Having reviewed the Proof of Evidence submitted by the Norwich Cycling Campaign prepared by Dr A. Boswell and Dr S. Peckham, my opinion on the robustness of the Nov19 AQA and points made in the Committee Report still stand. I am of the opinion that the concerns voiced over air quality impacts will be adequately mitigated by the developers proposals to minimise and combat this impact. In so doing, there will have been no breach of the Council's Air Quality Action Plan to actively and diligently work towards reducing pollutant levels to below the UKAQ objective levels and to then further improve on this. I therefore see no reason from an air quality point of view why the proposals should not receive planning permission.