

20 January 2020

Our Ref: 325_Anglia Square Inquiry/Rebuttal

Document Ref WH 8/4

Anglia Square, Norwich.

Rebuttal Proof of Evidence of Melanie Hobson MSc, BSc on

Air Quality Matters to

Norwich Cycling Campaign Proofs by Dr Boswell, and Prof Peckham / Dr Mills

PINS ref: APP/G2625/V/19/3225505; LPA ref: 18/00330/F

Background and context

1. Norwich Cycling Campaign have provided two Proofs of Evidence, (PoE), on the subject of air quality. The first is from Dr Andrew Boswell from CEPP (Ref: PoE CYC 101), and the second one from Professor Peckham and Dr Mills at the Centre for Health Studies at Kent University (Ref: PoE CYC 001).
2. Both proofs provide general background information on air quality at the site and then discuss the second air quality assessment (AQA) report for the proposed Anglia Square development that was submitted in August 2018 as part of the Amended Scheme documentation, (CD 7.77). Subsequently, in view of the delay to implementation of the scheme if consented, due to the call-in procedure, it has been necessary to review the AQA, as part of my Proof of Evidence on Air Quality (WH8/1) on behalf of the Applicant. Accordingly, that second AQA report has since been superseded and the latest AQA report, which is dated 28 November 2019 appears as an appendix to my proof (WH 8/3). Therefore, a number of the comments by Dr Boswell and Prof Peckham / Dr Mills are out of date.
3. The updated assessment results take into account:
 - a) That the year of completion is now expected to be 2031 (as opposed to 2028 that was modelled previously),
 - b) Local air pollution monitoring data for 2018, and
 - c) A proxy scenario that assesses the impact if the site was currently used for the activities which are permitted
4. The following main points are made on the proofs provided.

Comments on Dr. Andrew Boswell's Proof of Evidence (CYC 101)

5. Paragraphs 3 and 4 refer to legal compliance with air quality law and that it requires the objectives to be met "*within the shortest possible time*" and that the Gladman case re-iterated this finding. There are four main points to note in this regard.
6. (1) Plans are in place to minimise air pollutant concentrations from traffic generated from the re-development of the Application Site as much as possible. For example, as identified by Mr Paddle in his Transport PoE, (WH7/1), the Application Site is in a sustainable and accessible location (given its city centre location) and would provide a range of travel choices for future residents and employees, so as to use alternative modes, with less reliance on the use of private vehicles. This is in accordance with the NPPF 2019 (Ref CD1.1). The Applicant proposes:
 - a) installing the number of electric vehicle (EV) charging points requested by Norwich City Council (NCC), with scope to double this number in future, alongside 2 fast chargers for each residential car park, to ensure that 100% of residents with parking spaces could use EVs,
 - b) producing detailed residential and commercial travel plans to encourage trips by modes other than private vehicles,
 - c) the funding of a 7-vehicle car club and the provision of the required parking spaces for it, and
 - d) the use of renewable energy sources for the commercial areas.all of which is to be agreed upon in detail via planning conditions and the s.106 obligation as appropriate.
7. (2) As outlined in Norwich City Council's (NCC) 2019 Annual Status Report (ASR) (Ref: CD10.4), overall air pollutant concentrations within the Council's Air Quality Management Area are falling and in 2018, only two locations exceeded the annual mean nitrogen dioxide (NO₂) objective. Concentrations are predicted to continue to fall as a result of the uptake of measures outlined in NCC's Air Quality Action Plan (published in 2015) (CD15.105) together with national policies to improve air quality.
8. (3) The November 2019 air quality assessment report (WH8/3) has modelled a 2031 'no policy applied' scenario, which assumes that there is no improvement in the emissions arising from the road vehicle fleet or background pollutant concentrations from 2018 (the base year). This is a very conservative estimate as with the introduction of battery electric vehicles, plug-in hybrids (driven by policies such as the government's proposal to achieve net zero emissions by 2050 (CD10.7)) and the Euro 6d emission standard (which new cars had to meet from September 2019), there will be, as a matter of undisputable fact, an improvement in air quality going forward. Under the 'no policy applied' scenario in the 'without development' case, at all locations the hourly nitrogen dioxide objective (NO₂), the daily mean particulate matter (PM₁₀) objective and the annual mean PM₁₀ objective are all predicted to be met. There is just one location at ground floor level at the development site (modelled as receptor 'H', which is adjacent to Block B and close to Edward Street), at which the annual mean nitrogen dioxide (NO₂) objective is predicted to be exceeded and appropriate mitigation in the form of mechanical ventilation is to be provided, which is to be included in any event for all flats in the proposed scheme. Locations on St Augustines Street are also predicted to exceed the annual mean NO₂ objective, but only by a maximum of 1% of the objective level in the 'without development no policy applied' scenario. The 'with development' scenario however results in pollutant concentrations increasing by a negligible amount at the majority of locations. At receptor 'H' close to Edward Street a substantial impact is predicted. This is however as a result of traffic queues being assumed, which are now thought not to be likely. This is backed up by the fact that annual mean NO₂ concentrations along Edward Street in 2018 are predicted to be higher than that recorded by the automatic monitor in Castle Meadow for this year, which seems highly unlikely. However, as stated above, this is very much worst case and in the 'policy applied' scenario, the annual mean NO₂ objective is predicted to be at least 40% below the objective at locations where the objective applies. Although there is no certainty in the 'policy applied' scenario, the substantial reduction in pollutant concentrations to a level well below the objective gives clear confidence that it will be met by 2031 (thirteen years after the base year).

9. (4) A 'Proxy' scenario has also been modelled by way of an assessment of the site's currently permitted use. This scenario represents the potential of the majority of the site to be put to other uses in the event that the permission is refused. The present low level of use of the site is not a realistic starting point. It represents a pre planning determination state and is artificially low. The results show that the proposed re-development of Anglia Square results in an improvement in air pollutant concentrations in the majority of locations across the site compared to the 'proxy' scenario. At other locations across the site, no change is expected. A slight worsening is expected at locations on St Augustines Street, but the number of people impacted is far outweighed by the benefits obtained elsewhere.
10. Dr Boswell's proof at paragraph 3 refers to the fact that at the Client Earth 2 case, (CD 15.112), "*the inspector was not required to assume that local air quality would improve by any particular amount within any particular timeframe*" and that NPPF 183 may not be interpreted as meaning that the planning system can assume that the local air quality will improve because the government is required to comply with the law. This aspect was considered in the Gladman case, (CD 15.117 & CD 15.118). However, that decision was made because it was not known at the time of that decision what measures the Council's new draft air quality plan would contain, let alone what the final plan would contain after consultation. It was also not known how any national measures would relate to local measures, nor the time frame in which they would come forward. As identified in paragraph 7, NCC have a final action plan with concrete measures put in place to improve air quality in the City. Therefore, in respect of this application, this aspect is not subject to uncertainty, as it was in the Gladman case. In terms of national measures relating to local measures and the timeframe for implementation, from September 2019, new cars have had to meet the Euro 6d emission limits. Therefore, this law is already enacted and is not subject to any uncertainty. As time passes, with the natural turnover of the national fleet, conventionally fuelled cars on the roads will meet these limits. The emissions arising from the road traffic fleet in the 'policy applied' scenario in 2031 have been taken from Defra's emission factor toolkit, which was last updated in May 2019 and it provides the expected vehicle improvements by this year. As discussed in paragraph 8, in this case (unlike the Gladman case) the Inspector has been provided with very robust data relating to the policy applied position. With the 'policy applied' scenario, substantial reductions in air pollutant concentrations are predicted; however even with a slight reduction in air pollutant concentrations, the annual mean NO₂ objective will be met at all locations. There is therefore a clear and robust evidence base to guide the decision maker.
11. Paragraph 41 refers to the number of exceedances of the hourly mean NO₂ objective. The modelling now however predicts that this objective will no longer be exceeded.
12. Dr Boswell's proof refers to the number of locations at which the annual mean NO₂ objective is predicted to be exceeded (page 14 – Figure 1 and page 15 – paragraph 41) and has been exceeded at various monitoring sites across Norwich. However, it fails to mention that the annual mean objective only applies at locations where members of the public might be regularly exposed, such as building facades of residential properties, schools and hospitals and will not apply at the building facades of offices or other places of work, where members of the public do not have regular access. Therefore, paragraph 41 which refers to six receptors exceeding the objective at the development site is incorrect as some of these locations will be for commercial use. In fact, only at one location at the development site and at residential properties on St Augustine's Street is the annual mean objective not predicted to be met.
13. The proof refers to the WHO guidelines for particulate matter on numerous occasions. This has not been enacted into UK law and therefore it is not appropriate to make a comparison against these guidelines. The correct comparison is against the UK air quality objectives, which for PM₁₀ is an annual mean of 40µg/m³. The latest modelling shows that at no location will this objective be exceeded.
14. The proof in paragraph 18 correctly states that PM_{2.5} concentrations have not been modelled. As outlined in Local Air Quality Management (LAQM) Technical Guidance (TG16) 2018 (Ref: CD11.37), Local Authorities in England "*have a flexible role in working towards reducing emissions and concentrations of PM_{2.5}*" and there is no specific level that has been enacted into UK law for LAs to work towards. In paragraph 54, the proof refers to the EU Directive's annual mean PM_{2.5} level of

25µg/m³. The latest modelling undertaken by Aether shows that the maximum PM₁₀ concentration is predicted to be less than 25µg/m³. As PM_{2.5} is a sub-set of PM₁₀, compliance with the EU's limit value is however anyway met.

15. Paragraph 49 refers to the Council choosing "*an unusually low bias factor for the 2018 diffusion tube data*". It is unclear why this is deemed to be unusually low, as a local factor of 0.86 is used, which is thought to be a perfectly normal type of figure.
16. Paragraph 78 of the proof refers to the "*superficial mitigation within the development buildings*" and states that the scheme "*does not make any serious attempt to mitigate the illegal levels modelled in 2028 and beyond 2028 on the local streets and community areas outside of the buildings*". The annual mean NO₂ objective only applies to locations where the public might be regularly exposed, and it does not apply to kerbside sites where public exposure is expected to be short-term. So, it would only be the hourly NO₂ objective that would be relevant on local streets and community areas. The modelling does not show any exceedances of the hourly objective and therefore no mitigation is required to be undertaken for these locations. The installation of mechanical ventilation is proposed for all flats in the proposed scheme, including those residential locations where the annual mean objective is predicted to be exceeded.

Comments on Professor Peckham and Dr Mills' Proof of Evidence (CYC 001)

17. Paragraph 4 states that the *scheme "... is in a location with the highest NO₂ measurements within the whole of the AQMA"*. The Council's 2019 Air Quality Annual Status Report (ASR), (Ref: CD10.4) however shows that the highest concentrations recorded are at the Castle Meadow monitoring site, which is located in the City Centre, at the position of a series of bus stops, so it is unclear how this conclusion has been reached.
18. Paragraph 5 states that "*despite pollution already being above objective limits, the development is predicted to increase pollution further...*". See paragraph 8. It is true that a slight worsening is predicted in the 'no policy applied' scenario, however as discussed previously this is very much a worst-case scenario. When the development is compared against the 'proxy' scenario an improvement or no change is predicted across the development site.
19. Paragraph 5 states that "*The development will canyonise Edward Street, increasing pollution in the worst area*". See paragraph 17 above as to it not being the worst area according to the 2018 monitoring data presented in the Council's ASR (Ref: CD10.4). In addition, the scheme drawings show that Edward Street will not become a street canyon. Drawing WH4/3 SK003 attached as Appendix 1 to this Rebuttal, illustrates the distance between buildings across Edward Street and Magdalen Street. It demonstrates that distances are variable, and wide enough, along with gaps between buildings, to ensure that no street canyons are created on either street.
20. Paragraph 8 refers to an RMSE value of 10µg/m³ being obtained. However, in the latest modelling an RMSE value of 2.9 is obtained, which shows good agreement between the monitoring and modelling. This therefore shows improved confidence in the results.
21. Paragraph 9 – "*there is a lack of mitigation proposed*". The 'with development' scenario includes the impact on the surroundings of the proposed mitigation measures including the residential and commercial travel plans, and EV charging spaces. In the majority of locations, further mitigation is not required as the annual mean objectives for NO₂ and PM₁₀ are predicted to be met. At three locations (receptors DT9, DT11 and H, of which the former two are on St Augustines St and the third is in Block B on Edward Street), the annual mean is not predicted to be met , the modest scale of which I address above. In respect of Block B, which is part of the scheme, there would be appropriate mitigation via the mechanical ventilation that is proposed in any event within the entire development.
22. Paragraph 10 states that "*the housing density would have to be scaled back considerably to enable a 3m grass border adjacent to the road and a 10m woodland border beyond this around the whole proposal, both to protect pedestrians from canyon creation, and to protect residents from surrounding pollution.*". Drawing WH4/3 SK001 attached at Appendix 2 illustrates that all the air intakes for the

proposed mechanical ventilation for all flats can be taken from locations on roofs or podium gardens behind the suggested buffer line, which is shielded by the outer buildings and /or is at an elevated level. I have already addressed the fact that there will be no street canyons created.

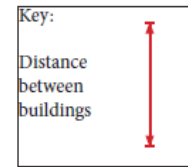
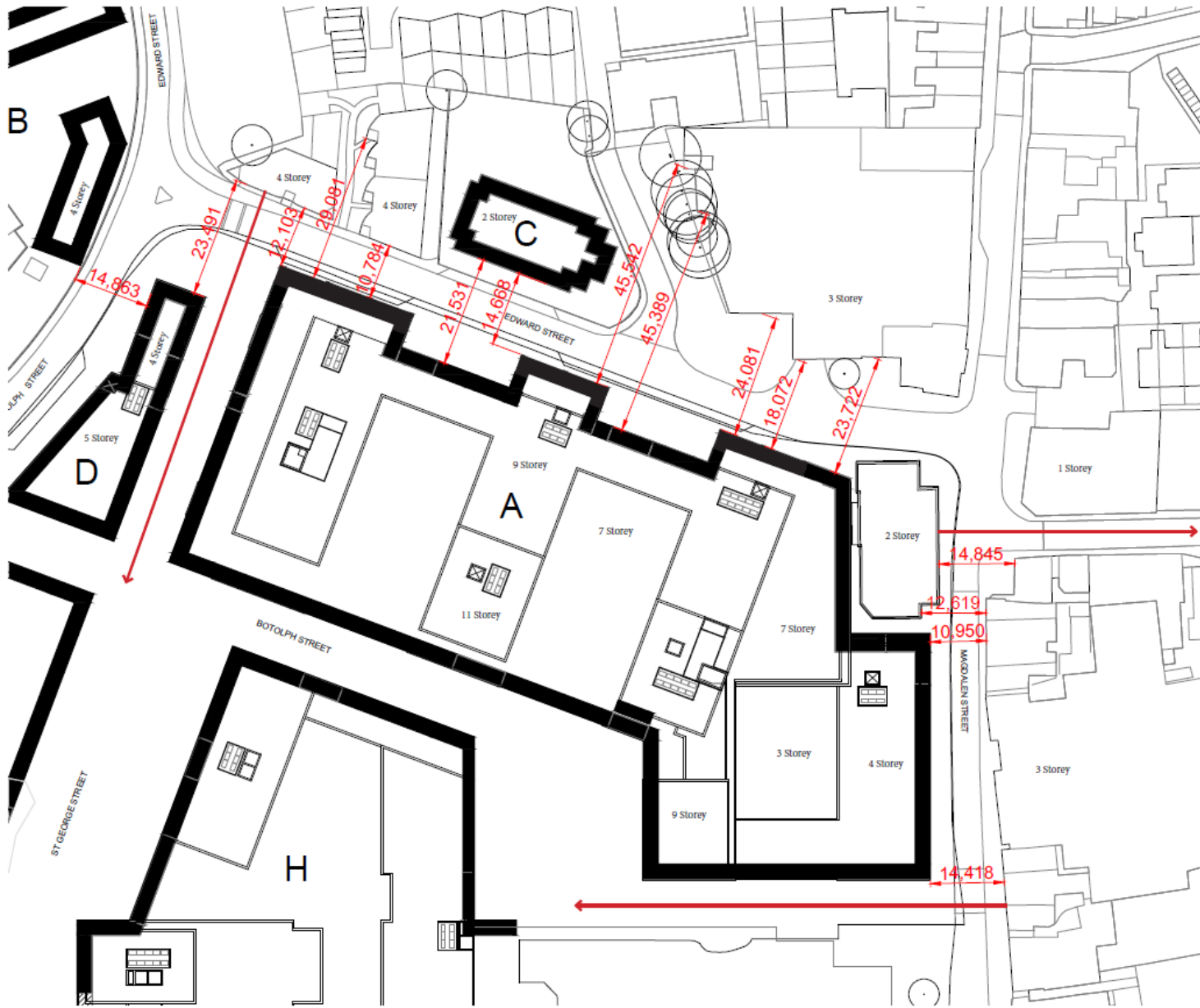
23. Paragraph 26 – refers to the hourly NO₂ objective being exceeded. However, the modelling now shows that the hourly objective will be met. At all locations the PM objectives are predicted to be met.
24. Paragraphs 33 / 34 – refers to the fact that even where the air quality objectives are met that the values do matter. The air quality assessments undertaken for the re-development of Anglia Square assess compliance with the UK's air quality objectives, which are enacted into law. There is currently no requirement to go beyond this.
25. Paragraph 42 – *“All but one receptor location shows an increase over baseline and the without development scenario for NO₂.”* This analysis is based on previous modelling undertaken. It also fails to take into account that the annual mean objective only applies at residential locations and not places that are used for commercial purposes.
26. Paragraph 44 – states that the bias correction factor for the diffusion tube has reduced between the 2017 and 2018 reports and that Norwich has always chosen the lowest factor. Norwich City Council have explained that the guidance advocates the use of a locally derived factor and it was only due to poor precision of the diffusion tube results in 2017 that a national factor was used that year.
27. Paragraph 45 and Table 2 – it is not clear what this table is showing. In addition, it does not appear appropriate to calculate an annual average concentration of the monitoring site results as it is very dependent on where the monitoring stations are placed. This comment also applies to paragraph 46.
28. Paragraph 50 – The comments don't take into account the proxy scenario and that planning permission is already granted for the site for a different use that would result in more traffic in the majority of cases.
29. Paragraph 54 / 55 – *“all levels of government should consider... siting living accommodation away from roadsides”*. The residential accommodation is positioned, in all places other than Block B, at first floor level and above, where the air quality objectives are predicted to be met even in the 'no policy applied' scenario. Mechanical ventilation is proposed to be installed for all residential accommodation.
30. Paragraphs 56 – 62 on street canyons – With the re-development of Anglia Square, Edward Street will not be a street canyon and therefore has not been modelled as such. See paragraph 19 for further information.
31. Paragraphs 63 and 64 – this section comments on the fact that we have used ADMS-Roads, rather than ADMS – Urban to model the surrounding air pollution concentrations and that ADMS-Roads should only be used for small towns or rural road networks. The text quoted only includes part of the information on CERC's website (the dispersion model developer). It actually says *“The ADMS-Roads pollution model is a comprehensive tool for investigating air pollution problems due to networks of roads that may be in combination with industrial sites, for instance small towns or rural road networks.”* We have checked with CERC, the model developers, and they have agreed that ADMS-Roads is appropriate for the Anglia Square site. They have said that: *“ADMS-Roads is suitable for modelling a small network of roads. It can be used for modelling parts of towns or cities, as long as the modelling adequately accounts for the contribution from emissions not explicitly included in the modelling..... by for example including a suitable urban background concentration in the model.”* We have done the latter. CERC have also confirmed that if you use the same input data in ADMS-Urban as ADMS- Roads you will in the circumstances of this case get the same predicted air pollutant concentrations.
32. Paragraph 65 – 69 – RMSE. In the latest modelling we have a value of 2.9, so well within the acceptable limit as defined by Defra.
33. Paragraph 71 – refers to the fact that we should have modelled Edward Street as a street canyon. Please see paragraph 19 above to justify why this would be incorrect.
34. Paragraph 72 onwards deals with vegetation being used for mitigation – As Professor Peckham identifies, vegetation has little impact on reducing air pollution and that the biggest impact comes from disturbing the air flow. However, the Applicant does not propose to plant an avenue of trees along the roadside but instead groupings of trees and low shrubs on the outer boundaries of the Site,

as well as sections of green wall on the ground floors on Edward Street and Pitt Street. Whilst not conclusive, evidence suggests that active green walls could play a role in effective filtration of NO₂ in urban environments (CD10.21 and CD10.22).

Summary and Conclusions

35. As identified above, steps are being taken to ensure that the air quality objectives will be met in the shortest possible time period. As well as actions being undertaken by Norwich City Council which are outlined in their Air Quality Action Plan, the site is a brownfield site and is in a sustainable and accessible location.
36. The Gladman case is not applicable in this case as that applied to a Local Authority that did not have a final air quality action plan and it was not understood how national measures would apply to the local scenario. With the introduction of the Euro 6d vehicle standard in September 2019, we already have a measure in place to enable compliance with the air quality objectives.
37. Norwich CYC proofs CYC 001 and CYC 101 both refer to the annual mean NO₂ objectives being exceeded at a large number of locations and have not taken into account where the objective applies.
38. CERC, the company who have developed the ADMS dispersion models have confirmed that using ADMS-Roads to model the Anglia Square site is appropriate.

Appendix 1



Weston Homes/CTI
 Rebuttal response to:
 Norwich Cycling Campaign
 Air Quality

Prof Peckham/Dr Mills

(CHSS) PoE CYC/001

4.2 Development creates street canyons which will trap pollution Para 59
 "The block A, along with the filling in with the open car park at Block C will create a new street canyon at Edwards street."

WH4/3 SK003
 14.01.2020

Appendix 2

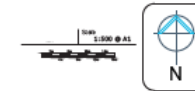
Drawing WH_SK_001



Key:

- 3m grass border
- 10m woodland border
- Indicative zone for air intake

Note: Grass border is set back 1.5m from the kerb line



Weston Homes/CTI
Rebuttal response to:
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(CHSS) PoE CYC/001

1 Summary paragraph 10

"A 3m grass border adjacent to the road and a 10m woodland border beyond this around the whole proposal"

WH4/3 SK001
14.01.2020