Department for Environment Food & Rural Affairs

Department for Transport

Supplement to the UK plan for tackling roadside nitrogen dioxide concentrations

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Introduction

1. Following the requirement to create a supplement to the 2017 UK plan for tackling roadside NO_2 concentrations, on 23 March 2018 the government legally directed 33 local authorities to develop a feasibility study. These local authorities had been identified in the UK plan for tackling roadside NO_2 concentrations[1] ('the 2017 Plan') as having shorter term NO_2 exceedances, with projected compliance with legal limits by 2021. The feasibility studies identify if there are any measures that could bring forward compliance on roads with concentrations of nitrogen dioxide (NO_2) in exceedance of the limits set out in the Ambient Air Quality Directive. This document forms a supplement to the 2017 Plan and sets out the next steps government is taking in relation to each of these 33 local authorities.

2. It sets out measures that have been identified to bring forward compliance on a number of road links which government has directed these local authorities to deliver. Measures identified include:

    - Retrofit of approximately 400 buses in total with technology to reduce harmful emissions in Dudley, Wolverhampton, Sandwell, Reading, Newcastle-under-Lyme and Portsmouth.
    - Traffic management measures such as signal optimisation in Dudley, Sandwell, Wolverhampton and South Gloucestershire.
    - Other measures such as behavioural change campaigns in Solihull and Leicester.

3. Some local studies, using more detailed local data, have set out that 26 road links identified in the national modelling as exceeding legal limits, are in fact already compliant. Conversely, some studies have identified roads with more persistent, long-term exceedances beyond 2021 and government has directed the local authorities responsible for these links to develop and implement plans to bring forward compliance. These are Bolsover, Bradford, Portsmouth, Broxbourne, Newcastle-under-Lyme, Stoke-on-Trent, Leicester and Liverpool.

4. The government will ensure that sufficient funding is in place to support the activities set out in this supplement to the 2017 Plan which are required to bring forward compliance. This will not change the activity of the 28 local authorities that are developing and implementing plans to deliver compliance in the shortest possible time.

[1] https://www.gov.uk/government/publications/air-quality-plan-for-nitrogen-dioxide-no2-in-uk-2017

The supplement to the 2017 Plan

5. This document is a supplement to the 2017 Plan and so it should be read in addition to and alongside the 2017 Plan. The supplement sets out the additional work carried out since publication of the 2017 Plan with local authorities identified as having shorter term NO_2 exceedances.

6. These local authorities were identified in Annex K of the 2017 Plan as having one or more sections of road (referred to as "road links") that exceeded the NO_2 limit value in 2015 according to the national assessment, but were projected to become compliant by 2021 at the latest by the national Pollution Climate Mapping (PCM) model. The data from the PCM model can be downloaded from Defra's UK-Air website[2].

7. There were 12 local authorities with exceedances in 2015 that were projected to become compliant in 2018 and so, given that the relevant legal limit is an annual mean average, it would not be possible to bring forward compliance in these local authorities and they were therefore not directed to carry out a feasibility study. These local authorities are: Chelmsford Borough Council, Doncaster Metropolitan Borough Council, Havant Borough Council, North East Lincolnshire Council, Warrington Borough Council, Broxtowe Borough Council, Luton Borough Council, South Ribble Borough Council, Knowsley Metropolitan Borough Council, Northampton Borough Council, Rochdale Metropolitan Borough Council and Dartford Borough Council.

8. Based on the national PCM modelling, the remaining 33 local authorities are projected to become compliant with the NO_2 limit value in 2019, 2020 or 2021. These local authorities are listed below:

List of 33 local authorities		
Ashfield District Council	Kirklees Council	Sandwell Metropolitan Borough Council
Basingstoke & Deane Borough Council	Leicester City Council	Sefton Metropolitan Borough Council
Blaby District Council	Liverpool City Council	Solihull Metropolitan Borough Council

[2] https://uk-air.defra.gov.uk/library/no2ten/2017-no2-projections-from-2015-data

Bolsover District Council	Newcastle-under-Lyme Borough Council	South Gloucestershire Council
Bournemouth Borough Council	Oldham Council	South Tyneside Council
City of Bradford Metropolitan District Council	Oxford City Council	Southend-on-Sea Borough Council
Broxbourne Borough Council	Peterborough City Council	Stoke on Trent City Council
Burnley Borough Council	Plymouth City Council	Sunderland City Council
Calderdale Metropolitan Borough Council	Poole Borough Council	Wakefield Metropolitan District Council
Cheltenham Borough Council	Portsmouth City Council	Walsall Council
Dudley Metropolitan Borough Council	Reading Borough Council	City of Wolverhampton Council

9. To support the development of feasibility studies, government provided each local authority with:

    - £50,000 funding to conduct the study.
    - Details of the road links identified as non-compliant in the national PCM model. This includes the census IDs, maps and nationally modelled source apportionment data.
    - Supporting guidance which included the approach to developing a feasibility study and ways of working with government. The guidance set out interim milestones so that government could support and appraise the work as it progressed.
    - Access to an information sharing portal through which local authorities and government could share documents.
    - Ongoing support to local authorities including through webinars, one-to-ones with each local authority and ongoing feedback as each study progressed.

10. The studies consider road links where the local authority (or its administrative county council) is the transport authority for those roads. As set out in the 2017

Plan, studies carried out by local authorities do not consider any road links managed by Highways England in that area because these road links are being considered separately through work managed by Highways England. Further information on this is set out in the 2017 Plan and in the Highways England section later in this document.

11. Local authorities were encouraged to include local air quality data in their studies where this was already available or where they were able to develop it in the time available. Government provided guidance setting out the local air quality monitoring and modelling data requirements, to ensure local data met appropriate and consistent standards. Local monitoring was required to follow Defra's existing best practice Technical Guidance 2016 (TG16) for data quality and to be carried out at locations consistent with the siting requirements set out in Annex III of the Ambient Air Quality Directive. Local modelling requirements were based on existing modelling guidance provided by government to support local authority air quality feasibility studies.

12. Local data has been used in a number of the studies in place of the national PCM modelled value to provide a local assessment of NO_2 concentrations where it was possible to gather the data in time. The national PCM modelling projections are based on 2015 and where possible local authorities' modelling has incorporated the impacts of projects, such as road infrastructure improvements, implemented since 2015 which would not have been reflected in the national modelling. This is consistent with the approach the government has taken with the first 28 local authorities (as set out in the Technical Report to the 2017 Plan[3]) in that the national scale PCM modelling is used to identify locations with NO_2 exceedances reported under the Ambient Air Quality Directive, and local authorities then conduct local assessments for those locations to support development of locally targeted measures. In some instances the local data has shown the road link in question is already compliant with the legal limits whilst in other instances it has identified a greater problem compared to the national modelling. Local authorities have also been able to include additional road links in their studies where they have local data that meets the required standards and identifies a problem that had not been identified in the national PCM modelling. Again, this approach is consistent with the approach the government has taken with the first 28 local authorities.

13. It should be recognised that two models are unlikely to produce exactly the same results, particularly when operating on different scales. The national PCM model was developed specifically to meet the requirements of Annex III of the Ambient Air Quality Directive and as such was designed for national scale assessments,

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3 https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/632916/air-quality-plan-technical-report.pdf

whereas local models tend to be optimised for more detailed local scale assessments, e.g. incorporating information on the identification of local traffic flows compositions or street geometry and topography which would not be determined on the national model.

14. Guidance and a template provided to local authorities set out the following suggested sections (where relevant) for each study:

    - Part 1: Understanding the problem. This section of the study sets out detailed information on the road links covered by the study including describing the magnitude of the NO_2 exceedance and its possible causes. Local authorities were able to include national data or their local monitoring or modelling data in this section.

    - Part 2: Developing a long list of measures for addressing exceedances. In this section local authorities were asked to provide a long list of possible measures to be considered reflecting on the main sources of emissions identified in part 1. This could include: local measures that have been implemented since 2015 and that are therefore not reflected in the baseline national PCM modelling; measures that are currently being implemented or due to be implemented soon; and potential new measures.

    - Part 3: Assessing deliverability and delivering a short list. In this section local authorities developed a short list of measures to consider in more detail, for example by removing measures that could not be delivered in time to bring forward compliance. Particular measures are only expected to be effective on certain roads. This could be because of the traffic composition, the time available for implementation before compliance is projected to be achieved naturally, or because of the physical characteristics of the road and so the short lists vary depending on the specific road link.

    - Part 4: Evidencing the short-listed measures to identify options that could bring forward compliance. The key aim of this section of the study was to identify, where they exist, measures that could lead to compliance with NO_2 concentration limits sooner than predicted in the baseline modelling. The guidance issued to local authorities aimed to support them in generating as robust an evidence base as possible in the time available and ensure they follow an appropriate approach to identify options that deliver compliance in the shortest possible time. There were two methods used in this part of the study:

        - Some local authorities used a tool provided by Defra called the Emissions Factors Toolkit to estimate the change in emissions that would result from the proposed measures and were supported with specific guidance on how to carry this out. The outputs from this

modelling were then run through the streamlined PCM (SL-PCM) model to estimate the impact on concentrations.

    - Some local authorities used their local model to assess the impact of measures. These local authorities submitted details of their local model which were reviewed by the government's expert consultants to ensure they met the necessary requirements. These requirements covered criteria such as the model inputs and model calibration.

- Part 5: Setting out a preferred option. In this section local authorities set out their recommendation for each of the road links captured by their study. Where local authorities identified more than one measure that brings forward compliance by the same amount of time they should consider a range of further factors in this section to decide on a recommended approach. For example, whether one of the options could be delivered faster and so reduce exposure quicker.

15. Local authorities' final feasibility studies have been published alongside the supplement to the 2017 Plan. Please note that government has not approved these documents in their entirety but has used the content of the documents (and further information where requested) to determine the content of the supplement set out in the remainder of this document.

16. In particular, local authorities have been responsible for providing evidence to support their feasibility studies. For many this has involved using local modelling and monitoring to estimate NO_2 concentrations and using local knowledge and/or evidence from a variety of sources to estimate the potential impact of measures. Government officials have made checks to ensure this evidence meets minimum requirements and is a reasonable basis for making decisions. Nonetheless, there is a high level of inherent uncertainty in estimating the potential impact of measures. In addition, any information in local authorities feasibility studies that is not material to the formulation of the recommendations detailed below has not been fully quality assured and may not, therefore, be consistent with analysis underpinning government policy.

Summary of the feasibility studies

17. There were 81 road links covered in the feasibility studies in the 33 local authorities. Most of these road links had been identified based on the national PCM modelling and an additional 16 road links were subsequently included in studies by individual local authorities based on local monitoring or modelling data.

18. Road links refer to specific sections of a road, usually between two junctions, and are taken from the Department for Transport's national Traffic Data census. Two road links representing adjacent sections of the same road can have quite different

NO_2 concentrations and therefore different conclusions regarding appropriate action that can be taken to reach compliance. This could be due to different traffic volume, traffic composition, surrounding geography, or land use on each section of the road in question. Where two road links are located either side of a major junction or motorway exit, large volumes of traffic exiting or entering the road at that junction may lead to the two road links having substantially different traffic flows. Two road links adjacent to one another, with a motorway exit at the far end of the first road link, may have different NO_2 concentrations if an industrial or retail park is situated between the two links, as most of the traffic exiting the major junction will travel along the first road link before entering the industrial or retail park, and not travel along the second link. Adjacent road links may also have different immediate environments which increase or diminish the dispersion of pollution, narrow streets versus open land or fields.

19. Each road link has been assessed in the feasibility studies and the supplement sets out one or more of the following conclusions for each road link:

    - No action has been identified, for example where local evidence shows the road link is now compliant or no measure has been identified that can bring forward compliance for the road link; or

    - At least one measure has been identified that brings forward compliance on the road link; and/or

    - A more persistent exceedance has been identified.

20. There are a number of reasons why no action has been identified for a road link, including:

    - In some instances the local authority has provided local data (which has been assessed as meeting our required standards) that shows that the road link is already compliant. This could happen where a local authority has carried out improvements that have impacted the road since 2015 (which is the year the national modelled projections are based on). For example, in Wakefield, local modelling has estimated that the section of the A61 covered in their study is compliant in 2018 with a NO_2 concentration of 38μg/m^3. This is due to the implementation in April 2017 of a major road scheme, the Wakefield Eastern Relief Road, which has reduced traffic flow on the road link.

    - In some instances the local authority has been unable to identify any measures that bring forward compliance. Local authorities were required to set out a long list of measures for each link, develop a short list of measures that could be delivered on the link in time to impact compliance and then model the impact these measures could have on NO_2 concentrations in order to conclude if any measures (or combination of measures) bring forward compliance. There are some instances where no measures have been found; for example, where NO_2

levels on a road link are projected to fall to within compliant levels within the next few years there may not be anything that can be delivered in the time frame available that has a material impact on NO_2 concentrations. The government will continue to work closely with them to improve their local air quality through their local air quality action plans; work with them to spend any remaining grant funding on air quality; and encourage local authorities to apply for the Air Quality Grant to deliver any measures that would improve air quality, even if this cannot bring forward legal compliance.

- As set out in the consultation, there are a small number of road links that under the Air Quality Standards Regulations 2010 do not need to be captured in the national modelling and therefore are not required to identify measures to bring forward compliance. Specifically, a small number of road links were identified as having no public access and one road link in Kirklees was assessed to be under 100m in length.

21. For a number of road links local authorities identified measures that were estimated to be able to bring forward compliance. Government has directed these local authorities to further develop the detail of these proposals and implement the measures as quickly as possible, and will be providing funding to support these measures.

22. For some road links a more persistent exceedance has been identified where the road link is projected to become compliant in 2022 or beyond[4]. For these road links more significant measures could be considered; for example, it is possible that a Clean Air Zone could be implemented. Whilst this measure may not be necessary or appropriate, it is necessary for these local authorities to carry out a much more thorough assessment of the air quality problem and the options available to bring forward compliance. The government has therefore further directed these local authorities to carry out a more detailed study to develop a plan to identify the most suitable measures to address the exceedance.

23. A full summary of conclusions by road link is available in **Annex B** and a summary of findings for each local authority is provided in the next section. Further information is also set out in the **'Next Steps'** section at the end of this document.

[4] As these local authorities have been identified for further work in dealing with exceedances that extend beyond 2021, further study and time to complete air quality dispersion models based on local data will improve the accuracy of these projections. As such the data presented in the studies of these LAs may be subject to change as more detailed modelling is undertaken.

Outcome of feasibility studies for each local authority

24. This section of the supplement sets out a summary for each of the 33 local authorities setting out whether any local data was used in the study and the approved conclusion of the study including any measures identified to bring forward compliance with the NO_2 limit value (40 µg/m^3). A full breakdown of conclusions for each road link is set out in **Annex B** and maps identifying the road links are set out in **Annex D.**

Ashfield District Council

25. Ashfield District Council has one road link with a projected exceedance of the annual mean NO_2 limit value in the national PCM modelling: a section of the A38 (Census ID 7353).

26. In their feasibility study, Ashfield District Council used a local model which demonstrated that Census ID 7353 was compliant with the NO_2 limit value in 2017, based on an NO_2 concentration of 38 µg/m^3. Ashfield District Council's road link is therefore considered compliant with the legal limits.

Basingstoke and Deane Borough Council

27. Basingstoke and Deane Borough Council has two road links with a projected exceedance of the annual mean NO_2 limit value in the national PCM modelling. Both are sections of the A339 (Census ID 56997 and 6941) and were projected to become compliant in 2020.

28. Census ID 56997 was confirmed as having no public access so this road link will be excluded from the national assessment in future, and as such was not considered as part of the feasibility study.

29. The Council used local modelling, which projected that Census ID 6941 is projected to be compliant in 2021. They considered a short list of measures and concluded that reducing the speed limit from 70 to 50 mph could bring forward compliance to 2019. However, further scoping work is required to identify if this is a feasible measure including considering safety and impacts on other road links. The government has directed the local authority to carry out this scoping work as soon as possible.

Blaby District Council

30. Blaby District Council has two road links with a projected exceedance of the annual mean NO_2 limit value in the national PCM modelling: a section of the A563 (Census

ID 80463); and a section of the A5460 (Census ID 80466). They are projected to become compliant in 2019.

31. The Council considered a short list of measures in their feasibility study but found none that could bring forward compliance.

Bolsover District Council

32. Bolsover District Council has one road link with a projected exceedance of the annual mean NO_2 limit value in the national PCM modelling: a section of the A38 (Census ID 28528).

33. In their feasibility study Bolsover District Council used local modelling, which projected that Census ID 28528 will not become compliant until 2023 and therefore has a more persistent exceedance.

34. The government has directed Bolsover District Council to carry out a more detailed study to develop a plan to bring forward compliance in the shortest possible time. The Direction requires that the local authority produce a final plan by 31 October 2019.

Bournemouth Borough Council

35. Bournemouth Borough Council has two road links with a projected exceedance of the annual mean NO_2 limit value in the national PCM modelling: both are sections of the A338 (Census ID 26967 and 7998).

36. In their feasibility study, Bournemouth Borough Council used a local model which demonstrated that Census IDs 26967 and 7998 were compliant with the NO_2 limit value in 2017 based on an NO_2 concentration of 39 $\mu g/m^3$ and 23 $\mu g/m^3$. Bournemouth Borough Council's roads links are therefore considered compliant with the legal limits.

City of Bradford Metropolitan District Council

37. The City of Bradford Metropolitan District Council has five road links with a projected exceedance of the annual mean NO_2 limit value in the national PCM modelling. These are three sections of the A650 (Census ID 28710, Census ID 8580 and Census ID 74525); and two sections of the A6117 (Census IDs 17705 and 74397).

38. The Council used local modelling to identify that Census ID 17705 was compliant in 2017 with a concentration of 35$\mu g/m^3$ and that Census IDs 74525, 74397, 28710 and 8580 are projected to become compliant in 2018, 2019, 2019 and 2024 respectively. The Council's local modelling identified four additional roads with an

NO_2 exceedance. These are projected to become compliant in 2019, 2020, 2023 and 2027.

39. Due to the more persistent exceedances identified in this local authority area, the government has directed the City of Bradford Metropolitan District Council to carry out a more detailed study to develop a plan to bring forward compliance in the shortest possible time. The Direction requires that the local authority produce a final plan by 31 October 2019.

Broxbourne Borough Council

40. Broxbourne Borough Council has one road link with a projected exceedance of the annual mean NO_2 limit value in the national PCM modelling: a section of the A10 (Census ID 78365).

41. In their feasibility study, Broxbourne Borough Council used local modelling and demonstrated that Census ID 78365 is projected to be compliant in 2028 and therefore has a more persistent exceedance.

42. Due to the more persistent exceedances identified in this local authority area, the government has directed Broxbourne Borough Council to carry out a more detailed study to develop a plan to bring forward compliance in the shortest possible time. The Direction requires that the local authority produces a final plan by 31 October 2019.

Burnley Borough Council

43. Burnley Borough Council has one road link with a projected exceedance of the annual mean NO_2 limit value in the national PCM modelling: a section of the A671 (Census ID 8416).

44. Burnley Borough Council used local modelling to demonstrate that Census ID 8416 was compliant with the NO_2 limit value in 2016 based on an NO_2 concentration of 39 $\mu g/m^3$. Burnley Borough Council's road link is therefore considered compliant with the legal limits.

Calderdale Metropolitan Council

45. Calderdale Metropolitan Borough Council has one road link with a projected exceedance of the annual mean NO_2 limit value in the national PCM modelling: a section of the A62 (Census ID 6604).

46. In their feasibility study, Calderdale Metropolitan Borough Council's local monitoring demonstrated that Census 6604 was compliant with the NO_2 limit value in 2017. This monitoring site met the standards set out in our guidance and the data for 2017

reported a NO_2 concentration of 32 µg/m^3. Calderdale Metropolitan Borough Council's road link is therefore considered compliant with the legal limits.

Cheltenham Borough Council

47. Cheltenham Borough Council has one road link with a projected exceedance of the annual mean NO_2 limit value in the national PCM modelling: a section of the A40 (Census ID 77985). This was projected to become compliant in 2019.

48. In their feasibility study, Cheltenham Borough Council used the approach set out in our guidance (using the Emissions Factors toolkit and the Streamlined Pollution Climate Mapping model), to demonstrate that Census ID 77985 is compliant with the annual mean NO_2 limit value based on an NO_2 concentration of 40 µg/m^3 in 2018. This is due to bus fleet upgrades to Euro VI emission standards.

49. Cheltenham Borough Council's road link is therefore considered compliant with the legal limit.

Dudley Metropolitan Borough Council

50. Dudley Metropolitan Borough Council has two road links with a projected exceedance of the annual mean NO_2 limit value in the national PCM modelling: both are sections of the A461 (Census ID's 74559 and 17611). These are projected to become compliant in 2020.

51. Dudley Metropolitan Borough Council used monitoring data to bring an additional road into the scope of its feasibility study: a section of the A491 Census ID 57205. This road link is projected to become compliant in 2022.

52. The local authority has identified measures that bring forward compliance on each of these road links and government has directed the local authority to implement these measures. These are:

    - For Census IDs 74559 and 17611 traffic signal optimisation was identified to bring forward compliance from 2020 to 2019.
    - For Census ID 57205 a combination of signal optimisation and bus retrofit was identified to bring forward compliance from 2022 to 2021.

53. Census ID 74559 is a section of the A461 from Cinderbank Island to Castlegate Island / Duncan Edwards Way. The study estimated that compliance is expected to be bought forward from 2020 to 2019, with NO_2 concentrations estimated to be 39.8 µg/m^3 in 2019 with this measure. A summary of the estimated concentration change is set out in Annex A. The scheme would involve a review of pedestrian crossing timings/upgrade to PUFFIN standard and a review/upgrade of signals at Castlegate Island. The local authority has been directed to implement this measure as soon as possible and by the latest, in time to bring forward compliance to 2019. The local

authority has estimated that this could be delivered within 12 months – government will now be working with them to further develop the delivery timetable and implement the measure.

54. Census ID 17611 is a section of the A461 from Castlegate Island to Burnt Tree Junction/Birmingham Road. The study estimated compliance is expected to be bought forward from 2020 to 2019, with NO_2 concentrations estimated to be 39.6 $\mu g/m^3$ in 2019 with this measure. A summary of the estimated concentration change is set out in Annex A. The scheme would involve a review and upgrade of signals at Burnt Tree Junction and a review of signals at the Tesco junction. The local authority has been directed to implement this measure as soon as possible and by the latest, in time to bring forward compliance to 2019. The local authority has estimated that this could be delivered within 12 months – government will now be working with them to further develop the delivery timetable and implement the measure.

55. Census ID 57205 is a section of the A491 on High Street Wordsley from Lawnswood Road to Church Road. The study set out that 90 per cent of buses on this route are Euro III and so there is considerable opportunity for reductions in bus emissions. A combination of bus retrofit and traffic signal optimisation is estimated to bring forward compliance from 2022 to 2021 with an estimate NO_2 concentration of 40 $\mu g/m^3$ in 2021. A summary of the estimated concentration change is set out in Annex A. The scheme would involve a review and upgrade of signals at High Street/Lawnswood Road which is estimated could be delivered in 12 months. It would also involve retrofitting approximately 30 buses which is also estimated to be deliverable within 12 months. The local authority has been directed to implement this measure as soon as possible and by the latest in time to bring forward compliance to 2021. The government will now be working with them to further develop the delivery timetable and implement the measure.

Kirklees Metropolitan Borough Council

56. Kirklees Metropolitan Borough Council has one road link with a projected exceedance of the annual mean NO_2 limit value in the national PCM modelling: a section of the A62 (Census ID 74811).

57. In their feasibility study, Kirklees Metropolitan Borough Council demonstrated that the road link Census ID 74811 is less than 100m long. The Air Quality Standards Regulations 2010 set out that Annex III of the Directive states that “the Secretary of State must locate sampling points so as to be representative of air quality in a street segment of no less than 100m in length at traffic-orientated sites”. Road links shorter than 100m are not included in the PCM national modelling and as such this road link is no longer part of the national model. This road link has therefore been removed from the PCM and no further action is required.

Leicester City Council

58. Leicester City Council has three road links with a projected exceedance of the annual mean NO_2 limit value in the national PCM modelling. A section of the A563 (Census ID 73725) is projected to become compliant in 2019 and two sections of the A594 (Census ID's 36524 and 48489) are projected to be compliant in 2020.

59. The Council considered a short list of measures in their feasibility study but found that no measures could bring forward compliance on Census ID 48489 and 73725.

60. On Census ID 36524, the feasibility study set out that an enhanced behavioural change programme is expected to bring forward compliance from 2020 to 2019. A summary of the concentration change is set out in Annex A. The enhanced behavioural change programme includes engagement with commercial and private users of the targeted link and an area wide marketing campaign. The local authority has been directed to implement this measure as soon as possible and by the latest in time to bring forward compliance to 2019. The Council estimates that they could launch the scheme in late 2018 – the government will now be working with them to further develop the delivery timetable and implement the measure.

61. In addition, the local authority submitted monitoring data for Census ID 56464 that demonstrated a more persistent exceedance, with the road link projected to become compliant in 2022. As well as providing support for the Council to deliver the behavioural change programme, the government has directed Leicester City Council to carry out a more detailed study to develop a plan to bring forward compliance in the shortest possible time. The Direction requires that the local authority produce a final plan by 31 October 2019.

Liverpool City Council

62. Liverpool City Council has six road links with a projected exceedance of the annual mean NO_2 limit value in the national PCM modelling. Three are projected to become compliant in 2019 and three in 2020.

63. In their feasibility study, Liverpool City Council used local modelling to show that five of the links are projected to be compliant in 2017 (Census ID's 17657, 28563, 37794, 37905 and 46588).For Census ID 18505, the Council considered a short list of measures in their feasibility study but found none that measures could bring forward compliance.

64. The Council carried out further local modelling and identified more persistent exceedances in two model areas, with projected compliance in 2025 and 2026. Due to the more persistent exceedances identified in this local authority, the government has directed Liverpool City Council to carry out a more detailed study to develop a plan to bring forward compliance in the shortest possible time. The Direction requires that the local authority produce a final plan by 31 October 2019.

Newcastle-under-Lyme Council

65. Newcastle-under-Lyme Council has one road link with a projected exceedance of the annual mean NO_2 limit value in the national PCM modelling: a section of the A53 (Census ID 74058).

66. In their feasibility study Newcastle-under-Lyme Council used local modelling to show that Census ID 74058 is projected to become compliant in 2026. Two additional road links were added to the scope of the council's feasibility study – both sections of the A53. Census ID 6545 was added in using local monitoring and is projected to become compliant in 2023. Census ID 28732 was added in using local modelling and is projected to become compliant in 2025.

67. Retrofitting buses to meet higher Euro emissions standards is expected to bring forward compliance for Census ID 6545 from 2023 to 2021 (with an estimated NO_2 concentration in 2021 of 39 $\mu g/m^3$), for Census ID 28732 from 2025 to 2024 (with an estimated NO_2 concentration in 2024 of 39 $\mu g/m^3$) and for Census ID 74058 from 2026 to 2025 (with an estimated NO_2 concentration in 2025 of 39 $\mu g/m^3$). A summary of the estimated concentration change is set out in Annex A. The Council estimate that this would require retrofitting approximately 25 buses to Euro VI standard and that this could be delivered within two years. The local authority has been directed to implement this measure as soon as possible and by the latest in time to bring forward compliance to 2021 for Census ID 6545, 2024 for Census ID 28732 and 2025 for Census ID 74058. The government will now be working with them to further develop the delivery timetable, encouraging delivery as quickly as possible, and implement the measure.

68. Even with the implementation of retrofit, there is still a more persistent exceedance with the last road link projected to become compliant in 2025. As well as providing support for the Council to deliver retrofit, government has directed Newcastle-under-Lyme Council to carry out a more detailed study to develop a plan to bring forward compliance in the shortest possible time. The Direction requires that the local authority produce a final plan by 31 October 2019. Given the proximity of their exceeding road links, the government would expect Newcastle-under-Lyme and Stoke-on-Trent councils to carry out a joint plan.

Oldham Council

69. Oldham Council has one road link with a projected exceedance of the annual mean NO_2 limit value in the national PCM modelling: a section of the A62 (Census ID 36632). It is projected to become compliant in 2021.

70. The Council considered a short list of measures in their feasibility study but found none that could bring forward compliance on Census ID 36632. However, Oldham

is part of the Greater Manchester plan being developed under the 2017 Plan which seeks to improve air quality across Greater Manchester and support the government in meeting all legal thresholds for key pollutants at the earliest date in Greater Manchester, so this link will be considered further as part of that work. This will involve more detailed local modelling.

Oxford City Council

71. Oxford City Council has one road link with a projected exceedance of the annual mean NO_2 limit value in the national PCM modelling: a section of the A420 (Census ID 57031). It is projected to become compliant in 2021.

72. Local monitoring data showed that this link was compliant with the NO_2 limit value based on an NO_2 concentration of 40 $\mu g/m^3$ in 2017. This is likely due to the work carried out to upgrade the bus fleet.

73. An additional road link was added to the study using local monitoring data on St Clements (Census ID 17051) which was projected to become compliant in 2021. The feasibility study identified that two potential measures brought forward compliance to 2020: bus retrofit or a low emission zone. The bus retrofit is an existing measure that is already funded under the Clean Bus Technology Fund and so the government has concluded that no additional measures are required to bring forward compliance. A summary of the estimated concentration change with bus retrofit is set out in Annex A.

Peterborough City Council

74. Peterborough City Council has one road link with a projected exceedance of the annual mean NO_2 limit value in the national PCM modelling: a section of the A1260 (Census ID 27586).

75. In their feasibility study Peterborough City Council set out that the road link Census ID 74811 does not have public access within 15 metres of the kerbside i.e. pavements, buildings, gardens, car parks, cycle tracks or footpaths (running parallel to the road). The Ambient Air Quality Directive provides that assessment must not be undertaken at locations where members of the public do not have access and there is no fixed habitation. The government's approach, informed by our expert consultants, is to exclude road links from the national PCM model where there is no public access within 15 metres. This road link is therefore no longer part of the national PCM modelling and no further action is required.

Plymouth City Council

76. Plymouth City Council has three road links with a projected exceedance of the annual mean NO_2 limit value in the national PCM modelling: one section of the

A386 (Census ID 27056), one section of the A374 (Census ID 27910), and one section of the A38 (Census ID 81374).

77. The Council used local modelling to demonstrate that all of the road links were compliant with the NO_2 limit value based on NO_2 concentrations of 33µg/m^3, 35µg/m^3 and 32µg/m^3 in 2017. Plymouth City Council's road links are therefore considered compliant.

Poole Borough Council

78. Poole Borough Council has two road links with a projected exceedance of the annual mean NO_2 limit value in the national PCM modelling: One section of the A3049 (Census ID 28471) and one stretch of the A348 (Census ID 38387). The national PCM modelling projects that Census ID 38387 will be compliant in 2019.

79. Poole Borough Council used local monitoring to identify that Census ID 28471 was compliant with the NO_2 limit value based on an NO_2 concentration of 32 µg/m^3 in 2017.

80. The Council considered a short list of measures in their feasibility study but found none that could bring forward compliance on Census ID 38387.

Portsmouth City Council

81. Portsmouth City Council has two road links with a projected exceedance of the annual mean NO_2 limit value in the national PCM modelling: both are sections of the A3 (Census ID 48196 and 18114).

82. In their feasibility study Portsmouth City Council used local modelling to project that Census ID 48196 will become compliant in 2020 and that Census ID 18114 will become compliant in 2023.

83. A combination of retrofitting buses to meet higher Euro emissions standards, reducing car use and promoting uptake of cleaner vehicles was modelled to bring forward compliance at Census ID 48196 from 2020 to 2019 and on Census ID 18114 from 2023 to 2022.

84. On Census ID 48196 the combined influence of the bus retrofitting, reducing private car use measures and promoting/encouraging the uptake of cleaner vehicles is expected to bring forward compliance from 2020 to 2019, with an estimated NO_2 concentration of 40 µg/m^3 in 2019. A summary of the estimated concentration change is set out in Annex A.

85. On Census ID 18114 the combined influence of the bus retrofitting, reducing private car use measures and promoting/encouraging the update of cleaner vehicles is expected to bring forward compliance from 2023 to 2022, with an estimated NO_2

concentration of 40 μg/m^3 in 2022. A summary of the estimated concentration change is set out in Annex A.

86. The measures to reduce car use include workplace travel and personal journey planning, school travel planning, promoting active travel options, and encouraging and supporting businesses to offer flexible working/home-working options. This programme of work will start in autumn 2018 and continue into early 2019. These measures are already funded through an air quality grant.

87. The measures to promote uptake of cleaner vehicles include the rollout of electric vehicle charging points later in 2018. This measure is already funded through a government grant from the Office of Low Emission Vehicles (OLEV) grant.

88. The bus retrofit scheme is estimated to include approximately 100 buses and the local authority estimates that it could be delivered by the end of 2019. The local authority has been directed to implement this measure as soon as possible and by the latest in time to bring forward compliance to 2019 for Census ID 48196 and 2022 for Census ID 18114 – the government will now be working with them to further develop the delivery timetable and implement the measure.

89. Even with the bus retrofit, there is still a persistent exceedance with compliance projected to be by 2022. The government has therefore also directed Portsmouth City Council to carry out a more detailed study to develop a plan to bring forward compliance in the shortest possible time. The Direction requires that the local authority produce a final plan by 31 October 2019.

Reading Borough Council

90. Reading Borough Council has three road links with a projected exceedance of the annual mean NO_2 limit value in the national PCM modelling; all are sections of the A329 (Census ID 27954, 18632 and 99740).

91. In their feasibility study Reading Borough Council used local modelling to identify that Census ID 27954 and Census ID 99740 were compliant with the NO_2 limit value in 2017 based on an NO_2 concentration of 37 μg/m^3 and 27 μg/m^3 respectively. Both road links are therefore considered compliant with legal limits.

92. Local modelling identified that Census ID 18632 is projected to be compliant in 2019 and a further five road links were added to the scope of the study:

    - Friar Street: projected to be compliant in 2021
    - London Road: Census ID 6127 – projected to be compliant in 2022
    - Census ID 6924 – projected to be compliant in 2019
    - Kings Road/Wokingham Road: Census ID 46955 - projected to be compliant in 2022
    - Chatham Street: Census ID 48360 – projected to be compliant in 2022

93. The Council considered a short list of measures in their feasibility study but found none that could bring forward compliance on Census ID 18632 and Census ID 6924, given the short timescale as the road link is projected to be compliant in 2019.

94. For the other road links, bus retrofit was identified as being able to bring forward compliance so the local authority has been directed to implement bus retrofit on these road links. The government has directed the local authority to implement these measures as soon as possible and by the latest in time to bring forward compliance with the dates set out below. The scheme would involve retrofitting approximately 140 buses to Euro VI standard – the Council estimates that this could be implemented by the end of 2019. A summary of the estimated concentration change is set out in Annex A. The local modelling sets out that bus retrofit could have the following impact:

    - Bring forward compliance on Friar Street from 2021 to 2019
    - Bring forward compliance on Census ID 6127 from 2022 to 2021
    - Bring forward compliance on Census ID 46955 from 2022 to 2020
    - Bring forward compliance on Census ID 48360 from 2022 to 2021

Sandwell Metropolitan Borough Council

95. Sandwell Metropolitan Borough Council has four road links with a projected exceedance of the annual mean NO_2 limit value in the national PCM modelling. Two sections of the A41 are projected to become compliant in 2020 (Census ID 99397 and 99155), one section of the A34 projected to be compliant in 2019 (Census ID 16330) and one section of the A457 projected to be compliant in 2019 (Census ID 17142).

96. The Council considered a short list of measures in their feasibility study but found none that could bring forward compliance on Census ID 16330 and Census ID 99397.

97. For the other two links (Census ID 17142 and 99155), measures have been identified that are expected to bring forward compliance and Sandwell Metropolitan Borough Council has been directed to implement these measures.

98. For Census ID 17142, retrofitting buses was identified to bring forward compliance from 2019 to 2018. The study estimated this could bring forward compliance from 2019 to 2018 with a NO_2 concentration of 40 $\mu g/m^{3.}$ A summary of the estimated concentration change is set out in Annex A. This scheme would include retrofitting two buses and the Council estimates this could be delivered in 2018. The local authority has been directed to implement this measure as soon as possible and by the latest in time to bring forward compliance to 2018 - the government will now be working with them to further develop the delivery timetable and implement the measure.

99. Traffic signal optimisation and retrofitting buses combined is expected to bring forward compliance at Census ID 99155 from 2020 to 2019. This road link is a stretch of road between the roundabout with M5 Junction 1 the local authority boundary with Birmingham City Council and the end point is the roundabout at M5 Junction. The study set out that 91 per cent of the vehicles serving this route are already Euro V and so the potential savings are limited compared to other routes. A combination of traffic signal optimisation and bus retrofit was estimated to bring forward compliance from 2020 to 2019, with an estimated NO_2 concentration in 2019 of 40 $\mu g/m^3$. A summary of the estimated concentration change is set out in Annex A.

100. The traffic signal optimisation would involve a manual review of all signals, an upgrade of pedestrian crossings (to PUFFIN where required) and an upgrade of signals at Park Lane junction M5/A4168. The local authority has been directed to implement this measure as soon as possible and by the latest in time to bring forward compliance to 2019. The local authority has estimated that this could be delivered within 12 months – the government will now be working with them to further develop the delivery timetable and implement the measure. The government is already funding Sandwell Metropolitan Borough Council's bus retrofit measures through the Clean Bus Technology Fund for Census ID 99155.

Sefton Metropolitan Borough Council

101. Sefton Metropolitan Borough Council has one road link with a projected exceedance of the annual mean NO_2 limit value in the national PCM modelling: a section of the A59 (Census ID 75290).

102. In their feasibility study, Sefton Metropolitan Borough Council identified that Census ID 75290 is managed by Highways England. Responsibility for identifying any measures to bring forward compliance is with Highways England. More information on the work Highways England is doing to improve air quality is set out in the 2017 Plan and later in this document.

Solihull Metropolitan Borough Council

103. Solihull Metropolitan Borough Council has two road links with a projected exceedance of the annual mean NO_2 limit value in the national PCM modelling. Both are sections of the A45: Census ID 99175 is projected by the PCM model to become compliant in 2020 and Census ID 86030 is projected to become compliant in 2021.

104. The Council found that a combination of measures brought forward compliance from 2021 to 2020 on Census ID 86030 and from 2020 to 2019 on Census ID 99175. This package of measures included: workplace travel plans, use of cycling and walking networks, car sharing schemes, changes to signing and fleet

efficiency advice. The local authority has been directed to implement this measure as soon as possible and by the latest in time to bring forward compliance. The local authority has estimated that this could be implemented from early 2019 - the government will now be working with them to further develop the delivery timetable and implement the measure. A summary of the estimated concentration change is set out in Annex A.

South Gloucestershire Borough Council

105. South Gloucestershire Borough Council has one road link with a projected exceedance of the annual mean NO_2 limit value in the national PCM modelling: a section of the A4174 (Census ID 17633).

106. South Gloucestershire Borough Council's local modelling confirmed that Census ID 17633 is projected to become compliant in 2021. In their feasibility study, the Council identified that traffic management measures are expected to bring forward compliance from 2021 to 2019. A summary of the estimated concentration change is set out in Annex A.

107. This includes banning certain turns and soft gating at a roundabout. The local authority has been directed to implement these measure as soon as possible and by the latest in time to bring forward compliance to 2019. The local authority has estimated that temporary works could be in place within three to four months - the government will now be working with them to further develop the delivery timetable and implement the measure

South Tyneside Metropolitan Borough Council

108. South Tyneside Metropolitan Borough Council has two road links with a projected exceedance of the annual mean NO_2 limit value in the national PCM modelling: both are sections of the A194 (Census ID 77767 and 6746).

109. In their feasibility study South Tyneside Metropolitan Borough Council used local modelling which demonstrated Census IDs 77767 and 6746 were compliant with the NO_2 limit value in 2017 based on an NO_2 concentration of 40 $\mu g/m^3$ and 36 $\mu g/m^3$ respectively. The study sets out that the disparity between local modelling and PCM projections can be explained by the Council implementing measures since 2015, such as the Lindisfarne improvement scheme, which has led to a reduction in NO_2 concentrations. Both road links are therefore considered compliant with legal limits.

Southend-on-Sea Borough Council

110. Southend-on-Sea Borough Council has one road link with a projected exceedance of the annual mean NO_2 limit value in the national PCM modelling: a section of the A127 (Census ID 99319).

111. In their feasibility study Southend-on-Sea Borough Council used local modelling, including the impact of a new junction improvement, to demonstrate that Census ID 99319 is expected to be compliant with the NO_2 limit value in 2018 based on an NO_2 concentration of 36 $\mu g/m^3$. Southend-on-Sea Borough Council's road link is therefore expected to be compliant in 2018.

Stoke-on-Trent City Council

112. Stoke-on-Trent Council has one road link with a projected exceedance of the annual mean NO_2 limit value in the national PCM modelling: a section of the A53 (Census ID 26555).

113. In their feasibility study Stoke-on-Trent City Council used local modelling to demonstrate that Census ID 26555 is projected to become compliant in 2022. The Council considered a short list of measures in their feasibility study but found none that could bring forward compliance.

114. Due to the more persistent exceedances identified in this local authority area, government has directed Stoke-on-Trent City Council to carry out a more detailed study to develop a plan to bring forward compliance in the shortest possible time. The Direction requires that the local authority produce a final plan by 31 October 2019. Given the proximity of their exceeding road links, the government would expect Newcastle-under-Lyme and Stoke-on-Trent councils to carry out a joint plan.

Sunderland City Council

115. Sunderland City Council has one road link with a projected exceedance of the annual mean NO_2 limit value in the national PCM modelling: a section of the A1231 (Census ID 57620).

116. In their feasibility study Sunderland City Council used local modelling, which demonstrated that Census ID 57620 was compliant with the NO_2 limit value in 2017 based on an NO_2 concentration of 35 $\mu g/m^3$. Sunderland City Council's road link is therefore considered compliant with legal limits.

Wakefield Metropolitan District Council

117. Wakefield Metropolitan District Council has one road link with a projected exceedance of the annual mean NO_2 limit value in the national PCM modelling: a section of the A61 (Census ID 56617).

118. In their feasibility study, Wakefield Metropolitan District Council used local modelling which demonstrated Census ID 56617 is expected to be compliant with the NO_2 limit value in 2018 based on an NO_2 concentration of 38$\mu g/m^3$. The study set out that this is likely due to the opening of the Wakefield Eastern Relief road in

2017. Therefore, Wakefield Metropolitan District Council's road link is expected to be compliant in 2018.

Walsall Metropolitan Borough Council

119. Walsall Metropolitan Borough Council has four road links with a projected exceedance of the annual mean NO_2 limit value in the national PCM modelling. A section of the A454 was projected to be compliant in 2021 (Census ID 27202); and two sections of the A4148 projected to be compliant in 2020 (Census ID 38201 and Census ID 7661). Census ID 74017 (a section of the A463) was identified as having no public access and has therefore been removed from the national PCM model.

120. In their feasibility study, Walsall Metropolitan Borough Council used local monitoring to show that Census ID 7661 was compliant with the NO_2 limit value in 2016 based on an NO_2 concentration of 31µg/m^3.

121. The Council considered a short list of measures in their feasibility study but found none that could bring forward compliance on Census ID 27202 and 38201.

City of Wolverhampton Council

122. The City of Wolverhampton Council has four road links with a projected exceedance of the annual mean NO_2 limit value in the national PCM modelling. Two sections of the A4150 projected to become compliant in 2021 (Census ID 28464) and 2019 (Census ID 57739); and two sections of the A463 projected to become compliant in 2021 (Census ID 99402) and in 2019 (Census ID 99404).

123. The Council considered a short list of measures in their feasibility study but found none that could bring forward compliance on Census IDs 99402, 57739 and 99404.

124. In their study, the Council identified that a combination of retrofitting buses to higher Euro emissions standards and traffic signal optimisation are expected to bring forward compliance on Census ID 28464 from 2021 to 2020. This road link is part of the Wolverhampton city centre ring road between Broad Street and Bilston Street Island. The study estimated that a combination both traffic signal optimisation and bus retrofit was found to bring forward compliance from 2021 to 2020, with an estimated NO_2 concentration of 40 µg/m^3. A summary of the estimated concentration change is set out in Annex A.

125. The signal optimisation measures includes an upgrade of lights at Bilston Island, Wednesfield Road and Broad Street. It is estimated this could be delivered within 24 months. The bus retrofit measure is for around 200 buses with a focus given to the main ring road around Wolverhampton and is estimated to be able to be delivered within 18 months. The local authority has been directed to implement this measure as soon as possible and by the latest in time to bring forward

compliance to 2020 - the government will now be working with them to further develop the delivery timetable and implement the measure.

Highways England

126. Highways England is charged with operating, maintaining and improving England's Strategic Road Network which consists of motorways and major A roads. Some of these roads are in the areas this supplement is concerned with. The feasibility studies covered local authority managed roads only.

127. Separately, as set out in the 2017 Plan, Highways England is taking a number of steps to improve air quality on the Strategy Road Network including:

- Delivering the £100m Air Quality Fund (2015-2021) which supports work to identify if there are viable options that could be introduced to bring forward compliance on the Highways England managed road links in the shortest possible time;
- Working with local authorities as they develop options for achieving the statutory NO_2 limit values in the shortest time possible; and
- Ensuring that 95 per cent of the network will have a chargepoint for electric vehicles every 20 miles.

Next steps

128. For a number of road links, measures were identified that could bring forward compliance with the annual mean NO_2 limit value. The government has issued legal directions to these local authorities to require them to deliver these measures in time to bring forward compliance and as quickly as possible. Government will now be working with these local authorities to further develop the detail of these proposals and implement the measures, including by providing funding to support these measures. Alongside this, the government will work with these local authorities to put in place monitoring of air quality and traffic on the target roads, where this is not already in place. This will allow us to keep track of whether or not compliance is being achieved on the expected timetable. For those local authorities that are implementing measures for which the evidence base is weaker, such as behavioural change campaigns, local authorities will also be expected to carry out an evaluation to understand the extent to which the measures have contributed to air quality improvements. The government will expect other bodies, including upper tier local authorities to work with these local authorities where appropriate.

129. For some road links a more persistent exceedance has been identified where the road link is projected to become compliant in 2022 or beyond[5]. For these road links more significant measures could be considered. The government has therefore further directed eight local authorities to carry out a more detailed study to develop a plan to identify the most suitable measures to address the exceedance in the shortest possible time. The government will expect other bodies, including upper tier local authorities and Highways England to work with these local authorities where appropriate.

130. The government has directed these local authorities to produce a final plan by 31 October 2019 at the latest and sooner where possible. This is a shorter timescale than was given to the 28 local authorities the government are already working with, since work has already started through this initial feasibility study. This is a challenging deadline, in particular as this process involves more detailed air quality and transport modelling which some local authorities will not yet have available. It is vital that action is taken in the shortest time possible to improve air quality in these areas above the legal limits. In order to inject urgency into this process, the government has included a deadline for initial plans by end January 2019, setting out a short list of options. At that point the government will know more about the modelling requirements for each local authority and can encourage further acceleration to the timetable where possible. To assist them in meeting

[5] As these local authorities have been identified for further work in dealing with exceedances that extend beyond 2021, further study and time to complete air quality dispersion models based on local data will improve the accuracy of these projections. As such the data presented in the studies of these LAs may be subject to change as more detailed modelling is undertaken.

these timescales, the government will ensure local authorities can immediately draw on funding, as well as central government expertise. The government will continue to work closely with these local authorities as they progress through this process.

131. The local authorities directed to carry out a more detailed study to develop a plan to address the exceedances are: Portsmouth; Newcastle-under-Lyme; Stoke-on-Trent; Bolsover; Bradford; Broxbourne; Liverpool; and Leicester.

132. As set out in the 2017 Plan, the government will assess plans to ensure they deliver the necessary air quality compliance, are fair, cost effective and where possible deliver wider benefits. Government will provide feedback on local authorities' initial plans and will decide whether or not to approve final plans.

133. The government will ensure that sufficient funding is in place to support the activities set out in this supplement to the 2017 Plan which are required to bring forward compliance. This will not change the activity of the 28 local authorities that are developing and implementing plans to deliver compliance in the shortest possible time.

134. All local authorities will continue to review and assess local air quality through the statutory local air quality management (LAQM) process. Where a council identifies areas exceeding statutory limits and there is relevant public exposure it is required to declare an air quality management area (AQMA) and draw up an action plan detailing remedial action to address the problem.

135. The government continues to encourage all local authorities to apply for relevant competitive grant schemes such as the Air Quality Grant which has been launched alongside this supplement.

136. Government is in the process of updating the central NO_2 concentration projections using the latest (2017) compliance reporting data. The 2017 compliance data indicates that, at a national level, overall actual NO_2 concentrations in 2017 were lower than predicted by the central projections used to inform the NO_2 plan. However, should the revised projections, once completed, identify any roads with more persistent exceedances than previously estimated the government will consider the implications of this and take appropriate step in response as part of our adaptive management process.

Annex A – Summary of estimated concentration change for new measures (set out in µg/m^3)

Dudley Metropolitan Borough Council

Census ID 74559	2018	2019	2020
NO_2 concentrations without measure (baseline)	43	41	38
NO_2 concentrations with measure	42	40	

Census ID 17611	2018	2019	2020
NO_2 concentrations without measure (baseline)	43	41	38
NO_2 concentrations with measure	42	40	

Census ID 57205	2019	2020	2021	2022
NO_2 concentrations without measure (baseline)	46	44	41	39
NO_2 concentrations with measure (max and min estimates)	43 – 44	42 - 43	38 - 40	36 - 38

Leicester City Council

Census ID 36524	2018	2019	2020
NO_2 concentrations without measure (baseline)	43	41	39
NO_2 concentrations with measure	42	40	38

Newcastle-under-Lyme Council

		2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
Census ID 6545	NO_2 concentrations without measure (baseline)	45	44	43	42	41	39	38			
	NO_2 concentrations with measure	45	43	41	39	37	36	35			
Census ID 28732	NO_2 concentrations without measure (baseline)	61	58	54	50	47	43	41	38	36	34
	NO_2 concentrations with measure	61	57	53	49	45	42	39	36	34	32
Census ID 74058	NO_2 concentrations without measure (baseline)	64	61	57	53	50	46	43	41	38	36
	NO_2 concentrations with measure	64	60	56	52	48	45	42	39	37	34

Oxford City Council

Census ID 17051	2018	2019	2020	2021
NO_2 concentrations without measure (baseline)	48	46	43	40
NO_2 concentrations with measure	47	43	40	37

Portsmouth City Council

Census ID 48196	2018	2019	2020
NO_2 concentrations without measure (baseline)	44	42	40
NO_2 concentrations with measure	42	40	39

Census ID 18114	2018	2019	2020	2021	2022	2023
NO_2 concentrations without measure (baseline)	49	48	46	44	41	39
NO_2 concentrations with measure	47	46	44	42	40	

Reading Borough Council

		2018	2019	2020	2021	2022
Friar Street	NO_2 concentrations without measure (baseline)	48	44	42	39	
	NO_2 concentrations with measure	43	35			
Census ID 6127	NO_2 concentrations without measure (baseline)	49	47	45	43	40
	NO_2 concentrations with measure	47	43	41	39	

Census ID 46955	NO_2 concentrations without measure (baseline)	49	47	45	42	40
	NO_2 concentrations with measure	47	42	40		
Census ID 48360	NO_2 concentrations without measure (baseline)	49	47	45	42	40
	NO_2 concentrations with measure	48	44	42	40	

Sandwell Metropolitan Borough Council

Census ID 17142	2018	2019	2020
NO_2 concentrations without measure (baseline)	41	39	37
NO_2 concentrations with measure (max estimates)	40	38	

Census ID 99155	2018	2019	2020
NO_2 concentrations without measure (baseline)	44	42	39
NO_2 concentrations with measure (max estimates)	42	40	

Solihull Metropolitan Borough Council

Census ID 86030	2018	2019	2020	2021
NO_2 concentrations without measure (baseline)	47	45	42	39
NO_2 concentrations with measure	47	44	40	37

Census ID 99175	2018	2019	2020	2021
NO_2 concentrations without measure (baseline)	43	41	39	36
NO_2 concentrations with measure	43	40	37	34

South Gloucestershire Borough Council

Census ID 17633	2017[6]	2019	2020
NO_2 concentrations without measure (baseline)	51	44	41
NO_2 concentrations with measure (max estimates)	51	40	

City of Wolverhampton Council

Census ID 28464	2018	2019	2020	2021
NO_2 concentrations without measure (baseline)	46	43	41	39
NO_2 concentrations with measure (max estimates)	44	42	40	

[6] South Gloucestershire did not run their model for 2018

Annex B – Summary of conclusions by road link

Local authority	Road link identified by PCM	Additional road links added by local data	Baseline projected compliance year	Post measures projected compliance year	Conclusion for each road link
Ashfield District Council	Census ID 7353 A38	NA	2017	NA	Local modelling demonstrated that Census ID 7353 was compliant with the NO_2 limit value in 2017, based on an NO_2 concentration of 38 µg/m^3. Ashfield District Council's road link is therefore considered compliant with the legal limits.
Basingstoke and Deane Borough Council	Census ID 56997 A339	NA	NA	NA	Census ID 56997 was one of the road links confirmed as having no public access, so this road link will be excluded from the national assessment in future, and as such was not considered as part of the feasibility study.
	Census ID 6941 A339	NA	2021	2019	The Council identified that reducing the speed limit from 70 to 50 mph could bring forward compliance to 2019. However, further scoping work is required to identify if this is a feasible measure including considering safety and impacts on other road links. The government has directed the local authority to carry out this scoping work as soon as possible.
Blaby District Council	Census ID 80463 A563	NA	2019	NA	The Council considered a short list of measures in their feasibility study but found that no measures could bring forward compliance.
	Census ID 80466 A5460	NA	2019	NA	The Council considered a short list of measures in their feasibility study but found that no measures could bring forward compliance.
Bolsover District Council	Census ID 28528 A38	NA	2023	NA	In their feasibility study Bolsover District Council used local modelling, which projected that Census ID 28528 will be compliant in 2023 and therefore has a more persistent exceedance. The government has directed Bolsover District Council to carry out a more detailed study to develop a plan to bring forward compliance in the shortest possible time.

Bournemouth Borough Council	Census ID 26967 A338	NA	2017	NA	Bournemouth Borough Council used a local model which demonstrated that Census ID 26967 was compliant with the NO_2 limit value in 2017 based on an NO_2 concentration of 39 $\mu g/m^3$. This road link is considered compliant with the legal limits.
	Census ID 7998 A338	NA	2017	NA	Bournemouth Borough Council used a local model which demonstrated that Census ID 7998 were compliant with the NO_2 limit value in 2017 based on an NO_2 concentration of 23 $\mu g/m^3$. This road link is considered compliant with the legal limits.
City of Bradford Metropolitan District Council	Census ID 74525 A650	NA	2018	NA	The Council used local modelling to identify that Census ID 74525 is projected to become compliant in 2018. Due to the more persistent exceedances identified in this local authority area, the government has directed the City of Bradford Metropolitan District Council to carry out a more detailed study to develop a plan to bring forward compliance in the shortest possible time.
	Census ID 28710 A650	NA	2019	NA	The Council used local modelling to identify that Census ID 28710 is projected to become compliant in 2019. As per Census ID 74525 above.
	Census ID 8580 A650	NA	2024	NA	The Council used local modelling to identify that Census ID 8580 is projected to become compliant in 2024. As per Census ID 74525 above.
	Census ID 17705 A6177	NA	2017	NA	The Council used local modelling to identify that Census ID 17705 was compliant in 2017 with a concentration of 35$\mu g/m^3$. This roads link is considered compliant with the legal limits.
	Census ID 74397 A6177	NA	2019	NA	The Council used local modelling to identify that Census ID 74397 is projected to become compliant in 2019. As per Census ID 74525 above.
	NA	Census ID 58269	2020	NA	The Council's local modelling identified four additional roads with an NO_2 exceedance. This link is projected to become compliant in 2020. As per Census ID 74525 above.
	NA	Census ID 7413	2027	NA	The Council's local modelling identified four additional roads with an NO_2 exceedance. This link is projected to become compliant in 2027.

					As per Census ID 74525 above.
	NA	Census ID 37487	2023	NA	The Council's local modelling identified four additional roads with an NO_2 exceedance. This link is projected to become compliant in 2023. As per Census ID 74525 above.
	NA	Census ID 80860	2019	NA	The Council's local modelling identified four additional roads with an NO_2 exceedance. This link is projected to become compliant in 2019. As per Census ID 74525 above.
Broxbourne Borough Council	Census ID 78365 A10	NA	2028	NA	Broxbourne Borough Council used local modelling and demonstrated that Census ID 78365 is projected to be compliant in 2028 and therefore has a more persistent exceedance. The government has directed Broxbourne Borough Council to carry out a more detailed study to develop a plan to bring forward compliance in the shortest possible time.
Burnley Borough Council	Census ID 8416 A671	NA	2016	NA	Burnley Borough Council used local modelling to demonstrate that Census ID 8416 was compliant with the NO_2 limit value in 2016 based on an NO_2 concentration of 39 µg/m3. This road link is therefore considered compliant with the legal limits.
Calderdale Metropolitan Council	Census ID 6604 A62	NA	2017	NA	Calderdale Metropolitan Borough Council's local monitoring demonstrated that Census 6604 was compliant with the NO_2 limit value in 2017. This monitoring site met the standards set out in our guidance and the data for 2017 reported a NO_2 concentration of 32 µg/m^3. This road link is therefore considered compliant with the legal limits.
Cheltenham Borough Council	Census ID 77985 A40	NA	2018	NA	Cheltenham Borough Council used the approach set out in our guidance (using the Emissions Factors toolkit and the Streamlined Pollution Climate Mapping model) to demonstrate that Census ID 77985 is compliant with the annual mean NO_2 limit value based on an NO_2 concentration of 40 µg/m^3 in 2018. This is due to bus fleet upgrades to Euro VI emission standards. This road link is therefore considered compliant.
Dudley Metropolitan Borough Council	Census ID 74559 A461	NA	2020	2019	The local authority has identified measures that bring forward compliance on this road link and government has directed the local authority to implement these measures. Traffic signal optimisation was identified to bring forward compliance from 2020 to 2019.

	Census ID 17611 A461	NA	2020	2019	The local authority has identified measures that bring forward compliance on this road link and government has directed the local authority to implement these measures. Traffic signal optimisation was identified to bring forward compliance from 2020 to 2019.
	NA	Census ID 57205	2022	2021	The local authority has identified measures that bring forward compliance on this road link and government has directed the local authority to implement these measures. A combination of signal optimisation and bus retrofit was identified to bring forward compliance to from 2022 to 2021.
Kirklees Metropolitan Borough Council	Census ID 74811 A62	NA	NA	NA	Kirklees Metropolitan Borough Council demonstrated that the road link Census ID 74811 is less than 100m long. Road links shorter than 100m are not included in the PCM national modelling and as such this road link is no longer part of the national model.
Leicester City Council	Census ID 73725 A563	NA	2019	NA	The Council considered a short list of measures in their feasibility study but found that no measures could bring forward compliance.
	Census ID 36524 A594	NA	2020	2019	The local authority has identified measures that bring forward compliance on this road link and government has directed the local authority to implement these measures. An enhanced behavioural change programme was identified to bring forward compliance from 2020 to 2019.
	Census ID 48489 A594	NA	2020	NA	The Council considered a short list of measures in their feasibility study but found that no measures could bring forward compliance.
	NA	Census ID 56464 A594	2022	NA	Leicester City Council used local monitoring and projected that Census ID 56464 will be compliant in 2022 and therefore has a more persistent exceedance. The government has directed Leicester City Council to carry out a more detailed study to develop a plan to bring forward compliance in the shortest possible time.
Liverpool City Council	Census ID 17657	NA	2017	NA	Liverpool City Council used local modelling to demonstrate that Census ID 17657 was compliant with the NO_2 limit value in

					2017 based on an NO_2 concentration of 40 µg/m3. This road link is therefore considered compliant with the legal limits.
	Census ID 28563	NA	2017	NA	Liverpool City Council used local modelling to demonstrate that Census ID 17657 was compliant with the NO_2 limit value in 2017 based on an NO_2 concentration of 37 µg/m3. This road link is therefore considered compliant with the legal limits.
	Census ID 37794	NA	2017	NA	Liverpool City Council used local modelling to demonstrate that Census ID 17657 was compliant with the NO_2 limit value in 2017 based on an NO_2 concentration of 37 µg/m3. This road link is therefore considered compliant with the legal limits.
	Census ID 37905	NA	2017	NA	Liverpool City Council used local modelling to demonstrate that Census ID 17657 was compliant with the NO_2 limit value in 2017 based on an NO_2 concentration of 36 µg/m3. This road link is therefore considered compliant with the legal limits.
	Census ID 46588	NA	2017	NA	Liverpool City Council used local modelling to demonstrate that Census ID 17657 was compliant with the NO_2 limit value in 2017 based on an NO_2 concentration of 32 µg/m3. This road link is therefore considered compliant with the legal limits.
	Census ID 18505	NA	2020	NA	The Council considered a short list of measures in their feasibility study but found that no measures could bring forward compliance.
	NA	Census ID 8459 A562 Smithdown Road	2025	NA	Liverpool City Council used local modelling and projected that the A562 Smithdown Road will be compliant in 2025 and therefore has a more persistent exceedance. The government has directed Liverpool City Council to carry out a more detailed study to develop a plan to bring forward compliance in the shortest possible time.
	NA	Census ID 27297 A561 Speke Road	2026	NA	Liverpool City Council used local modelling and projected that the A561 Speke Road will be compliant in 2026 and therefore has a more persistent exceedance. The government has directed Liverpool City Council to carry out a more detailed study to develop a plan to bring forward compliance in the shortest possible time.

Newcastle-under-Lyme Council	Census ID 74058 A53	NA	2026	2025	Retrofitting buses to meet higher Euro emissions standards could bring forward compliance for Census ID 74058 from 2026 to 2025, with an estimated NO_2 concentration in 2025 of 39 µg/m^3. The Council has been directed to implement these measures. Even with the implementation on retrofit, there is still a more persistent exceedance with this road link projected to become compliant in 2025. Government has directed Newcastle-under-Lyme Council to carry out a more detailed study to develop a plan to bring forward compliance in the shortest possible time.
	NA	Census ID 6545	2023	2021	Retrofitting buses to meet higher Euro emissions standards could bring forward compliance for Census ID 6545 from 2023 to 2021, with an estimated NO_2 concentration in 2021 of 39 µg/m^3. The Council has been directed to implement these measures.
	NA	Census ID 28732	2025	2024	Retrofitting buses to meet higher Euro emissions standards could bring forward compliance for Census ID 28732 from 2025 to 2024, with an estimated NO_2 concentration in 2022 of 39 µg/m^3. The Council has been directed to implement these measures. Even with the implementation on retrofit, there is still a more persistent exceedance with this road link projected to become compliant in 2024. Government has directed Newcastle-under-Lyme Council to carry out a more detailed study to develop a plan to bring forward compliance in the shortest possible time.
Oldham Council	Census ID 36632 A62	NA	2021	NA	The Council was unable to identify measures that bring forward compliance at Census ID 36632 having assessed a short list of measures in their feasibility study.
Oxford City Council	Census ID 57031 A420	NA	2018	NA	Local monitoring data showed that this link was compliant with the NO_2 limit value based on an NO_2 concentration of 40 µg/m^3 in 2017. This is likely due to the work carried out to upgrade the bus fleet.
	NA	Census ID 17051 St Clements	2021	2020	The feasibility study identified that two potential measures brought forward compliance to 2020: bus retrofit or a low emission zone. The bus retrofit is an existing measure that is

					already funded under the Clean Bus Technology Fund and so the government has concluded that no additional measures are required to bring forward compliance.
Peterborough City Council	Census ID 27586 A1260	NA	NA	NA	Peterborough City Council set out that the road link Census ID 74811 does not have public access within 15 metres of the kerbside i.e. pavements, buildings, gardens, car parks, cycle tracks or footpaths (running parallel to the road). This road link is therefore no longer part of the national PCM modelling.
Plymouth City Council	Census ID 27056 A386	NA	2017	NA	The Council used local modelling to demonstrate that this road link is compliant with the NO_2 limit value based on NO_2 concentrations of 33 µg/m^3 in 2017. This road link is considered compliant.
	Census ID 27910 A374	NA	2017	NA	The Council used local modelling to demonstrate that this road link is compliant with the NO_2 limit value based on NO_2 concentrations of 35 µg/m^3 in 2017. This road link is considered compliant.
	Census ID 81374 A38	NA	2017	NA	The Council used local modelling to demonstrate that this road link is compliant with the NO_2 limit value based on NO_2 concentrations of 32 µg/m^3 in 2017. This road link is considered compliant.
Poole Borough Council	Census ID 28471 A3049	NA	2017	NA	The Council used local monitoring to identify that Census ID 28471 was compliant with the NO_2 limit value based on an NO_2 concentration of 32 µg/m^3 in 2017. This road link is considered compliant.
	Census ID 38387 A348	NA	2019	NA	The Council was unable to identify measures that bring forward compliance at Census ID 38387 having assessed a short list of measures in their feasibility study.
Portsmouth City Council	Census ID 48196 A3	NA	2020	2019	Portsmouth City Council used local modelling to project that Census ID 48196 will become compliant in 2020. A combination of retrofitting buses to meet higher Euro emissions standards, reducing car use and promoting uptake of cleaner vehicles was modelled to bring forward compliance from 2020 to 2019. The measures to reduce car use are already funded through an air quality grant. The measures to promote uptake of cleaner

					vehicles are already funded through an OLEV grant. The Council has been directed to implement bus retrofit.
	Census ID 18114 A3	NA	2023	2022	Portsmouth City Council used local modelling to project that Census ID 18114 will become compliant in 2023. A combination of retrofitting buses to meet higher Euro emissions standards, reducing car use and promoting uptake of cleaner vehicles was modelled to bring forward compliance from 2023 to 2022. The measures to reduce car use are already funded through an air quality grant. The measures to promote uptake of cleaner vehicles are already funded through an OLEV grant. The Council has been directed to implement bus retrofit. Even with the bus retrofit, there is still a persistent exceedance with compliance projected to be by 2022. The Government has therefore also directed Portsmouth City Council to carry out a more detailed study to develop a plan to bring forward compliance in the shortest possible time.
Reading Borough Council	Census ID 99740 A329	NA	2018	NA	Reading Borough Council used local modelling to identify that Census ID 99740 was compliant with the NO_2 limit value in 2017 based on an NO_2 concentration of 27 $\mu g/m^3$. This road link is considered compliant.
	Census ID 18632 A329	NA	2019	NA	The Council was unable to identify measures that bring forward compliance at Census ID 18632 having assessed a short list of measures in their feasibility study.
	Census ID 27954 A329	NA	2018	NA	Reading Borough Council used local modelling to identify that Census ID 27954 was compliant with the NO_2 limit value in 2017 based on an NO_2 concentration of 37 $\mu g/m^3$. This road link is considered compliant.
	NA	Friar Street	2021	2019	Bus retrofit was identified as being able to bring forward compliance so the local authority has been directed to implement bus retrofit on these road links. The local modelling sets out that bus retrofit could bring forward compliance on Friar Street from 2021 to 2019.
	NA	Census ID 6127	2022	2021	Bus retrofit was identified as being able to bring forward compliance so the local authority has been directed to implement bus retrofit on these road links. The local modelling

					sets out that bus retrofit could bring forward compliance on Census ID 6127 from 2022 to 2021.
	NA	Census ID 6924	2019	NA	The Council was unable to identify measures that bring forward compliance at Census ID 6924 having assessed a short list of measures in their feasibility study.
	NA	Census ID 46955	2022	2020	Bus retrofit was identified as being able to bring forward compliance so the local authority has been directed to implement bus retrofit on these road links. The local modelling sets out that bus retrofit could bring forward compliance on Census ID 46955 from 2022 to 2020.
	NA	Census ID 48360	2022	2021	Bus retrofit was identified as being able to bring forward compliance so the local authority has been directed to implement bus retrofit on these road links. The local modelling sets out that bus retrofit would bring forward compliance on Census ID 48360 from 2022 to 2021.
Sandwell Metropolitan Borough Council	Census ID 99397 A41	NA	2020	NA	The Council was unable to identify measures that bring forward compliance at Census ID 99397 having assessed a short list of measures in their feasibility study.
	Census ID 99155 A41	NA	2020	2019	Traffic signal optimisation and retrofitting buses combined could bring forward compliance at Census ID 99155 from 2020 to 2019. The government is already funding Sandwell Metropolitan Borough Council's bus retrofit measures through the Clean Bus Technology Fund for Census ID 99155. The Council has been directed to implement these measures.
	Census ID 16330 A34	NA	2019	NA	The Council was unable to identify measures that bring forward compliance at Census ID 16330 having assessed a short list of measures in their feasibility study.
	Census ID 17142 A457	NA	2019	2018	Retrofitting buses was identified to bring forward compliance from 2019 to 2018. The Council has been directed to implement these measures.
Sefton Metropolitan Borough Council	Census ID 75290 A59	NA	NA	NA	Sefton Metropolitan Borough Council identified that Census ID 75290 is managed by Highways England. Responsibility for identifying any measures to bring forward compliance is with Highways England.

Solihull Metropolitan Borough Council	Census ID 86030 A45	NA	2021	2020	The Council found that a combination of measures brought forward compliance from 2021 to 2020. This package of measures included: workplace travel plans, use of cycling and walking networks, car sharing schemes, changes to signing and fleet efficiency advice. The government has directed the local authority to implement these measures.
	Census ID 99175 A45	NA	2020	2019	The Council found that a combination of measures brought forward compliance from 2020 to 2019. This package of measures included: workplace travel plans, use of cycling and walking networks, car sharing schemes, changes to signing and fleet efficiency advice. The government has directed the local authority to implement these measures
South Gloucestershire Borough Council	Census ID 17633 A4174	NA	2021	2019	The Council identified that traffic management measures could bring forward compliance from 2021 to 2019. This includes removal of a right hand turn and soft gating at a roundabout. The government has directed South Gloucestershire Borough Council to take forward these measures.
South Tyneside Metropolitan Borough Council	Census ID 77767 A194	NA	2017	NA	Local modelling demonstrated Census ID 77767 is compliant with the NO_2 limit value in 2017 based on an NO_2 concentration of 36 µg/m^3. This road link is therefore considered compliant.
	Census ID 6746 A194	NA	2017	NA	Local modelling demonstrated Census ID 6746 is compliant with the NO_2 limit value in 2017 based on an NO_2 concentration of 40 µg/$m^{3.}$ This road link is therefore considered compliant.
Southend-on-Sea Borough Council	Census ID 99319 A127	NA	2018	NA	Local modelling demonstrated that Census ID 99319 is expected to be compliant with the NO_2 limit value in 2018 based on an NO_2 concentration of 36 µg/m^3. This road link is therefore expected to be compliant in 2018.
Stoke-on-Trent City Council	Census ID 26555 A53	NA	2022	NA	Stoke-on-Trent Council used local modelling to demonstrate that Census ID 26555 is projected to be compliant in 2022 and therefore has a more persistent exceedance. The government has directed Stoke-on-Trent Council to carry out a more detailed study to develop a plan to bring forward compliance in the shortest possible time.

Sunderland City Council	Census ID 57620 A1231	NA	2017	NA	Local modelling demonstrated that Census ID 57620 was compliant with the NO_2 limit value in 2017 based on an NO_2 concentration of 35 µg/m^3. This road link is therefore considered compliant.
Wakefield Metropolitan District Council	Census ID 56617 A61	NA	2018	NA	Wakefield Metropolitan District Council used local modelling which demonstrated Census ID 56617 is expected to be compliant with the NO_2 limit value in 2018 based on an NO_2 concentration of 38µg/m^3. The study set out that this is likely due to the opening of the Wakefield Eastern Relief road in 2017. Therefore, this road link is expected to be compliant in 2018.
Walsall Metropolitan Borough Council	Census ID 27202 A454	NA	2021	NA	The Council was unable to identify measures that bring forward compliance at Census ID 27202 having assessed a short list of measures in their feasibility study.
	Census ID 74017 A463	NA	NA	NA	Census ID 74017 (a section of the A463) was identified as having no public access and has therefore been removed from the national PCM model.
	Census ID 38201 A4148	NA	2020	NA	The Council was unable to identify measures that bring forward compliance at Census ID 38201 having assessed a short list of measures in their feasibility study.
	Census ID 7661 A4148	NA	2016	NA	Walsall Metropolitan Borough Council used local monitoring to show that Census ID 7661 was compliant with the NO_2 limit value in 2016 based on an NO_2 concentration of 31µg/$m^{3.}$
City of Wolverhampton Council	Census ID 28464 A4150	NA	2021	2020	The Council identified that a combination of retrofitting buses to higher Euro emissions standards and traffic signal optimisation could bring forward compliance on Census ID 28464 from 2021 to 2020. The government has directed the local authority to implement these measures.
	Census ID 57739 A4150	NA	2019	NA	The Council was unable to identify measures that bring forward compliance at Census ID 57739 having assessed a short list of measures in their feasibility study.
	Census ID 99402 A463	NA	2021	NA	The Council was unable to identify measures that bring forward compliance at Census ID 99402 having assessed a short list of measures in their feasibility study.

	Census ID 99404 A463	NA	2019	NA	The Council was unable to identify measures that bring forward compliance at Census ID 99404 having assessed a short list of measures in their feasibility study.

Annex C - Update to Zone Plans

1. In 2017, the government produced zone plans to be read in conjunction with the 2017 Plan.[7] These set out the authorities responsible (some agglomerated) for delivering air quality improvements and the list of UK and national measures that were applied in some or all UK zones. The measures presented in the 2017 zone plans, and the accompanying UK overview document, showed how the UK will ensure compliance with NO_2 limit values in the shortest possible time.

2. Table i) shows which zone plans each of the 33 local authorities are included within.

3. Table ii) provides an update to the relevant zone plans where new measures have been identified in the supplement.

Table i): List of local authorities and their corresponding zone plans

Local authority	Corresponding zone plan
Broxbourne Borough Council	Zone 1: Greater London Urban Area Zone Plan
Solihull Metropolitan Borough Council, Dudley Metropolitan Borough Council, Sandwell MBC, Walsall Metropolitan Borough Council, City of Wolverhampton Council	Zone 2: West Midlands Urban Area Zone Plan
Oldham Council	Zone 3: Greater Manchester Urban Area Zone Plan
Calderdale Metropolitan Council, City of Bradford Metropolitan District Council, Kirklees Metropolitan Borough Council, Wakefield Metropolitan District Council	Zone 4: West Yorkshire Urban Area Zone Plan
South Tyneside Council, Sunderland City Council	Zone 5: Tyneside Zone Plan
Liverpool City Council, Sefton Metropolitan Borough Council, Ashfield District Council	Zone 8: Nottingham Urban Area Zone Plan
South Gloucestershire Borough Council	Zone 9: Bristol Urban Area Zone Plan
Blaby District Council, Leicester City Council	Zone 11: Leicester Urban Area Zone Plan
Portsmouth City Council	Zone 12: Portsmouth Urban Area Zone Plan
Newcastle-under-Lyme Council, Stoke-on-Trent Council	Zone 14: The Potteries Zone Plan

[7] https://uk-air.defra.gov.uk/library/no2ten/2017-zone-plan-documents

Bournemouth Borough Council, Poole Borough Council	Zone 15: Bournemouth Urban Area Zone Plan
Reading Borough Council	Zone 16: Reading/Wokingham Urban Area Zone Plan
Southend-on-Sea Borough Council	Zone 21: Southend Urban Area Zone Plan
Broxbourne Borough Council, Peterborough City Council, Southend-on-Sea Borough Council	Zone 29: Eastern Zone Plan
Bournemouth Borough Council, Cheltenham Borough Council, Plymouth City Council, South Gloucestershire Borough Council	Zone 30: South West Zone Plan
Basingstoke and Deane Borough Council, Oxford City Council, Portsmouth City Council, Reading Borough Council	Zone 31: South East Zone Plan
Ashfield District Council, Blaby District Council, Bolsover District Council, Leicester City Council	Zone 32: East Midlands Zone Plan
Burnley Borough Council, Oldham Council, Liverpool City Council, Sefton Metropolitan Borough Council	Zone 33: North West & Merseyside Zone Plan
Dudley Metropolitan Borough Council, Newcastle-under-Lyme Council, Sandwell Metropolitan Borough Council, Solihull Metropolitan Borough Council, Stoke-on-Trent Council, City of Wolverhampton Council	Zone 35: West Midlands Zone Plan
South Tyneside Metropolitan Borough Council, Sunderland City Council	Zone 36: North East Zone Plan

Table ii) Supplement to 2017 Zone Plans – updates to the zone plans in line with measures identified in the supplement to the 2017 Plan

Relevant Local Authority Measures within West Midlands Zone (UK0035) and West Midlands Urban Area (UK0002)

Measure code	Description	Focus	Classification	Status	Other information
Dudley Metropolitan Borough	To improve traffic flow on Census ID 74559	Signal optimisation	Traffic planning and manage	Planning	Start date: 2018 End date: The local authority has been directed to implement

Council_Supplement 1			ment: other measure		this measure as soon as possible and by the latest in time to bring forward compliance to 2019. Spatial scale: Local Source affected: Transport Indicator: Signal optimisation installed Target emissions reduction: To bring forward compliance with NO_2 legal limits from 2020 to 2019
Dudley Metropolitan Borough Council_Supplement 2	To improve traffic flow on Census ID 17611	Signal optimisation	Traffic planning and management: other measure	Planning	Start date: 2018 End date: The local authority has been directed to implement this measure as soon as possible and by the latest in time to bring forward compliance to 2019. Spatial scale: Local Source affected: Transport Indicator: Signal optimisation installed Target emissions reduction: To bring forward compliance with NO_2 legal limits from 2020 to 2019
Dudley Metropolitan Borough Council_Supplement 3	To improve traffic flow on Census ID 57205	Signal optimisation	Traffic planning and management: other measure	Planning	Start date: 2018 End date: The local authority has been directed to implement this measure as soon as possible and by the latest in time to bring forward compliance to 2021. Spatial scale: Local Source affected: Transport

					Indicator: Signal optimisation installed Target emissions reduction: To bring forward compliance with NO_2 legal limits from 2022 to 2021
Dudley Metropolitan Borough Council_Supplement 4	To improve air quality of local bus fleet on Census ID 57205	Bus retrofit	Retrofitting: Retrofitting emission control equipment to vehicles	Planning	Start date: 2018 End date: The local authority has been directed to implement this measure as soon as possible and by the latest in time to bring forward compliance to 2021. Spatial scale: Local Source affected: Transport Indicator: Bus retrofit technology installed Target emissions reduction: To bring forward compliance with NO_2 legal limits from 2022 to 2021
Sandwell Metropolitan Borough Council_Supplement 1	To improve air quality of local bus fleet on Census ID 17142 and 99155	Bus retrofit	Retrofitting: Retrofitting emission control equipment to vehicles	Planning	Start date: 2018 End date: The local authority has been directed to implement this measure as soon as possible and by the latest in time to bring forward compliance to 2018 for Census ID 17142 and 2019 for Census ID 99155 Spatial scale: Local Source affected: Transport Indicator: Bus retrofit technology installed Target emissions reduction: To bring forward compliance with NO_2 legal limits from 2020 to

					2019 on Census ID 99155 and from 2019 to 2018 on Census ID 17142
Sandwell Metropolitan Borough Council_Supplement 2	To improve traffic flow on Census ID 99155	Signal optimisation	Traffic planning and management: other measure	Planning	Start date: 2018 End date: The local authority has been directed to implement this measure as soon as possible and by the latest in time to bring forward compliance to 2019 Spatial scale: Local Source affected: Transport Indicator: Signal optimisation installed Target emissions reduction: To bring forward compliance with NO_2 legal limits from 2020 to 2019
Solihull Metropolitan Borough Council_Supplement 1	To encourage less private vehicle use on Census ID 86030	Combination of measures: workplace travel plans, use of cycling and walking networks, car sharing schemes, changes to signing and fleet efficiency advice.	Traffic planning and management: Encouragement of shift of transport modes	Planning	Start date: 2018 End date: The local authority have estimated that this could be implemented from early 2019 Spatial scale: Local Source affected: Transport Indicator: Target emissions reduction: To bring forward compliance with NO_2 legal limits from 2021 to 2020

Wolverhampton City Council_Supplement 1	To improve air quality of local bus fleet on Census ID 28464	Bus retrofit	Retrofitting: Retrofitting emission control equipment to vehicles	Planning	Start date: 2018 End date: The local authority has been directed to implement this measure as soon as possible and by the latest in time to bring forward compliance to 2020 Spatial scale: Local Source affected: Transport Indicator: Bus retrofit technology installed Target emissions reduction: To bring forward compliance with NO_2 legal limits from 2021 to 2020

Relevant Local Authority Measures within the Potteries (UK0014) and West Midlands Zone (UK0035)

Measure code	Description	Focus	Classification	Status	Other information
Newcastle-under-Lyme Borough Council _Supplement 1	To improve air quality of local bus fleet on Census ID 6545 and 28732	Bus retrofit	Retrofitting: Retrofitting emission control equipment to vehicles	Planning	Start date: 2018 End date: The local authority has been directed to implement this measure as soon as possible and by the latest in time to bring forward compliance to 2021 for Census ID 6545 and 2022 for Census ID 28732 Spatial scale: Local Source affected: Transport Indicator: Bus retrofit technology installed Target emissions reduction: To bring forward compliance with NO_2 legal limits from

					2023 to 2021 on Census ID 6545 and from 2026 to 2022 on Census ID 28732.

Relevant Local Authority Measures within the South East Zone Plan (UK0031)

Measure code	Description	Focus	Classification	Status	Other information
Oxford City Council_Supplement 1	To improve air quality of local bus fleet on Census ID 17051	Bus retrofit	Retrofitting: Retrofitting emission control equipment to vehicles	Planning	Start date: 2018 End date: Spatial scale: Local Source affected: Transport Indicator: Bus retrofit technology installed Target emissions reduction: To bring forward compliance with NO_2 legal limits from 2021 to 2020

Relevant Local Authority Measures within the South East Zone Plan (UK0031) and Portsmouth Urban Area Zone Plan (UK0012)

Measure code	Description	Focus	Classification	Status	Other information
Portsmouth City Council_Supplement 1	To improve air quality of local bus fleet on Census ID 48196 and 18114	Bus retrofit	Retrofitting: Retrofitting emission control equipment to vehicles	Planning	Start date: 2018 End date: The local authority has been directed to implement this measure as soon as possible and by the latest in time to bring forward compliance to 2019 for Census ID 48196 and 2022 for Census ID 18114 Spatial scale: Local Source affected: Transport

					Indicator: Bus retrofit technology installed Target emissions reduction: To bring forward compliance with NO_2 legal limits from 2020 to 2019 on Census ID 48196 and from 2023 to 2022 to Census ID 18144.

Relevant Local Authority Measures within the South East Zone Plan (UK0031) and Reading/Wokingham Urban Area Zone Plan (UK0016)

Measure code	Description	Focus	Classification	Status	Other information
Reading Borough Council_Supplement 1	To improve air quality of local bus fleet on Friar Street and Census IDs 6127, 46955, 48360.	Bus retrofit	Retrofitting: Retrofitting emission control equipment to vehicles	Planning	Start date: 2018 End date: We have directed the local authority to implement these measures as soon as possible and by the latest in time to bring forward compliance with the dates set out in the NO_2 Supplement. Spatial scale: Local Source affected: Transport Indicator: Bus retrofit technology installed Target emissions reduction: To bring forward compliance with NO_2 legal limits from 2021 to 2019 on Friar Street; 2022 to 2021 on Census ID 6127; 2022 to 2020 on Census ID 46955; from 2020 to 2021 on Census ID 48360.

Relevant Local Authority Measures within the South West Zone Plan (UK0030) and Bristol Urban Area Zone Plan (UK0009)

Measure code	Description	Focus	Classification	Status	Other information
South Gloucestershire District Council_Supplement 1	To improve traffic flow on Census ID 17633	Traffic management measures including soft gating and removing a right hand turn	Traffic planning and management: other measure	Planning	Start date: 2018 End date: The local authority has been directed to implement this measure as soon as possible and by the latest in time to bring forward compliance to 2019. Spatial scale: Local Source affected: Transport Indicator: Traffic management measures implemented Target emissions reduction: To bring forward compliance with NO_2 legal limits from 2021 to 2019

Relevant Local Authority Measures within the Leicester Urban Area Zone Plan (UK0011) and East Midlands Zone Plan (UK0032)

Measure code	Description	Focus	Classification	Status	Other information
Leicester City Council_Supplement 1	Enhanced behavioural change on Census ID 36524	Behavioural change	Traffic planning and management: Encouragement of shift of transport modes	Planning	Start date: 2018 End date: The local authority has been directed to implement this measure as soon as possible and by the latest in time to bring forward compliance to 2019. Spatial scale: Local Source affected: Transport

					Indicator: Behavioural change measures implemented Target emissions reduction: To bring forward compliance with NO_2 legal limits from 2020 to 2019

Annex D – Updated maps for each local authority

See separate document