

## Bath Clean Air Plan

Bath & North East Somerset

### Potential Reductions to the CAZ Boundary - Main Routes

| 1

February 2019

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## 1. Introduction

In 2017 the government published a UK Air Quality Plan for Nitrogen Dioxide (NO<sub>2</sub>) setting out how compliance with the EU Limit Value for annual mean NO<sub>2</sub> will be reached across the UK in the shortest possible time. Due to forecast air quality exceedances, B&NES, along with 27 other Local Authorities, was directed by Minister Therese Coffey (Defra) and Minister Jesse Norman (DfT) in 2017 to produce a Clean Air Plan (CAP). The Plan must set out how B&NES will achieve sufficient air quality improvements in the shortest possible time. In line with Government guidance, B&NES is considering implementation of a Clean Air Zone (CAZ) including both charging and non-charging measures to achieve sufficient improvement in air quality and public health.

**Figure 1.1** below shows the extent of the proposed CAZ in the draft Outline Business Case issued for formal public consultation in October 2018.

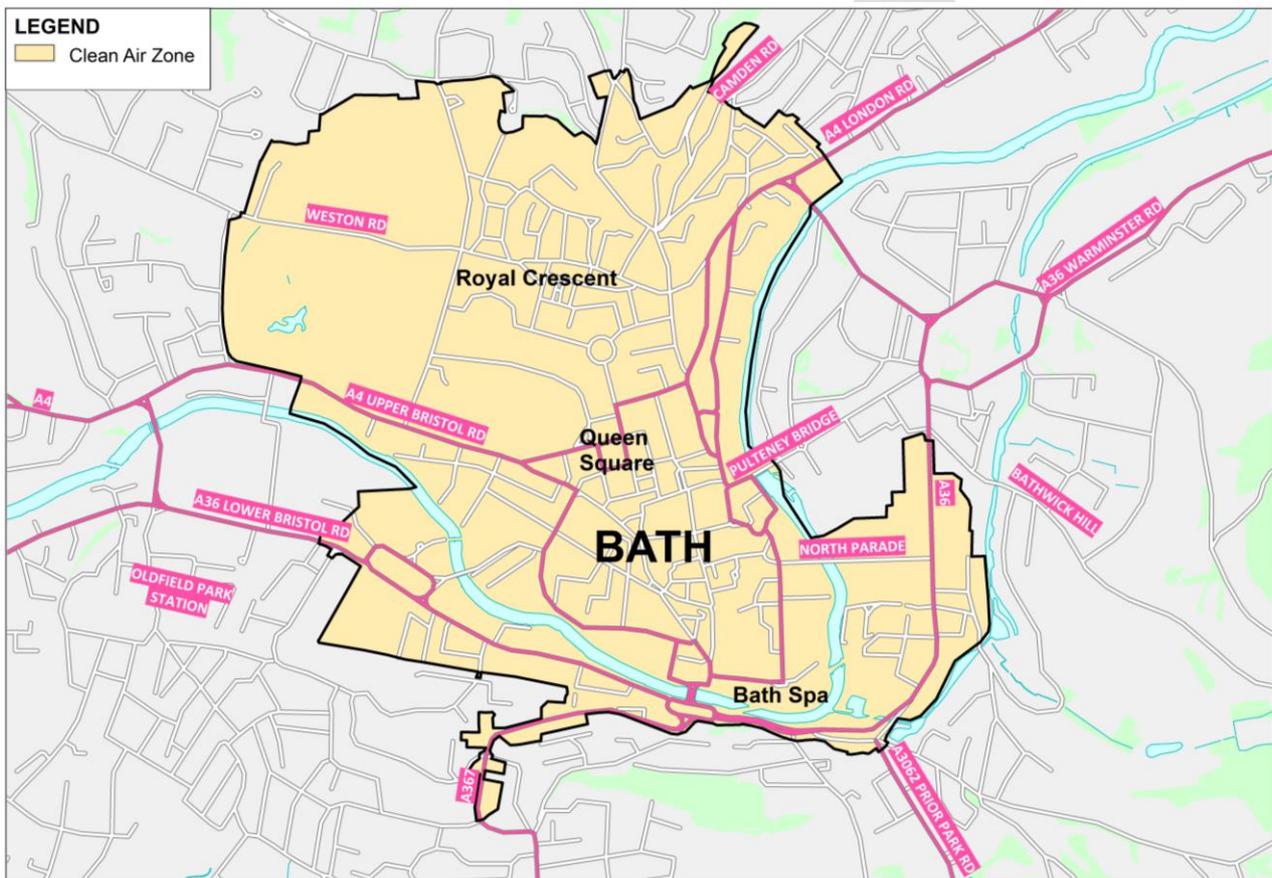


Figure 1.1 Proposed Clean Air Zone (CAZ) Extents - draft Outline Business Case

The public consultation on the scheme undertaken in October and November 2018 resulted in a range of feedback on the definition of the CAZ boundary. Specific concerns were highlighted about the proposed size of the Class D CAZ and the extent to which this was necessary to achieve air quality compliance. Commentary on the viability of small alterations having no impact on removing ‘key’ traffic circulation routes from the zone is included in the main text of OBC-25a ‘Consultation Response Report’. This note deals with those consultation comments that requested consideration of more significant changes to the zone to reduce its size and exclude some of main routes. Specifically this note deals with the comments set out below. This table is replicated from Table 7.2 of OBC-25 ‘Report on Formal Consultation’.

Location suggested for EXCLUSION or where concern expressed about inclusion	Reasons given by respondents
<p><i>A4 London Road/A36 Cleveland Place Junction</i></p>	<ul style="list-style-type: none"> <li>- Respondents identified the junction of London Road and Cleveland Place as an area they would like to see removed from the zone, or an area that they felt caused issues through its inclusion. The reasons for this view included the following:</li> <li>- To allow traffic to get around/out of the city, to the motorway and to the A36 Warminster Road or the A4/A46. Respondents expressed concern about the inclusion of the A4, the A36 and the A367 – all the through routes – given that there is no bypass/alternative route.</li> <li>- To allow traffic to get from the east of Bath to the University and other destinations such as the fire and ambulance station as well as schools south of Bath and the hospital.</li> <li>- This is one of very few river crossings and there are no alternative routes (other than the Batheaston toll bridge).</li> <li>- Inclusion of this junction will encourage more traffic to use routes through Batheaston and Bathampton, including the toll bridge and this will have knock on effects for residents in this area.</li> <li>- Traffic would seek alternative unsuitable routes through local towns, for example; Bradford on Avon, Winsley and Limpley Stoke or via unclassified roads.</li> <li>- It would be unsafe if drivers decided to make a last-minute change of route to avoid the CAZ. There is no space to turn.</li> <li>- Some drivers would incur the charge just for using this corner. Respondents felt strongly that drivers using this junction to get out of the city should not be penalised and emphasised that many vehicles using this junction are not entering the city centre.</li> <li>- Concern that the inclusion of this junction is generated by a desire to make money/collect additional charges.</li> <li>- Respondents felt that the above issues could be addressed by a small change to the boundary at the junction.</li> <li>- Without a A46/A36 bypass this corner is unavoidable for many trips.</li> <li>- Concern that including this corner restricts access to Morrisons.</li> <li>- This junction is on an important route to the hospital, especially from Wiltshire.</li> <li>- <b><u>Hilpertown Parish Council, Heywood Parish Council and Westbury Town Council</u></b> all support exclusion of this junction.</li> </ul>
<p><b>A36 section including:</b></p> <ul style="list-style-type: none"> <li>- <b>Lower Bristol Road</b></li> <li>- <b>Claverton Street</b></li> <li>- <b>Rossiter Road</b></li> <li>- <b>Pulteney Road</b></li> </ul>	<ul style="list-style-type: none"> <li>- Respondents felt that the A36 should not be included in the zone because it is a main road, it is the main route around Bath, main east/west route, a key route to the motorway and there is no alternative route.</li> <li>- There needs to be a way for traffic to get around the perimeter of the city. There should be at least one through route.</li> <li>- There were various suggestions about where the zone should end. Typically, respondents suggested that this route should be excluded up to the Churchill Bridge roundabout/the A36/A367 junction or from Westmoreland Road and Midland Bridge.</li> <li>- <b><u>The Road Haulage Association</u></b> expressed a strong view that the A36 should be excluded from the zone.</li> </ul>

	<ul style="list-style-type: none"> <li>- <b><u>Trowbridge Town Council</u></b> and others requested for the A36 to be excluded from the CAZ.</li> <li>- <b><u>The British and Vehicle Licensing Association</u></b> noted concern about inclusion of A36, due to the impact on freight movement.</li> <li>- HGVs need to use this route and there are not suitable alternatives for HGVs.</li> <li>- The A36 is not part of the city centre (respondents felt the CAZ should only cover the city centre).</li> <li>- No need to include routes south of the river/the CAZ should only cover the area of the city to the north of the river, they also argued that the river would be a more logical southern boundary, <b><u>Heywood Parish Council</u></b> support this.</li> <li>- This route is important to access supermarkets and retail outlets (Sainsburys, Homebase and Lidl) and petrol stations (see below).</li> <li>- Including the A36 will encourage more traffic to rat run through residential areas, particularly Oldfield Park, Combe Down, Claverton Down and Twerton and between Newton St Loe and Hinton Charterhouse and Bradford on Avon. Particular concern about HGVs taking alternative, inappropriate routes.</li> <li>- Including this route will affect many people's frequent journeys, for example to work, to the motorway and to the Royal United Hospital (RUH). It is an important route for commuters.</li> <li>- Many of those who requested the exclusion of the A36 specifically highlighted the need to exclude the junction of the A36 and the A4 London Road (see below).</li> <li>- It was noted that the A36 is sometimes used as a diversion route and questions asked about how this would work if it were in the CAZ.</li> <li>- Churchill Bridge and Midland Bridge should not be included.</li> <li>- Including the A36 affects lower income families in Twerton, Newbridge and Weston.</li> <li>- There was concern that inclusion of the A36 was driven by a desire to raise additional revenue.</li> <li>- As well as asking for the part of the A36 currently included in the zone to be excluded, respondents asked that the section currently not included (Bathwick Street) should not be included, as this is part of the through route.</li> <li>- Businesses located off the Lower Bristol Road, such as in the Midland Bridge area, should not be in the zone.</li> <li>- The A36 is an important route to the hospital from the east/south of Bath.</li> <li>- <b><u>Foxhill Residents Association</u></b> requested that Rossiter Road and the Widcombe area be removed from the CAZ.</li> </ul>
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These concerns relate to the inclusion of the A36, the A4/Cleveland Place junction or both, with a wide variety of reasons being stated. These are in the main about vehicular accessibility around the zone for internal trips within Bath to/from key destinations, such as the Royal United Hospital (RUH). However, there is also concern about the cutting of the strategic A46(T) to A36(T) route via London Road and Bathwick Street with the inclusion of the A4/Cleveland Place junction.

This Technical Report therefore covers the impact of two potential zone reductions as follows:

- Removal of all sections of the A36 corridor included in the CAZ to the south and east of the City Centre. In addition, the removal of the A4 London/Cleveland Place junction, so preventing the strategic A46(T) to A36(T) route via the A4 London Road and Bathwick Street from being 'cut' by the CAZ; and
- The removal of the A4 London/Cleveland Place junction only.

As noted above, these changes re-open 'key' circulation routes around a 'reduced' CAZ. As such, it has been necessary to undertake further traffic and air quality modelling work to understand whether doing so would still allow air quality compliance to be achieved. This is because there are current exceedances on the A4 London Road, the A36 Lower Bristol Road just west of Brougham Hayes and the A367 Wells Road on the approach to the Churchill Gyratory.

## 2. Analysis of Potential Zone Reductions

### 2.1 A36 Corridor and A4 London Road/Cleveland Place Junction

#### 2.1.1 Assessed Boundary Change and Potential Issues

Figure 2.1 below shows the reduction to the CAZ specifically tested in this scenario. The whole of the A36 corridor presently included between the Brougham Hayes junction and Bathwick Roundabout is removed. This also removes the included northern part of the A367 Wells Road between Oldfield Road and Churchill Gyratory where, as noted earlier, there is an existing air quality exceedance. To the north of the A36 Pines Way, the Sainsbury's store and other developments served off Ivo Peters Road are also removed from the zone, which would otherwise require a new CAZ cordon point to be established here.

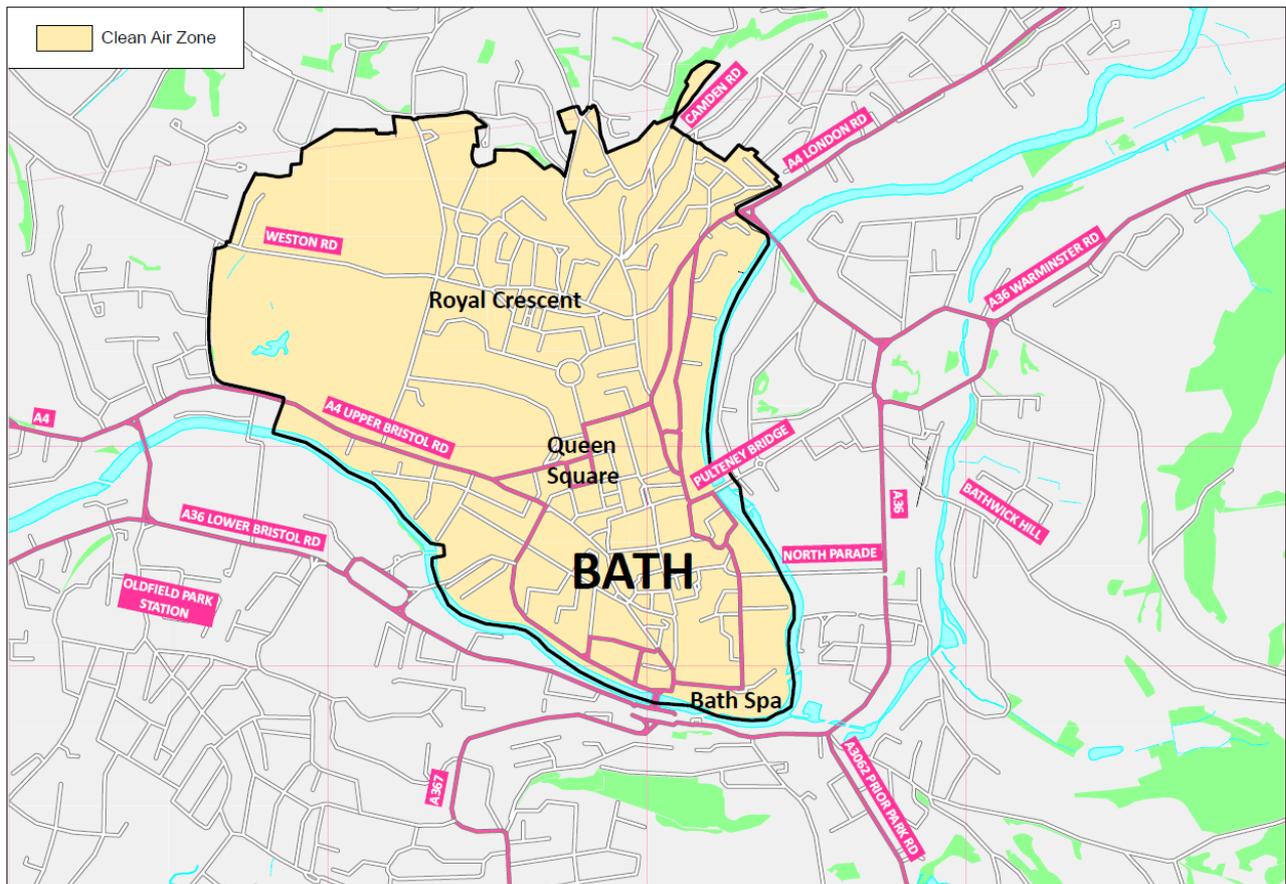


Figure 2.1 Reduced Clean Air Zone (CAZ) Extent - Removing the A36 and the A4/Cleveland Place Junction

It is accepted that 'tucking in' the zone to the south, so maintaining the A36 route through Bath 'outside' of the CAZ, would assist in addressing 'rat-running' or 'avoidance' concerns, particularly to residents in Upper Oldfield Park/Oldfield Park. The original small CAZ considered at 'Strategic Outline Business Case (SOBC) Stage included just the A36/A367 Churchill Gyratory, but this still severed the east-west A36 route and the A367 radial route into/out of Bath to the south. As a result, the extent of the A36 included in the CAZ was necessarily increased to cover the potential 'rat-runs' via the White Hart junction (Widcombe) and the B Class route between the A367 and the A36/Brougham Hayes junction (Oldfield Park). As a result, it presently now encompasses Sainsbury's, the filling station in this location and the Esso filling station on the A36 Lower Bristol Road just west of the Churchill Gyratory. To the north of Widcombe, the A36 Pulteney Road was included to prevent non-compliant vehicles from using unsuitable roads to turn around and avoid zone entry, with 'U' turns possible at Bathwick Roundabout for all vehicles, including HGV's.

The concern with excluding the A36 east-west route but keeping the alternative east-west routes to the north in (A4 and Weston Lane/Julian Road), was that non-compliant vehicle traffic could be 'channelled' onto the A36. In highway capacity terms it was accepted that this may not have an impact. This is because any increase in congestion on the A36 would most likely lead to compliant vehicle drivers switching to use of the other alternative routes as appropriate. However, even assuming overall volumes on the three routes remained roughly the same due to re-routing effects, it was deemed possible that the air quality impact on the A36 could be greater due to its use by a greater proportion of non-compliant fleet. As such, bespoke modelling was undertaken to confirm the view about relative volume impacts, but more expressly to understand how emission levels on the A36 could change. As noted earlier, there are already predicted to be exceedances on both the A36 Lower Bristol Road and the A367 Wells Road in the 'base-line' case.

Exclusion of the A4 London Road/Cleveland Place junction was in fact the original position with the small zone considered at SOBC Stage. However, this was subsequently added in the 3 April revision to the zone (as set out in OBC-04). This is because it would retain the main route for HGVs through Bath (A46(T) to A36(T)) outside of the CAZ, with these vehicles a significant contributor to air pollution levels in London Road where there are existing exceedances. On the positive side, removal of this junction from the CAZ would serve to reduce the risk of traffic diversion to the Bathampton Lane-Mill Lane route via the Toll Bridge, which would be the only other route available on the east side of the city for non-compliant drivers to cross the River Avon. Whilst the traffic modelling suggests that diversion to the toll bridge route is low, and certainly not 'excess' or 'severe', it nevertheless remains a potential risk or issue with the Cleveland Bridge route cut by the CAZ as proposed.

### 2.1.2 Air Quality Modelling Results

The detailed air quality modelling results emerging from this scenario test are included in **Appendix A**. In summary, this highlighted that these changes to the proposed CAZ resulting a much smaller zone would result in five exceedances of the air quality limit values. Specifically, these were identified at:

- A4 London Road, east end in Lambridge;
- A4 London Road, east of Cleveland Place;
- A367 Wells Road, near Oldfield Road;
- A36 Lower Bristol Road, between Pines Way and Windsor Bridge Road; and
- A4 Upper Bristol Road, between Windsor Bridge Road and Newbridge Hill.

The maximum predicted concentration was 47 µg/m<sup>3</sup>.

In view of the earlier discussion these results are not surprising. The exclusion of the A36 but retained inclusion of the A4 Upper Bristol Road and Weston Road/Julian Road east-west routes through Bath will inevitably attract a higher proportion of non-compliant vehicle fleet to the A36 corridor. This would thus exacerbate a situation where there are 'base-line' exceedances on the A36 Lower Bristol Road (just west of Brougham Hayes) and the A367 Wells Road. In conclusion, whilst accepting the concerns about the difficulty of non-compliant vehicles routing around the zone with the A36 and Bathwick Street routes cut, the removal of these routes is not predicted to achieve air quality compliance over the entirety of the central area by 2021.

## 2.2 A4 London Road/Cleveland Place Junction Only

### 2.2.1 Assessed Boundary Change and Potential Issues

Whilst the removal of the A4/Cleveland Place junction was included in the above scenario, it was decided to test the removal of this junction independently. In the earlier SOBC work it was felt that solely targeting vehicle traffic on the A4 London Road routing into/out the City Centre (so into/out of a 'reduced' CAZ) may be sufficient to bring the air quality concentrations here within the legal limit. In other words, whether it was necessary for the CAZ to 'cut' the strategic A46(T) to A36(T) route via Bathwick Street. Whilst the above scenario test suggested that the A4 London Road/Cleveland Place needed to be included, there was a concern that predicted air quality conditions here might be affected by the removal of the whole of the A36 as well. In other words, the removal of

both could result in London Road, Bathwick Street and the A36 being used by an increased volume of non-compliant traffic routing between the northeast and south parts of the city. Examination of Figure 2.1 shows that the only other viable route avoiding the CAZ would be a quite circuitous route via Lansdown Lane through Upper Weston.

### 2.2.2 Air Quality Modelling Results

The traffic and air quality models were duly run with just the A4 London Road/Cleveland Place junction removed from the proposed CAZ area. The results showed a maximum concentration is  $40.8 \mu\text{g}/\text{m}^3$ , with three PCM-equivalent receptors in exceedance. This scenario is thus still non-compliant, albeit the difference with the Type D CAZ as proposed is marginal. The detailed air quality modelling results emerging from this scenario test are again included in **Appendix A**.

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### 3. Conclusions

This Technical Report forms a response to concerns expressed from the public consultation about its currently proposed size and the need for it to be so large to achieve air quality compliance. Commentary on the viability of small alterations having no impact on removing 'key' traffic circulation routes from the zone is included in the main text of the 'Consultation Response' report. However, some comments concerning zone reductions requested consideration be given to exclusion of some main routes.

These concerns relate to the inclusion of the A36, the A4/Cleveland Place junction or both, with a wide variety of reasons being stated. These are in the main about vehicular accessibility around the zone for internal trips within Bath to/from key destinations, such as the RUH. However, there is also concern about the cutting of the strategic A46(T) to A36(T) route via London Road and Bathwick Street with the inclusion of the A4/Cleveland Place junction.

This Technical Report has therefore assessed the impact of two potential zone reductions as follows:

- Removal of all sections of the A36 corridor included in the CAZ to the south and east of the City Centre. In addition, the removal of the A4 London/Cleveland Place junction, so preventing the strategic A46(T) to A36(T) route via the A4 London Road and Bathwick Street from being 'cut' by the CAZ; and
- The removal of the A4 London/Cleveland Place junction only.

Bespoke traffic and air quality modelling (2021) predicts that removal of the A36 and the A4 London Road/Cleveland Place junction from the CAZ would result in five exceedances of air quality. Specifically, these were identified at:

- A4 London Road, east end in Lambridge;
- A4 London Road, east of Cleveland Place;
- A367 Wells Road, near Oldfield Road;
- A36 Lower Bristol Road, between Pines Way and Windsor Bridge Road; and
- A4 Upper Bristol Road, between Windsor Bridge Road and Newbridge Hill.

The maximum predicted concentration was  $47 \mu\text{g}/\text{m}^3$ .

A key reason for this is that exclusion of the A36 but retained inclusion of the A4 Upper Bristol Road and Weston Road/Julian Road east-west routes through Bath will inevitably attract a higher proportion of non-compliant vehicle fleet to the A36 corridor. This would thus exacerbate a situation where there are 'base-line' exceedances on the A36 Lower Bristol Road (just west of Brougham Hayes) and the A367 Wells Road. In conclusion, whilst accepting the concerns about the difficulty of non-compliant vehicles routing around the zone with the A36 and Bathwick Street routes cut, the removal of these routes is not predicted to achieve air quality compliance over the entirety of the central area by 2021.

The removal of the A4 London Road/Cleveland Place junction has also been assessed independently. In the earlier SOBC work it was felt that solely targeting vehicle traffic on the A4 London Road routing into/out the City Centre (so into/out of a 'reduced' CAZ) may be sufficient to bring the air quality concentrations here within the legal limit. In other words, whether it was necessary for the CAZ to 'cut' the strategic A46(T) to A36(T) route via Bathwick Street. Whilst the above scenario test suggested that the A4 London Road/Cleveland Place needed to be included, there was a concern that predicted air quality conditions here might be affected by the removal of the whole of the A36 as well. However, these results still showed a maximum concentration is  $40.8 \mu\text{g}/\text{m}^3$ , with three PCM-equivalent receptors in exceedance. This scenario is thus still non-compliant, albeit the difference when compared with the Type D CAZ area as proposed is marginal.

In overall conclusion, neither of these reduced CAZ scenarios removing 'key' circulation routes from coverage would achieve the required air quality compliance levels in 2021. However, it is evident that removing just the A4 London Road/Cleveland Place junction creates only a marginal change when compared to the currently proposed CAZ extent.

## Appendix A.

Table A1: Air Quality Modelling Results: Comparison

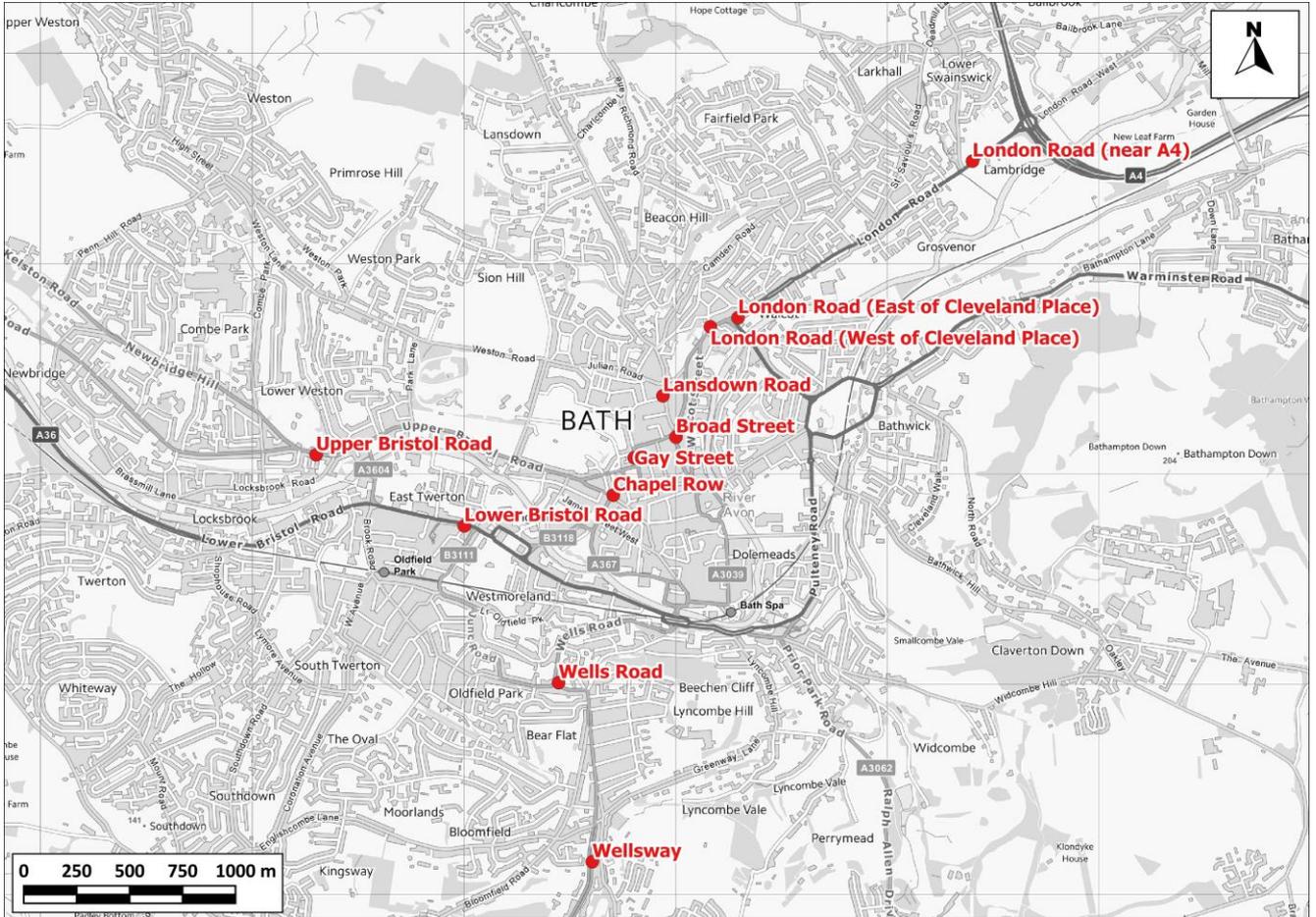
Location	2017 Base	2021 Base	2021 CAZ C £9.00	2021 CAZ C £9.00 with TM	2021 CAZ D £7.50	2021 CAZ D £9.00	2021 CAZ D £9.00 Smaller	2021 CAZ D £9.00 CPR
Gay Street	60.1	50.9	42.0	36.9	40.8	40.4	39.5	40.8
London Road (West of Cleveland Place)	70.2	57.6	38.5	38.2	36.7	36.4	36.6	36.5
London Road (East of Cleveland Place)	61.9	52.2	39.6	39.5	37.1	36.9	41.7	37.8
London Road (near A4)	64.4	50.8	31.4	31.3	31.0	30.9	41.6	31.5
Wells Road	69.1	57.5	31.0	30.9	30.2	29.9	42.4	30.1
Wellsway	58.6	47.8	25.1	25.1	24.5	24.5	36.7	24.5
Upper Bristol Road	75.4	61.9	36.4	36.3	35.6	35.5	46.9	35.6
Chapel Row	53.7	45.7	38.3	35.4	37.1	36.8	36.2	36.7
Lansdown Road	62.4	51.9	38.0	37.9	36.1	35.9	35.5	35.9
Broad Street	58.1	49.8	35.2	35.0	34.7	34.6	34.3	34.6
Lower Bristol Road	51.0	44.5	36.7	36.7	34.4	34.2	40.9	34.0
<b>Maximum Value</b>	<b>75.4</b>	<b>61.9</b>	<b>42.0</b>	<b>39.5</b>	<b>40.8</b>	<b>40.4</b>	<b>46.9</b>	<b>40.8</b>

Notes

1: CPR = Cleveland Place Removed

2. Yellow shading indicates scenarios achieving full air quality compliance

Table A2: Plan showing Locations Compared



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