



Bath Clean Air Plan

Bath and North East Somerset Council

Clean Air Zone Boundary Updates

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Contents

Acronyms and Abbreviations	1
1. Introduction	2
2. Bath Clean Air Zone Boundary Updates	3
2.1 Initial Clean Air Zone Boundary Proposals.....	3
2.2 First Clean Air Zone Amendments - 03.04.2018	5
2.3 Second Clean Air Zone Amendment - 04.05.2018	6
2.4 Third Clean Air Zone Amendments - 04.06.2018	7
2.5 Fourth Clean Air Zone Amendments - 19.06.2018	8
2.6 Fifth Clean Air Zone Amendments - 03.09.18	10
2.7 Sixth Clean Air Zone Amendments - 31.01.19	11
2.8 Seventh Clean Air Zone Amendments – 05.03.19	12
2.9 Final FBC Boundary – 31.05.19	14
2.10 Summary	15

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Acronyms and Abbreviations

ANPR	Automatic Number Plate Recognition
AQMA	Air Quality Management Area
B&NES	Bath and North East Somerset Council
CAP	Clean Air Plan
CAZ	Clean Air Zone
CSF	Critical Success Factor
Defra	Department for Environment, Food & Rural Affairs
DfT	Department for Transport
FBC	Full Business Case
JAQU	Joint Air Quality Unit
OBC	Outline Business Case
RPZ	Resident's Parking Zone
SOC	Strategic Outline Case

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1. Introduction

Poor air quality is the largest known environmental risk to public health in the UK¹. Investing in cleaner air and doing more to tackle air pollution are priorities for the EU and UK governments, as well as for Bath and North East Somerset Council (B&NES). B&NES has monitored and endeavoured to address air quality in Bath, and wider B&NES, since 2002. Despite this, Bath has ongoing exceedances of the legal limits for Nitrogen Dioxide (NO₂) and these are predicted to continue until 2025 without intervention.

In 2017 the government published a UK Air Quality Plan for Nitrogen Dioxide² setting out how compliance with the EU Limit Value for annual mean NO₂ 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, in order to achieve sufficient improvement in air quality and public health.

Jacobs has been commissioned by B&NES to produce a Strategic Outline Business Case (SOBC), Outline Business Case (OBC) and Full Business Case (FBC) for the delivery of the CAP; a package of measures which will bring about compliance with the Limit Value for annual mean NO₂ in the shortest time possible in Bath. The OBC assessed the shortlist of options set out in the Strategic Outline Case^[1], and proposed a preferred option including details of delivery. The FBC develops the preferred option set out in the Outline Business Case, detailing the commercial, financial and management requirements to implement and operate the scheme. The OBC and FBC form a bid to central government for funding to implement the CAP.

This document is written to support the OBC and FBC and describes how the CAZ boundary has developed over time.

¹ Public Health England (2014) Estimating local mortality burdens associated with particular air pollution.

<https://www.gov.uk/government/publications/estimating-local-mortality-burdens-associated-with-particulate-air-pollution>

² <https://www.gov.uk/government/publications/air-quality-plan-for-nitrogen-dioxide-no2-in-uk-2017>

^[1] Bath and North East Somerset Council Clean Air Plan: Strategic Outline Case, March 2018

http://www.bathnes.gov.uk/sites/default/files/siteimages/Environment/Pollution/strategic_outline_case_bath_28.03.2018_with_annexes.pdf

2. Bath Clean Air Zone Boundary Updates

2.1 Initial Clean Air Zone Boundary Proposals

For the Strategic Outline Case (SOC), three different CAZ boundaries were proposed. These boundaries were assessed against several different criteria to assess their suitability for the scheme. The boundaries can be seen in **Figure 2-1, 2.2 and 2.3** below.

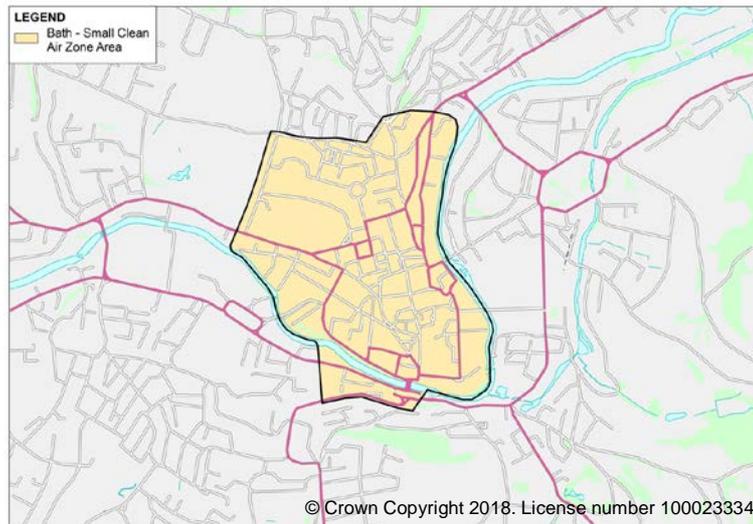


Figure 2-1: 'SMALL' Clean Air Zone Area: Bath City Centre area only, primarily to the north of the River Avon, with a small extension to the south of the river to cover the A36/A367 Churchill Bridge gyratory

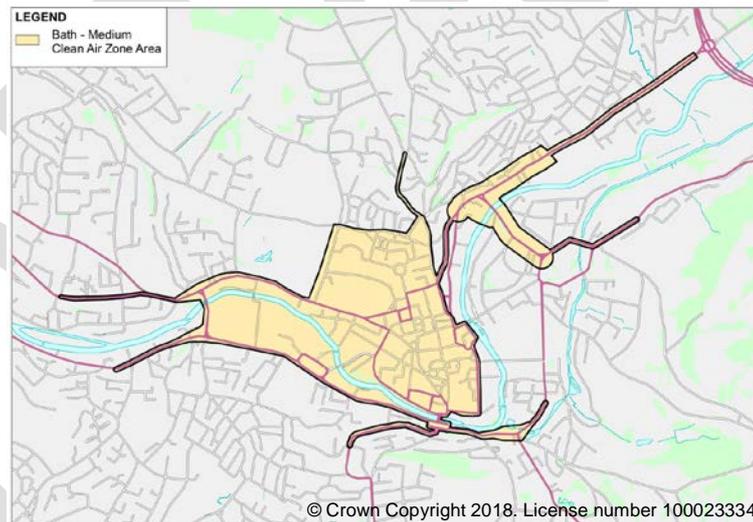


Figure 2-2: 'MEDIUM' Clean Air Zone Area: The Bath Air Quality Management Area (AQMA), extending out along key arterial routes to encompass Bathwick Street and London Road to the north east, and the Upper Bristol Road, A36 and A367 to the west and south respectively

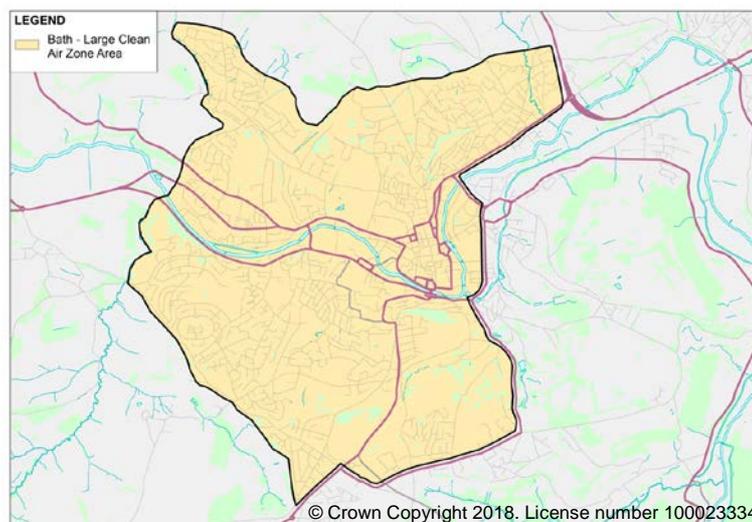


Figure 2-3: 'LARGE' Clean Air Zone Area: The whole of the Bath urban area (but excluding the Park and Ride sites at Newbridge, Lansdown and Odd Down)

The three boundaries were analysed with each of the CAZ Classes A,B,C and D against a list of Critical Success Factors (CSFs), at a high level, to formulate a shortlist of options to take forward. The full analysis of this can be found in the SOC³. However, a summary is provided below:

- The primary CSF was to deliver compliance with the Joint Air Quality Unit (JAQU) objectives in the shortest possible timescale. Therefore, a projected timescale for implementation and achieving compliance for each boundary proposal was calculated. Findings were as follows:
 - The Small CAZ was projected to be the quickest to implement. This was mainly due to the reduced timescale needed for detailed design and installation of the infrastructure required as part of the zone. This was due to the reduced area and the number of boundary crossing points needed;
 - It was estimated that the Small CAZ would take 1.5 years to implement, the Medium CAZ 1.6 years and the Large CAZ 1.9 years, Whilst the expected timescale differences were not large, it was recognised that this estimate would become far less certain with a larger zone area due to the increased risk; and
 - A Class C and D CAZ for all boundary proposals was predicted to achieve compliance at all air quality monitoring sites by 2021, whilst a Class B CAZ would be very close. On this basis there was felt to be no justification for making the zone area larger than necessary.
- As a result of this initial assessment, a CAZ Class B, C and D option of each of the above boundary sizes was taken forward to the next stage, where they were 'scored' against a long list of secondary CSFs. The highest scoring options were a Small CAZ boundary with a Class B, C and D CAZ. This was considered to provide the following benefits over the medium or large boundary:
 - It was expected to achieve compliance in the same timescales as a medium or large zone (by 2021);
 - It minimised the inclusion of residential areas within the zone, therefore minimising impacts on vulnerable groups. This was also expected to maximise public acceptability of the zone since fewer households were directly affected by inclusion;
 - It minimised the number of businesses included within the zone, and therefore, reduced the risk of adverse impacts on the local economy;
 - It only included areas with a known, and evidenced, air quality problem (i.e. within the AQMA); and

³ Bath and North East Somerset Council Clean Air Plan: Strategic Outline Case

- It required the least amount of infrastructure to be implemented on street, including signage, road markings and ANPR cameras. This thus reduced the risk that suppliers may not be able to deliver within the required timescales.

Following the above assessments, the MEDIUM and LARGE CAZ boundary areas were dropped from the consultation process and the SMALL CAZ boundary taken forward.

2.2 First Clean Air Zone Amendments - 03.04.2018

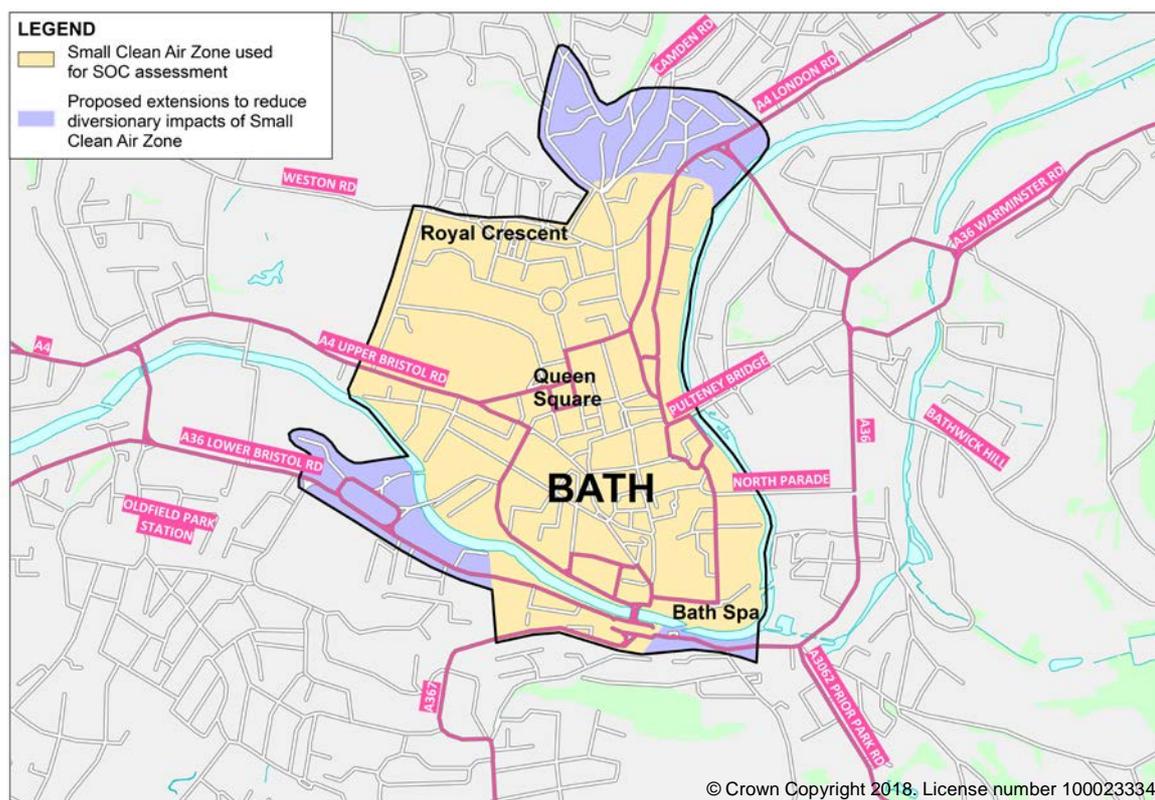


Figure 2-4: First proposed extensions to the CAZ

Following an initial assessment and ongoing discussions with key stakeholders within the Council, some amendments to the CAZ were proposed in April 2018. These are shown on **Figure 2-4** above in purple and described below:

- Northwards to St. Stephen's Church (Lansdown Road/Richmond Road junction). Eastwards through Camden Road, Gay's Hill, principally to include the A4 London Road/Cleveland Place junction;
- South East along the A36 Claverton Street to include the junctions with Lyncombe Hill and Widcombe Parade; and
- South West along the A36 Lower Bristol Road to include Pines Way gyratory and the Brougham Hayes junction.

These extensions were primarily focused on preventing the undesirable re-routing of non-compliant vehicle trips around the edges of the zone, which might otherwise result in worsened air quality in these areas and/or undesirable congestion issues.

2.3 Second Clean Air Zone Amendment - 04.05.2018

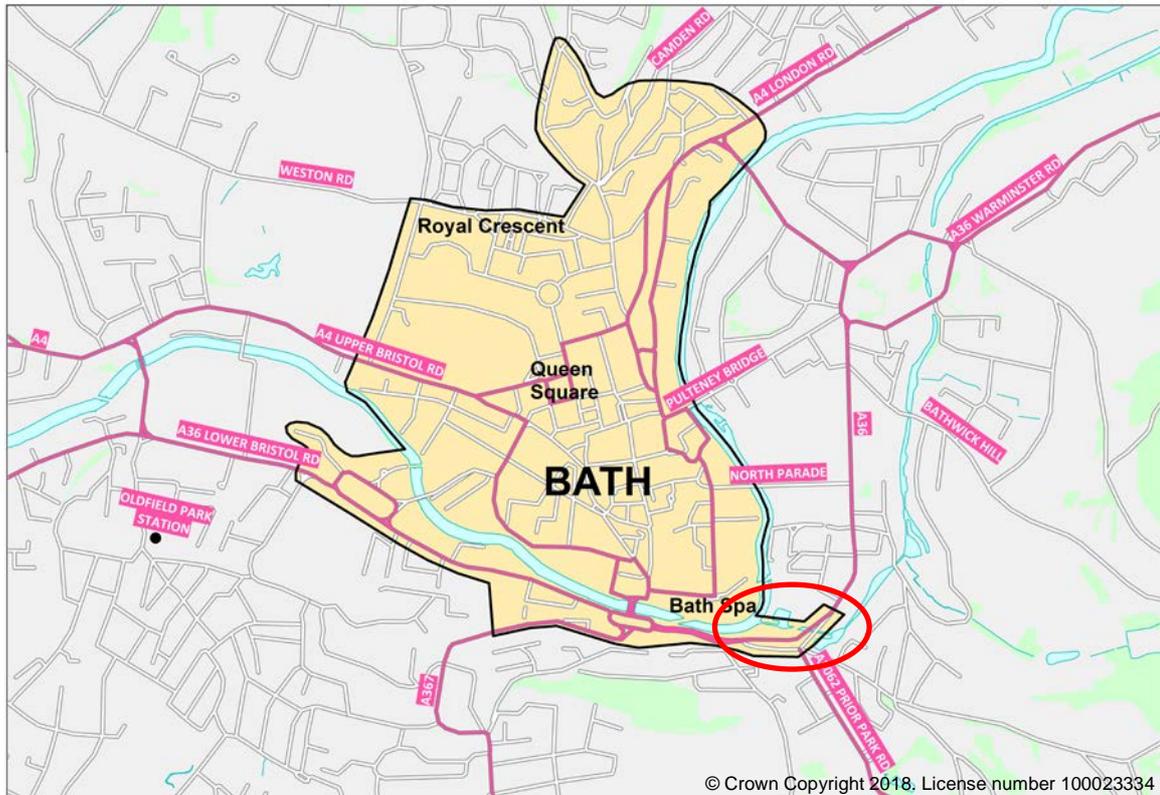


Figure 2-5: Second proposed extension to the CAZ

Figure 2-5 shows a further extension, circled in red, which was made to the south east corner of the zone in May 2018. This was to extend coverage to include the A36 Rossiter Road and the gyratory system in Widcombe. The main objective was to include the White Hart junction at the bottom of Widcombe Hill and Prior Park Road, so preventing 'rat-running' or avoidance issues with routing of non-compliant vehicles between these roads and the A36 Pulteney Road. A further issue with not including the White Hart junction was the risk of increased traffic routing between the A36 Pulteney Road and Greenway Lane, using Prior Park Road, Rosemount Lane and Forefield Rise. The latter two roads are narrow residential streets where opportunity for two-way passage is very limited.

2.4 Third Clean Air Zone Amendments - 04.06.2018

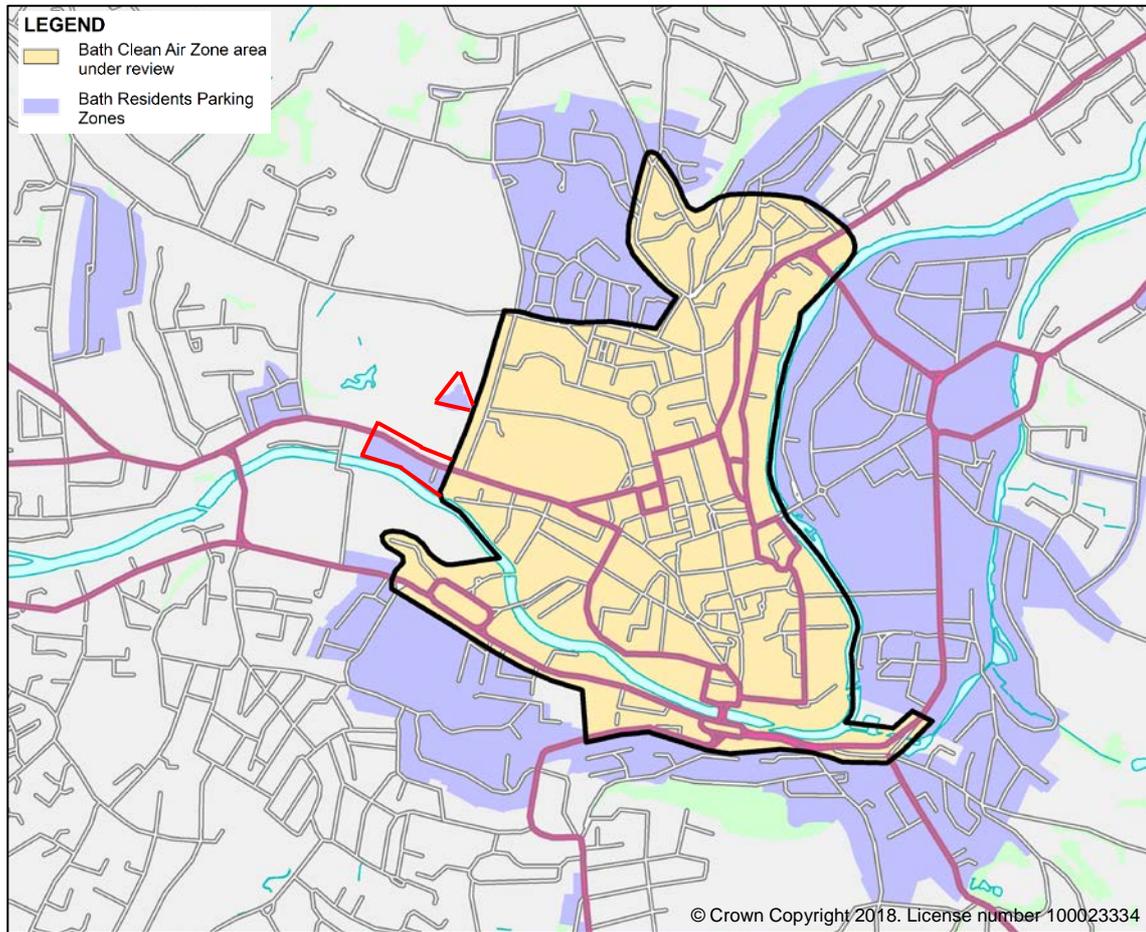


Figure 2-6: Third proposed extension to the CAZ

Minor changes to the boundary were again made in June 2018. These are shown by the red lines in **Figure 2-6**, and ensure that the entirety of Residential Parking Zone (RPZ) 6 was within the CAZ boundary. It was considered that if a small part of RPZ 6 remained outside the zone boundary, it could result in parking here being more desirable to residents of RPZ 6, particularly if a large part of the vehicle ownership was non-compliant.

2.5 Fourth Clean Air Zone Amendments - 19.06.2018

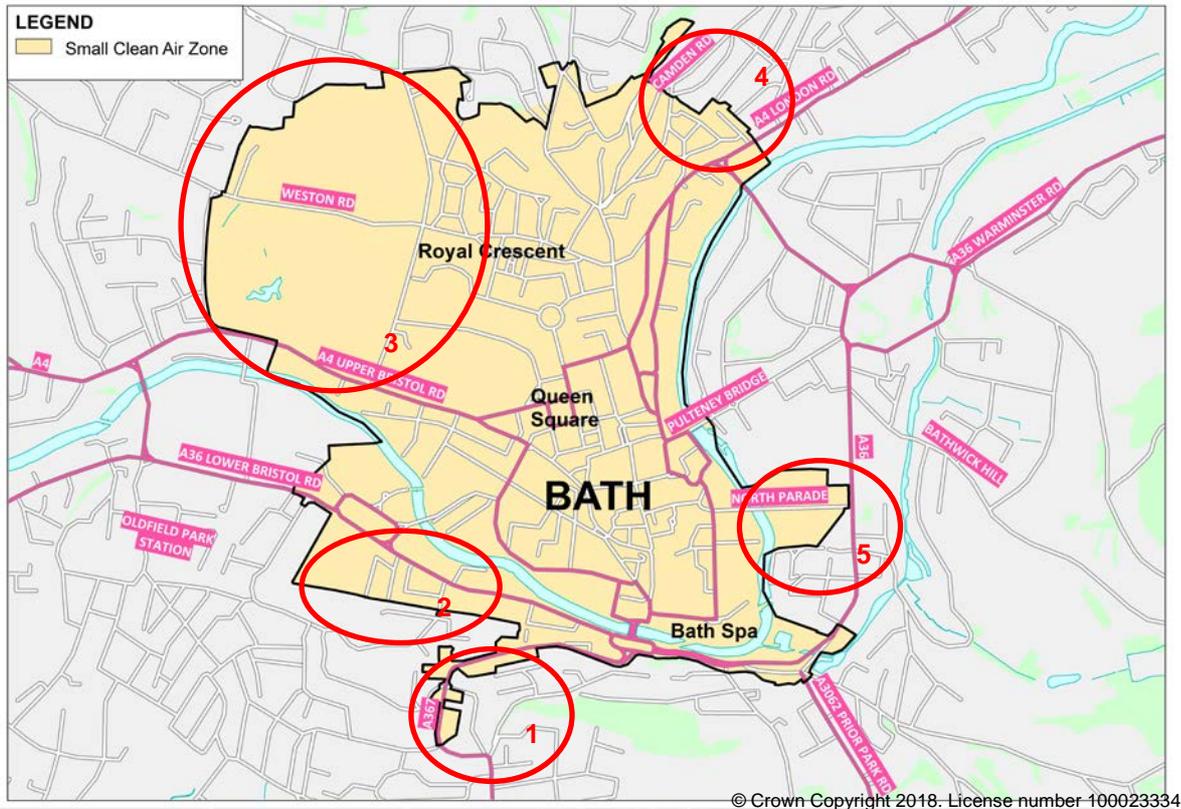


Figure 2-7: Fourth proposed extensions to the CAZ

Following a meeting and a walk around the CAZ boundary with B&NES officers, several adjustments to its position and 'detailing' were made. The changes that were agreed upon are highlighted in the red circles and numbered in **Figure 2-7** above. They include the following:

- 1) An extension to the south up the Wells Road (A367) to the junction with Oldfield Road (B3111). This includes new boundary crossing or 'cordon' points on Hayesfield Park and Upper Oldfield Park, whilst the cordon point on the A367 is moved to a point just north of the B3111 Oldfield Road junction.
 - This change was proposed by the residents of Upper Oldfield Park to avoid rat-running on what is a minor road, and one which serves as a main point of access to Hayesfield school. The signed position of the CAZ cordon point on the A367 just north of, or effectively at, the junction, means that drivers turning to avoid entry would do so via a 'B' classified road.
- 2) Moved to the south to the railway bridge on Westmoreland Road, with the revised cordon point just north of the junction with Westmoreland Station Road/Lower Oldfield Park/Thornbank Place.
 - This change was made as the junction is a clearer and more obvious turn-around point before entering the CAZ. Even HGVs would have the opportunity to turn around here using the entrance area to Westmoreland Station where the carriageway area is quite wide. This change removed the need for two cordon points to/from the A36 Lower Bristol Road at Westmoreland Road and Cheltenham Street, the latter less than ideal;
- 3) Extended to the north west to encompass the entirety of Victoria Park, as well as the whole of the 'St. James Square' area. It was considered this was desirable because of a number of factors as follows.
 - The boundary crossing point situated by the Victoria Monument in Victoria Park just west of Marlborough Lane was considered unlikely to be acceptable due to its proximity to the monument;
 - The large number of medium-stay (up to 4 hours) parking spaces available in Victoria Park could become more popular if omitted from the zone. This could serve to increasing vehicular traffic in the

park. As the primary CAZ scheme objective is to promote clean air, it was considered that decreasing the quality of the air in a park would be counter intuitive; and

- The initial zone created a lot of boundary crossing points onto Julian Road, with signing/ANPR cameras needed to cover several minor roads. The revision to the boundary meant that this could be reduced and rationalised to only one cordon point at the top of Cavendish Road.
- 4) Small changes to the boundary crossing points on Camden Road and Gay's Hill and an extension to cover a large property on Rivers Road with access 'only' off St. Stephen's Road.
- The change to the boundary crossing points on Camden Road and Gay's Hill were done to make the cordon 'entry' points and signing more visible from the preceding junction, allowing drivers to use the junctions as decision points to avoid entering the zone should they choose; and
 - The boundary was extended around the said property in Rivers Road due to its sole vehicular access via the junction with St. Stephen's Road, which was already inside the zone.
- 5) Adjusted east to the end of North Parade Road.
- This eastward movement of the boundary crossing point on North Parade Road to the junction with the A36 Pulteney Road was proposed to avoid 'entrapment' of drivers making the turn into North Parade. This is because, once such turns are executed, there was considered to be no viable means of a non-compliant vehicle taking action to avoid zone entry. Whilst turning within the Sports Centre or Cricket Ground car parks would be possible to execute a 'U' turn, this was hardly considered ideal.

The entire boundary edge was also refined to fully encompass land or property boundaries where vehicular access could only be made or achieved using roads or streets within the CAZ boundary. The principle applied here was that the entirety of the property or land parcel was effectively within the CAZ if vehicular access could only be made by roads within it.

2.6 Fifth Clean Air Zone Amendments - 03.09.18

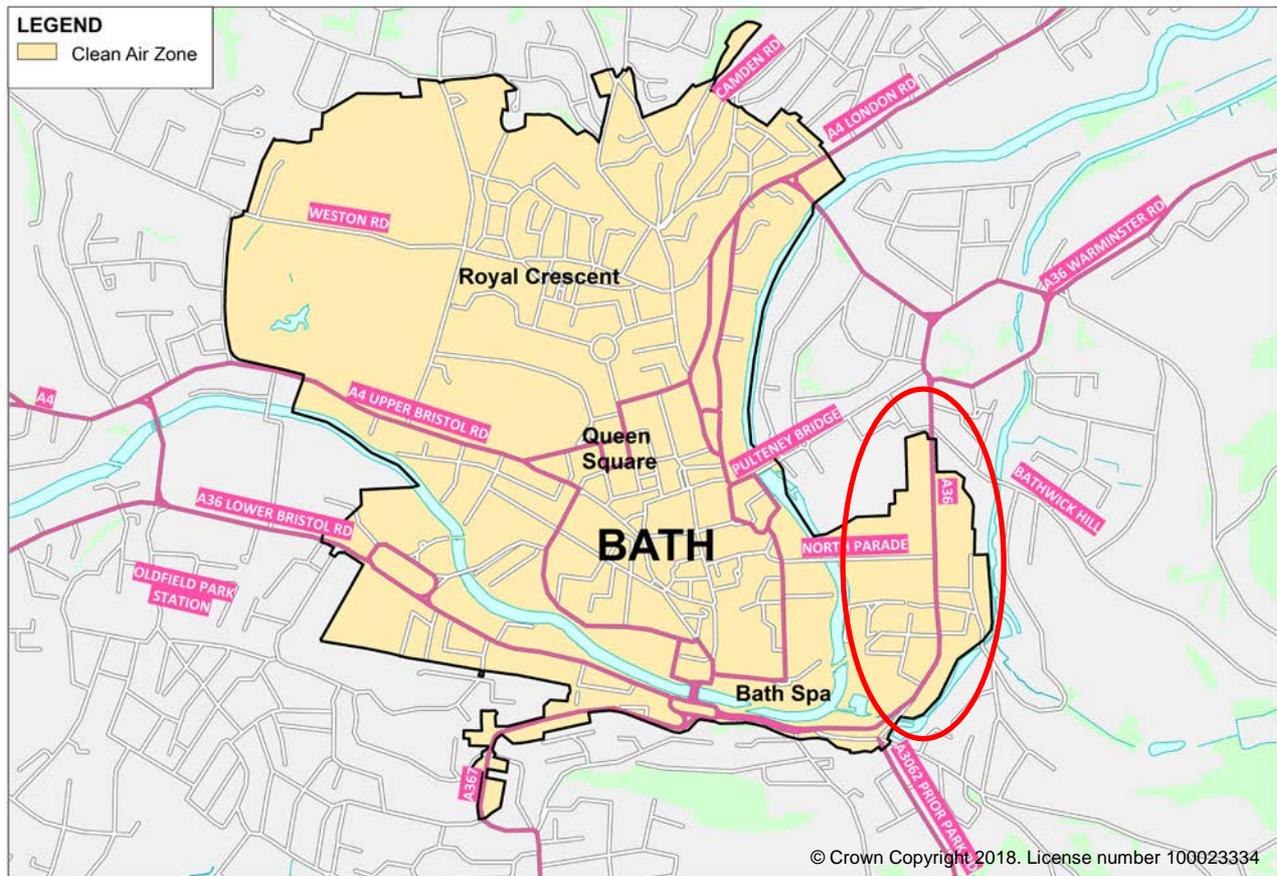


Figure 2-8: Fifth proposed extensions to the CAZ

Following a meeting with cabinet the CAZ was further extended in the Widcombe area, as circled in red on **Figure 2-8** above.

The CAZ boundary has been extended to capture the entirety of the A36 Pulteney Road, Pulteney Gardens, The Bath Hotel and Widcombe C of E primary school. The boundary line now cutting off at the Bathwick Hill Roundabout to the north and following the canal to the east. This has resulted in the moving of two boundary crossing points in the area; one from the east end of North Parade to the southbound A36 exit from Bathwick Hill Roundabout, and the other from Pulteney Road to where Pulteney Gardens crosses the canal.

The reason behind the boundary extension was the potential for 'entrapment' and vehicle avoidance impacts on the now included residential streets. A 'key' issue was the likely impact on Widcombe C of E Primary School, with minor streets around the school offering the most obvious turning around or 'U' turn opportunity for a non-compliant vehicle driver when approaching the original cordon point just north of the Bath Hotel junction. An HGV reaching this point would have no real alternative to crossing the CAZ boundary. The new boundary addresses this operational risk by moving the cordon point on the southbound A36 to the exit point from Bathwick Roundabout. This would allow drivers seeking to avoid entry (including HGV drivers) to use either Bathwick Hill, Vane Street, or make a 'U' turn at the roundabout back to Sydney Place.

2.7 Sixth Clean Air Zone Amendments - 31.01.19

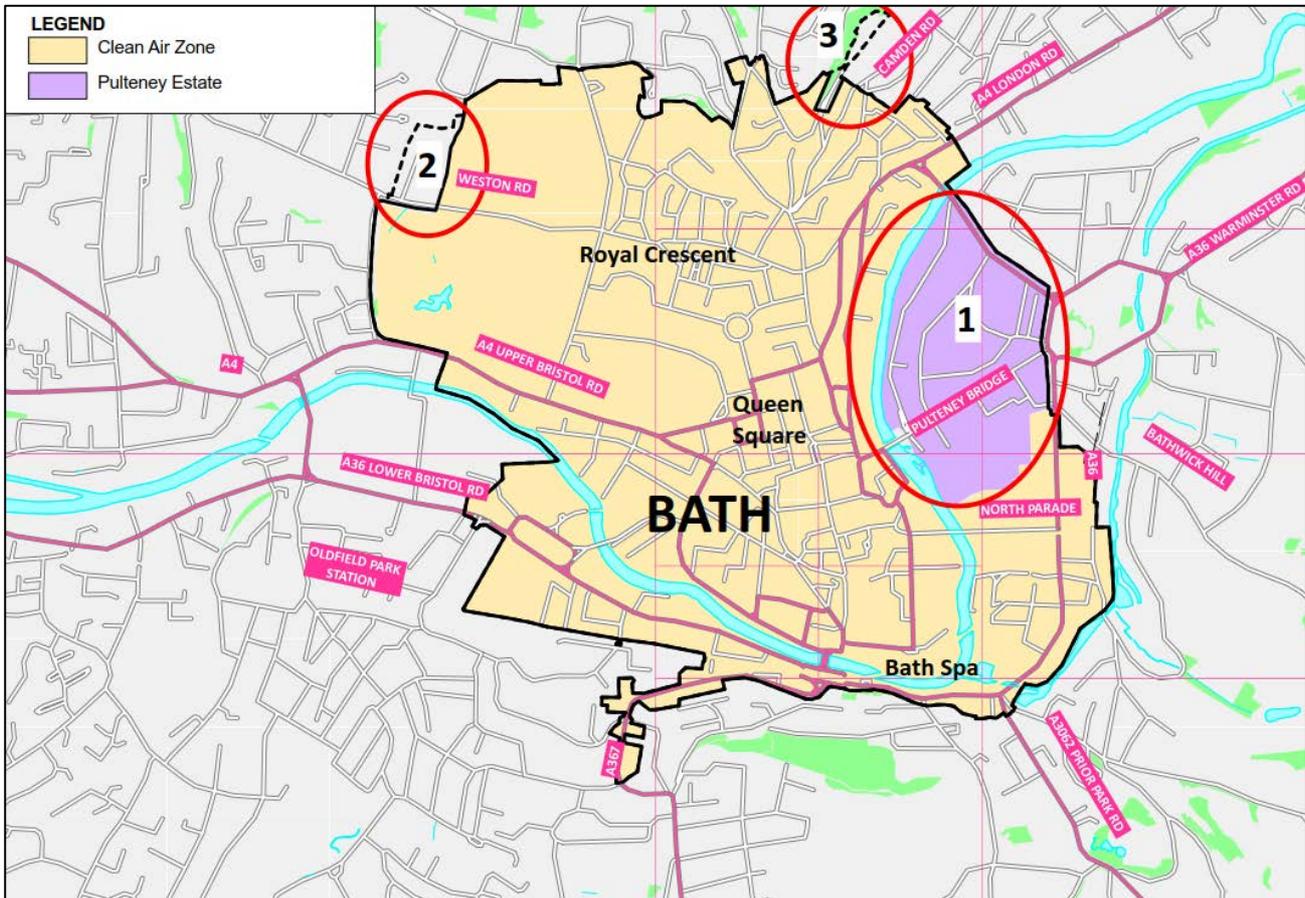


Figure 2-9: Sixth proposed amendments to the CAZ

Following the consultation period, three alterations to the CAZ boundary were proposed, with a new area being included and two areas being removed. These are shown in **Figure 2-9** above and described below:

- 1) Inclusion of the Pulteney Estate including Bathwick Street but excluding the A36 around Sydney Gardens.
 - During the consultation period there were concerns from residents in the Pulteney and Bathwick Estate about an increase in idling coaches, rat-running traffic and drop-offs or parking of non-compliant vehicles in the area, as it was very close to the city centre.
 - Including this area only and leaving the A36 outside the zone, allows for suitable 'turn-back' options for large vehicles via the Sydney Gardens 'loop' (Beckford Road/Sydney Place/Sydney Road) or a 'U' turn at Bathwick Roundabout. If the A36 to the North Road junction had been included in the zone, large vehicles could become entrapped as they would have no option to avoid entering the CAZ. Light vehicle traffic may also have increased on North Road, outside of King Edwards School.
- 2) Removal of Cranhill Road to the west of the zone.
 - During the consultation, several people requested the removal on Cranhill Road from the zone as it was a cul-de-sac and therefore, not subject to much traffic. Cranhill Nursing Home would also be inside the zone, causing issue with carers, visitors and deliveries. Removing the nursing home would alleviate these issues.
 - Removing Cranhill Road increases the risk that vehicles may turn around in it to avoid the CAZ, however, this is considered low risk.
- 3) Removal of Rivers Road and Beacon Wood House from the north part of the zone.

- Rivers Road is a private road which leads only to a Beacons Wood House, a private property which also has access from Perfect View and, therefore, doesn't need to be inside the zone.

2.8 Seventh Clean Air Zone Amendments – 05.03.19

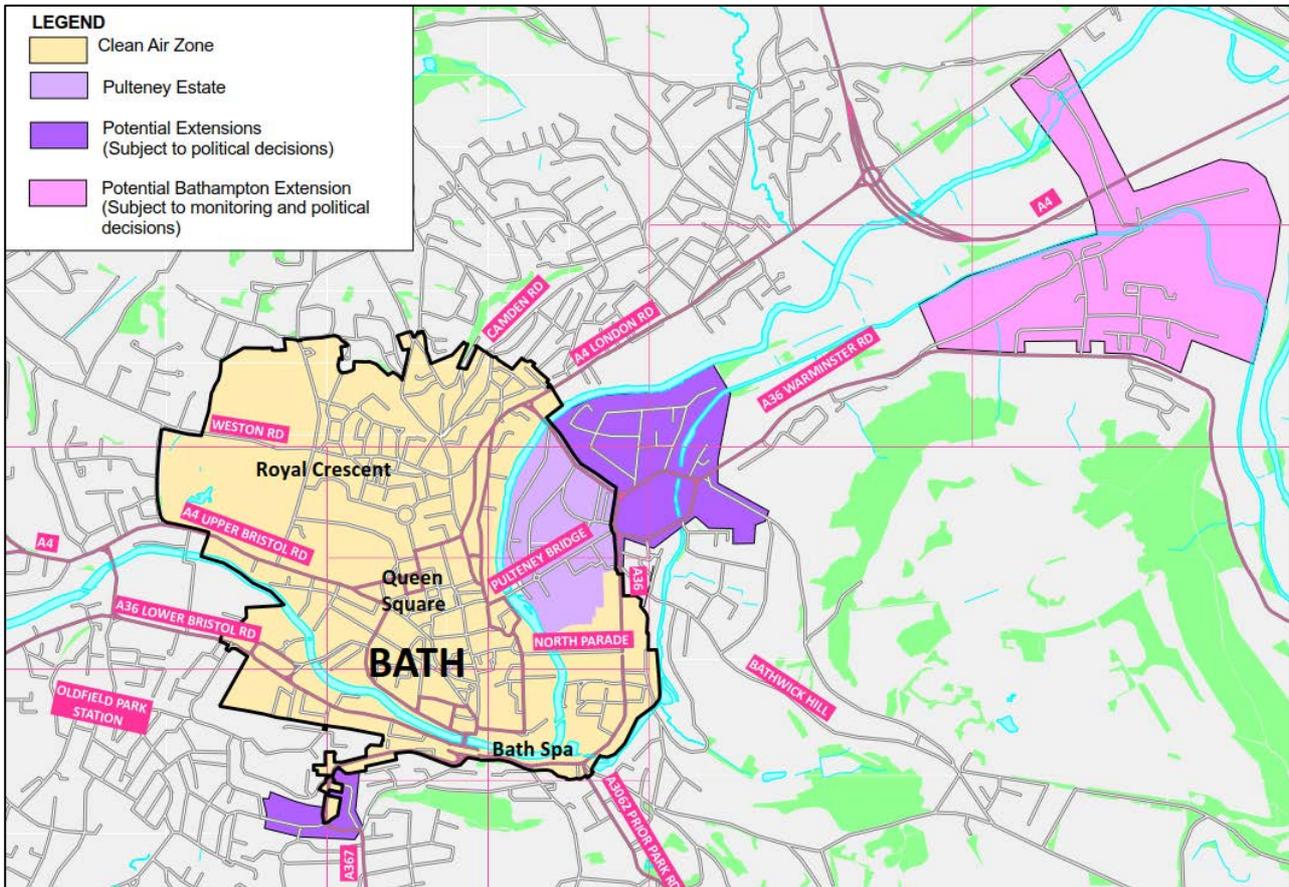


Figure 2-10: Boundary Changes Under Consideration

A further three proposed extensions to the CAZ boundary were presented for political decision at the final OBC sign-off and are shown in **Figure 2-10** above, highlighted in purple and pink.

The purple areas were selected for inclusion and comprise:

- To the south of the zone, further inclusion of the A367 Wells Road up to, but not including, the junction with Holloway, so including the length of the B3111 Oldfield Road up to, but not including, its junction with Junction Road.
 - During the consultation period, contrasting feedback was received about moving the CAZ boundary to cover the A367 Wells Road/B3111 Oldfield Road junction. This was as follows:
 - There were concerns about additional rat-running, parking, congestion and decreased air quality along both Oldfield Road and in Oldfield Park generally if the junction were to remain outside the zone and the B3111 open (Noting that the northern end of the B3111 is covered by the inclusion of the A36/B3111 Brougham Hayes junction within the present CAZ boundary already).
 - The Federation of Bath Residents Association (FOBRA) and the Lower Oldfield Park Residents Association and several individual respondents were in support of the inclusion of the Wells Road/Oldfield Road Junction.
 - There were also requests to keep the junction excluded so it would retain non-compliant vehicle access to the doctor's surgery on Upper Oldfield Park and Hayesfield Girls School. There were

also concerns its exclusion would lead to rat running further south along Hensley Road, Egerton Road and Cotswold Road.

- Upper Oldfield Park Residents Association wanted the boundary of the CAZ here to remain in its current position, though this could have been a greater concern about it being moved north of the junction between Upper Oldfield Park and Wells Road.
- 2) Inclusion of the wider Bathwick area to the east of the zone, including A36 Beckford Road, A36 Warminster Road (past the junction with North Road), North Road (to the junction with Cleveland Walk), Sydney Road and Sydney Place.
- During the consultation period there were concerns from residents in the Pulteney and Bathwick Estate about an increase in idling coaches, rat-running traffic and drop-offs or parking of non-compliant vehicles in the area, as it was very close to the city centre.
 - Pulteney Estate Residents Association (PERA) and Bathwick Estate Residents Association and several individual Bath residents requested that such an area, as shown by the purple, should be within the CAZ boundary.
 - As shown in Section 2.7 point 1), a smaller extension covering the Pulteney Estate has now been included. This does not interfere with Sydney Gardens or Bathwick Roundabout, maintaining a suitable turning point for non-complaint HGVs reaching this part of Bath on the A36(T). However, an extension to the zone as shown could have implications in providing suitable opportunity for 'turn-back' or re-routing of non-compliant vehicles, particularly HGVs, entering Bath on the A36(T). Non-compliant vehicles would be forced to turn around using residential estate roads prior to a repositioned zone entry point on the A36 just east of the North Road junction to avoid entering the CAZ. This is potentially unsuitable for HGVs and could lead to 'entrapment' issues with non-compliant large vehicles proceeding northbound on the A36(T) beyond the B3108 Little Stoke junction to the south of Bath (Winsley).

The pink area to the east of the zone is a potential 'outlier' zone covering Bathampton. It's inclusion will be subject to traffic and air quality monitoring and should issues arise, a political decision. It is therefore not included at this time. This zone extension sitting between the A36 and London Road West would include: Bathampton Lane, Down Lane Devonshire Road, High Street, Mill Lane and all side roads with access off the roads listed. At the present time this extension is on balance not considered necessary after weighing up the following:

- Bathampton Parish Council, Batheaston Parish Council and Bathampton Primary School all requested an extension of the CAZ zone to cover Bathampton.
- During the consultation period the organisations above and many respondents expressed concern that the current boundary would lead to large amounts of traffic diverting through Bathampton and across the toll bridge. As a result, this would cause issues with increased congestion and worse air quality in Bathampton. They also highlighted a potential safety issue with additional parked cars, and a greater risk to pedestrians, especially children, in Bathampton from increased traffic.
- However, modelling has predicted that the traffic is not expected to increase excessively across the toll bridge, the route is already heavily constrained by the capacity available in peak hours and this is well known by local drivers.
- Further to this there is no case to include this area to achieve air quality compliance by 2021.
- There are also concerns that including this area would leave no convenient crossing point over the River Avon to the east side of the city for non-compliant drivers, with the B3108 at Winsley offering the nearest viable alternative, well to the south of Bath.

As such it was proposed to introduce a programme of regular monitoring to establish changing traffic flows and potentially journey times on the Bathampton Lane/Mill Lane/Toll Bridge Road route in the pre-CAZ and post-CAZ scenarios. Comparison of 2014 and 2018 flows on Toll Bridge Road has shown no appreciable change in two-way 'peak' weekday flows at the Toll Bridge, but a perceivable growth change in the average inter-peak hour flow over the period 2014-2018. Further data collection up to CAZ implementation will enable what appears to be an underlying growth trend to be established. In the post-CAZ scenario, this can then be accounted for in establishing any true 'extra-over' effects of the CAZ. If the outcome from future comparison

analyses does reveal a net impact of significance, then a decision could be taken then to introduce an 'outlier' CAZ if required, subject to a full public consultation. As the route is already subject to a 4-ton weight restriction and has traffic calming and a 20mph speed restriction in parts, it is considered that little could be achieved using further formal traffic management measures to deter vehicle usage. Increasing charges on the Toll Bridge is also outside of the control of B&NES.

2.9 Eighth Clean Air Zone Amendments – 31.05.19

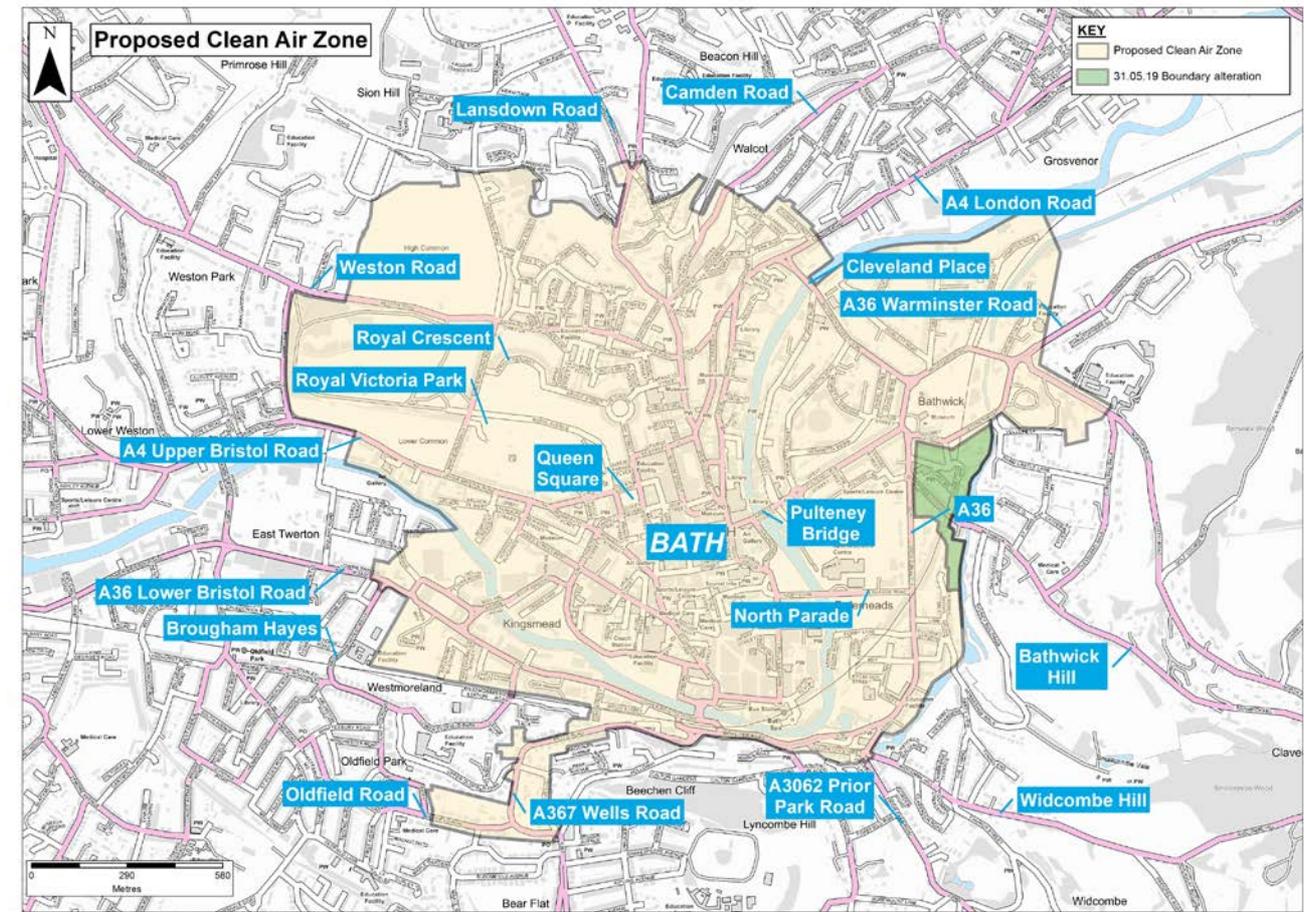


Figure 2-11: Eighth Proposed Amendments to the CAZ

A further minor change is proposed to the boundary for practical reasons. The area adjusted is highlighted by the green shading in **Figure 2-11**. The boundary as it stood before would require four camera locations, at; Sydney Mews, Raby Mews, Sydney Wharf and Sham Castle Lane. This would require 7 ANPR cameras and 16 signs to monitor a very predominantly residential area.

As is shown, extending the boundary to the canal from Sydney Road to Bathwick Hill will define the zone more clearly and reduce the infrastructure requirements to 3 ANPR cameras and 8 signs. Further advantages of revising the boundary are:

- It makes technical installation easier to achieve (power/communications/installing posts);
- Reduces negative impact on streetscape;
- Aligns to include all of the associated Residents Parking Zone;
- Doesn't discriminate between different areas of Bathwick i.e. some properties in and some out of zone; and
- Leaves potential to redeploy cameras elsewhere or reduce/reallocate budget.

2.10 Summary

This document is written to support the OBC and FBC and documents the CAZ zone limits initially considered and how this boundary has changed over time. It is possible that, as the design process draws to a close, further adjustments may be made to the position of the CAZ boundary position. It is also possible that further changes might need to be made as a result of the final consultation. It is intended that subsequent revisions to this document will include any ensuing updates made through the design and consultation process, showing the physical changes to the boundary position and the reasoning behind them.

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