



RPZ Review - Parking Permit Proposals

Distributional Impact Assessment

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Bath & North East Somerset Council

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1. Introduction

1.1 Background

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 across its area since 2002. 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 in 2017, by Ministers at Defra and DfT, to produce a Clean Air Plan (CAP), to set out how they will achieve sufficient air quality improvements in the shortest possible time. The Plan is currently being implemented, and as part of this a Clean Air Zone (CAZ) in the centre of the city, class 'C' charging non-compliant commercial vehicles, went live in March 2021.

Also as part of the council's continuing programme to addressing air quality and traffic management issues through the management of parking behaviour on the highway, B&NES is seeking to amend the charges levied for on-street parking permits for residents of restricted parking zones (RPZ) in the council area, most of which are in the city of Bath. Revised charges would be linked with vehicle emissions, charges accordingly increasing with emissions, with the aim being to encourage the use of less polluting vehicles.

Jacobs has been commissioned by B&NES to produce a Distributional Impact Assessment of the proposal. This report outlines the overarching framework and detailed analysis that assesses the proposal on relevant socio-economic groups. It presents the key assumptions, approach and structure of the impact analysis, leading to an identification of particular distributional and equality issues and concerns.

1.2 Distributional impact assessment

1.2.1 Screening and appraisal process

The evidence base for distributional impacts associated with parking permit change has been accumulated through research originally part of the distributional impact assessments of the CAP and CAZ. Analyses applied to the RPZ charging proposals have been prepared in accordance with TAG Unit A4.2 ('Distributional Impact Appraisal'). A three-step approach has been followed, involving:

- Step One – Screening: impacts that the scheme might have are considered and prioritised for further analysis; only the most relevant indicators for the scheme are appraised to ensure proportionality.
- Step Two – Assessment: information is collected on the geographical area likely to be affected and how different social groups are distributed within that geographical area.
- Step Three – Appraisal: an assessment is made as to the extent of the impact of the scheme on the social groups identified (for the impacts included in the assessment).

This report determines the impacts likely to be associated with the scheme and what analysis would be best suited to investigating these impacts, depending on the data available and how sensitive the issue is.

1.2.2 Assessment criteria

In order to understand whether or not a particular group is being unduly disadvantaged by the proposed option, it is necessary to understand whether impacts are disproportionate. In order to investigate whether impacts are disproportionate, it is necessary to obtain an understanding of how impacts are occurring, whether they are

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>

acceptable or whether the option should be altered or mitigated. The following scale is used as a guide to determine the scale and extent of an impact.

Note that the assessment scoring outlined in Table 2.1 is undertaken relative to population sizes, comparing the proportion of net winners or losers in each socio-economic quintile to that socio-economic quintile's share of population in the study area. Therefore, a larger score (of '✓✓✓' or '×××') is indicative of impacts falling disproportionately on a particular quintile relative to that quintile's population share across the study area as a whole. So, if 20% of an impact falls on socio-economic quintile x, but socio-economic quintile x only form 10% of the study area population, a large assessment score will be recorded.

Table 1.1: Distributional Impact Assessment criteria

Assessment		Impact Description
✓✓✓	Large beneficial	Beneficial and the population impacted is significantly greater than the proportion of the group in the total population
✓✓	Moderate beneficial	Beneficial and the population impacted is broadly in line with the proportion of the group in the total population
✓	Slight beneficial	Beneficial and the population impacted is smaller than the proportion of the group in the total population
-	Neutral	There are no significant benefits or disbenefits experienced by the group for the specified impact
×	Slight adverse	Adverse and the population impacted is smaller than the proportion of the population of the group in the total population
××	Moderate adverse	Adverse and the population impacted is broadly in line with the proportion of the population of the group in the total population
×××	Large adverse	Adverse and the population impacted is significantly greater than the proportion of the group in the total population

1.3 Scheme and study area

1.3.1 Scheme proposals

As noted above, B&NES is seeking to amend the charges levied for on-street parking permits for residents of restricted parking zones (RPZ) in the council area. This part of a series of parking-related proposals, the aims of which are to: ³

- Improve air quality in the shortest possible time through a major shift to mass transport, walking and cycling and incentives to reduce the use of more polluting vehicles, in order to secure the safer movement of pedestrian traffic on the highway by reducing the public health risks posed to them by air pollution; and
- Facilitate the achievement of strategic outcomes of local transport policy by reducing congestion and vehicle intrusion into neighbourhoods, and particularly residential neighbourhoods.

Other aspect of the wider parking-related proposals include changes to on-street parking charges (both the costs and timings), amendments to trade-based parking permits, procedures for temporary suspensions of restrictions, changes to specialist permits (such as for medical access and use of hotels), review of historic paper permits (that are still in use) and residents' access to visitor permits.

This report considers the impacts of changes to on-street parking for residents, specifically the introduction of emissions-based parking permits for all residents parking zones, which is described briefly below:

³ The aims of the proposals, as well as detailed descriptions of emissions-based permits, are taken from the 'Council Executive Covering Report' on the subject, which can be found at the following link on the council's website: <https://democracy.bathnes.gov.uk/documents/s64642/E3253%20-%20Addressing%20air%20quality%20and%20traffic%20management%20issues%20through%20the%20management%20of%20parking%20behav.pdf>

- The proposal is designed to achieve the objectives (above) by encouraging a switch to low emission vehicles and a shift to mass transport, walking and cycling;
- In line with precedents set by other Local Authorities, the pricing policy is based on vehicle carbon dioxide (CO₂) emissions as per Vehicle Excise Duty (VED) classification with bands at 1st April 2017. As CO₂ is by-product of internal combustion, a reduction in CO₂ emissions through reduced combustion will therefore reduce other pollutants within vehicle emissions which are harmful to pedestrian safety.
- The baseline prices under the proposals are equivalent to existing permit prices in Bath. A first permit is £100 per year, with a second permit at £160 per year. This baseline is set at CO₂ emissions of 111-130g/km, including 44% of all existing permits. The proposed price increases by 5% for each subsequent and higher emissions band.
- A diesel supplement is proposed to achieve NO₂ targets in the shortest possible time. The price for a permit for a diesel fuelled vehicle contains a 25% surcharge on top of the basic price based on CO₂ emission alone. On a baseline price this surcharge would be £25 and £40 for the first and second permit respectively.
- Proposed prices are to be implemented across all residents parking zones in Bath & North East Somerset. Prices for more polluting vehicles are set higher based proportionately on their emissions. Where a VED emissions rating is not available, including all pre 2001 registered vehicles, the prices are set at a standard level based on engine capacity, similar to the approach for VED.

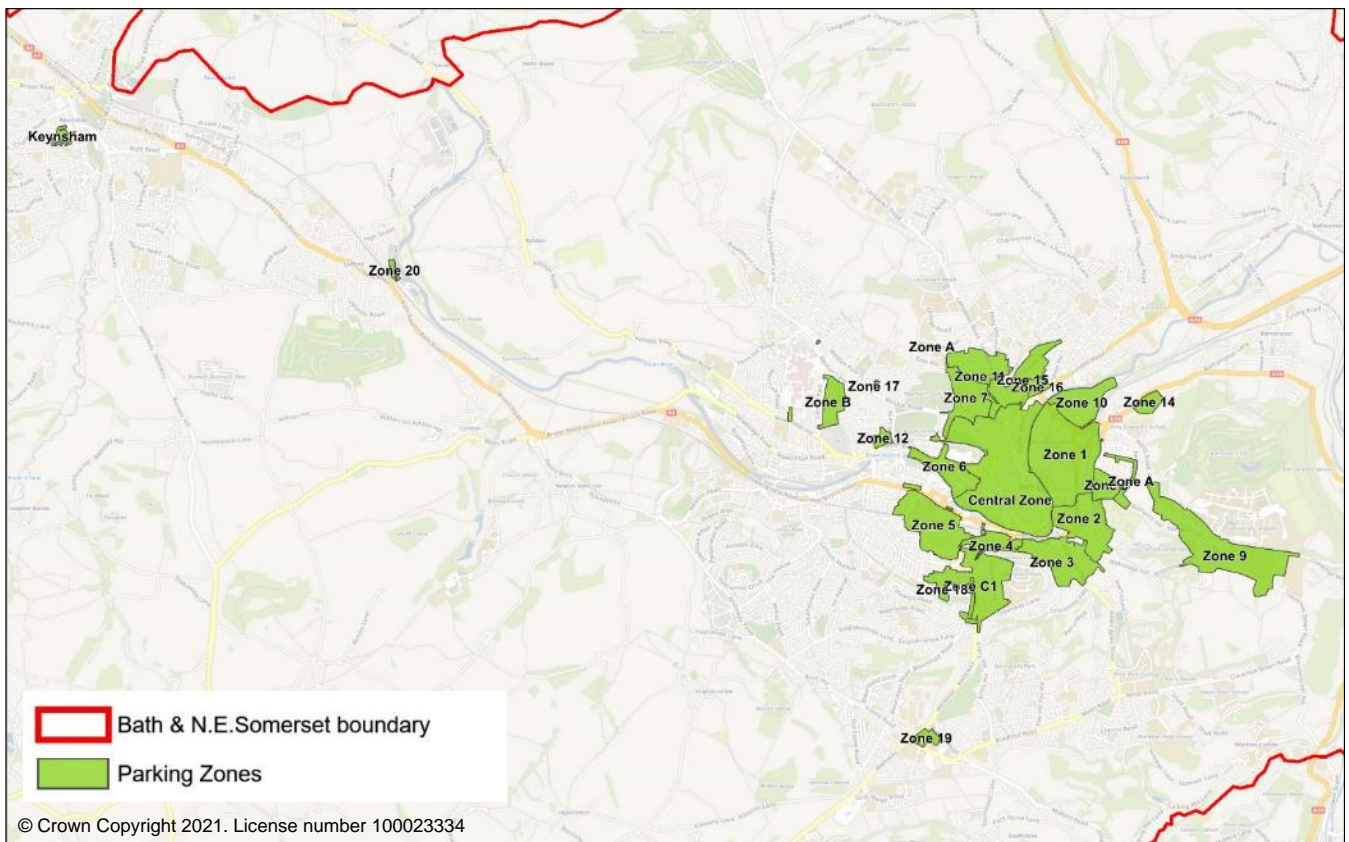
It is envisaged that implementation of emissions-based parking permits for residents will be in place before the end of financial year 2021/22.

1.3.2 Study area

Most of the RPZ areas are within the city of Bath, and indeed are largely located in central areas of the city, with a few located away from the centre, with the only areas outside the city being two small zones in Saltford and Keynsham. Figure 1.1 shows the locations of the RPZs.

A layered approach to identifying the study area for the assessment of distributional impacts was adopted. This reflects the potential variation in spatial extent of any impacts that materialise. The immediate study area is the population of residents within the RPZs. Clearly as an existing residents' parking scheme, the impact of changing charges will fall to residents of the scheme areas. For comparison though, the distributional impact assessment consider a wider study area of the B&NES local authority area, with reference to the other administrative areas forming the West of England (WoE) sub-region (i.e. Bristol, South Gloucestershire and North Somerset) for relative consideration of incomes. The analysis presented in this report uses the appropriate study area definition based on the socio-economic group and impact variable being considered.

Figure 1.1: Location of Bath & North East Somerset parking zones



2. Step 1: Screening

The first step in the assessment process involves undertaking an initial screening of the key impacts specified in TAG Unit A4.2, to identify those impacts that could potentially be affected by the proposals and any that are unlikely to be affected.

Key outcomes and conclusions of the initial screening are summarised in Table 2.1. It should be noted that most of the impacts identified are 'screened-out' at this stage.

Table 2.1: Distributional Impact Assessment – Initial Screening

Impact Area	Conclusion	Next Step
User Benefits	<p>There are no specifically identifiable user benefit impacts with changes to residents' parking permit charges. Trip changes may be observed should residents chose to dispose of vehicles, but even should this happen it is impossible to reliably quantify the specific impact on trip-making as a result of changes to permit costs.</p> <p>It is worth noting though that an aim of the overall parking-proposal is as part of the suite of measures to facilitate broader outcomes of reduced congestion and vehicle intrusion, so a small beneficial impact could be anticipated, if not measured. As user benefits cannot sensibly be calculated, distribution of user benefits is therefore also not possible to quantify.</p> <p>Summary: Potential small beneficial impact (not measurable), distributional impact neutral.</p>	<p>Distributional assessment: neutral (no measurable user benefit impact):</p> <p>No further analysis required</p>
Noise	<p>No noise analysis has been carried out. As for user impacts, changes to residents' parking permit charges will have very limited impact on noise. Trip-making changes may be observed should residents chose to dispose of vehicles, but even should this happen it is impossible to reliably quantify the specific impact on noise. As for user impacts, a small beneficial impact could be anticipated, if not measured, with the proposal being part of the suite of measures to facilitate broader outcomes of reduced congestion and vehicle intrusion. As noise impacts are not being modelled, distribution of noise impacts is therefore also not possible to quantify.</p> <p>Summary: Potential small beneficial impact (not measurable), distributional impact neutral.</p>	<p>Distributional assessment: neutral (no measurable noise impact):</p> <p>No further analysis required</p>
Air Quality	<p>No specific air quality analysis has been carried out for proposed changes to residents' parking permit charges.</p> <p>Direct impact on air quality is difficult to specifically attribute to parking permit charges. As for noise and user benefits, trip-making changes may be observed should residents chose to dispose of vehicles, but even should this happen it is impossible to reliably quantify the specific impact on air quality.</p> <p>However, a key aspect of the proposed permit regime is to encourage less-polluting vehicles, through the scale of charges proposed rising with CO₂ emissions, with an additional supplement for diesel cars (reflecting their greater impact on NO₂ and local air quality than petrol powered vehicles). It is notable though that zero-emission (electric) vehicles are not exempt, acknowledging that permits for parking are required for physical reasons of capacity in the principal instance.</p>	<p>Distributional assessment: neutral (no measurable air quality impact):</p> <p>No further analysis required</p>

Table 2.1: Distributional Impact Assessment – Initial Screening

Impact Area	Conclusion	Next Step
	<p>Hence, a small beneficial impact would be anticipated, as residents may choose to change to lesser-polluting vehicles over time, although this cannot readily be measured. As air quality impacts are not being modelled, distribution of air quality impacts is therefore also not possible to quantify.</p> <p>Summary: Potential small beneficial impact (not measurable), distributional impact neutral.</p>	
Accidents	<p>No accident analysis has been carried out. Changes to residents' parking permit charges will have very limited impact on trip-making, and hence accidents. Changes may be observed should residents dispose of vehicles, but should this happen it is impossible to reliably quantify the specific impact on accidents. As for user impacts, a small beneficial impact could be anticipated, if not measured, with the proposal being part of the suite of measures to facilitate broader outcomes of reduced congestion and vehicle intrusion. As accident impacts are not being modelled, distribution of accident impacts is therefore also not possible to quantify.</p> <p>Summary: Potential very small beneficial impact (not measurable), distributional impact neutral.</p>	<p>Distributional assessment: neutral (no measurable accident impact):</p> <p>No further analysis required</p>
Security	<p>There are no direct security impacts. A small security disbenefit could be anticipated, if not measured, if residents chose to park vehicles in locations remote from their residence and walk (albeit this could only occur in zones that are sufficiently close to areas with suitably lower levels of restriction). However, it is not possible to quantify. As security impacts are not being modelled, distribution of security impacts is therefore also not possible to quantify.</p> <p>Summary: Potential very small disbenefit (not measurable), distributional impact neutral.</p>	<p>Distributional assessment: neutral (no measurable security impact):</p> <p>No further analysis required</p>
Severance	<p>There are no direct severance impacts. A small beneficial severance impact could be anticipated, if not measured, with the proposal being part of the suite of measures to facilitate broader outcomes of reduced congestion and vehicle intrusion across residential areas. However, it is not possible to quantify. As severance impacts are not being modelled, distribution of accessibility impacts is therefore also not possible to quantify.</p> <p>Summary: Potential very small beneficial impact (not measurable), distributional impact neutral.</p>	<p>Distributional assessment: neutral (no measurable severance impact):</p> <p>No further analysis required</p>
Accessibility	<p>There are no direct accessibility impacts, as the proposal does not affect provision of public transport. A small beneficial accessibility impact could be anticipated, if not measured, with the proposal being part of the suite of measures to facilitate broader outcomes of reduced congestion and vehicle intrusion across residential areas. However, it is not possible to quantify. As accessibility impacts are not being modelled, distribution of accessibility impacts is therefore also not possible to quantify.</p> <p>Summary: Potential very small beneficial impact (not measurable), distributional impact neutral.</p>	<p>Distributional assessment: neutral (no measurable accessibility impact):</p> <p>No further analysis required</p>

Table 2.1: Distributional Impact Assessment – Initial Screening

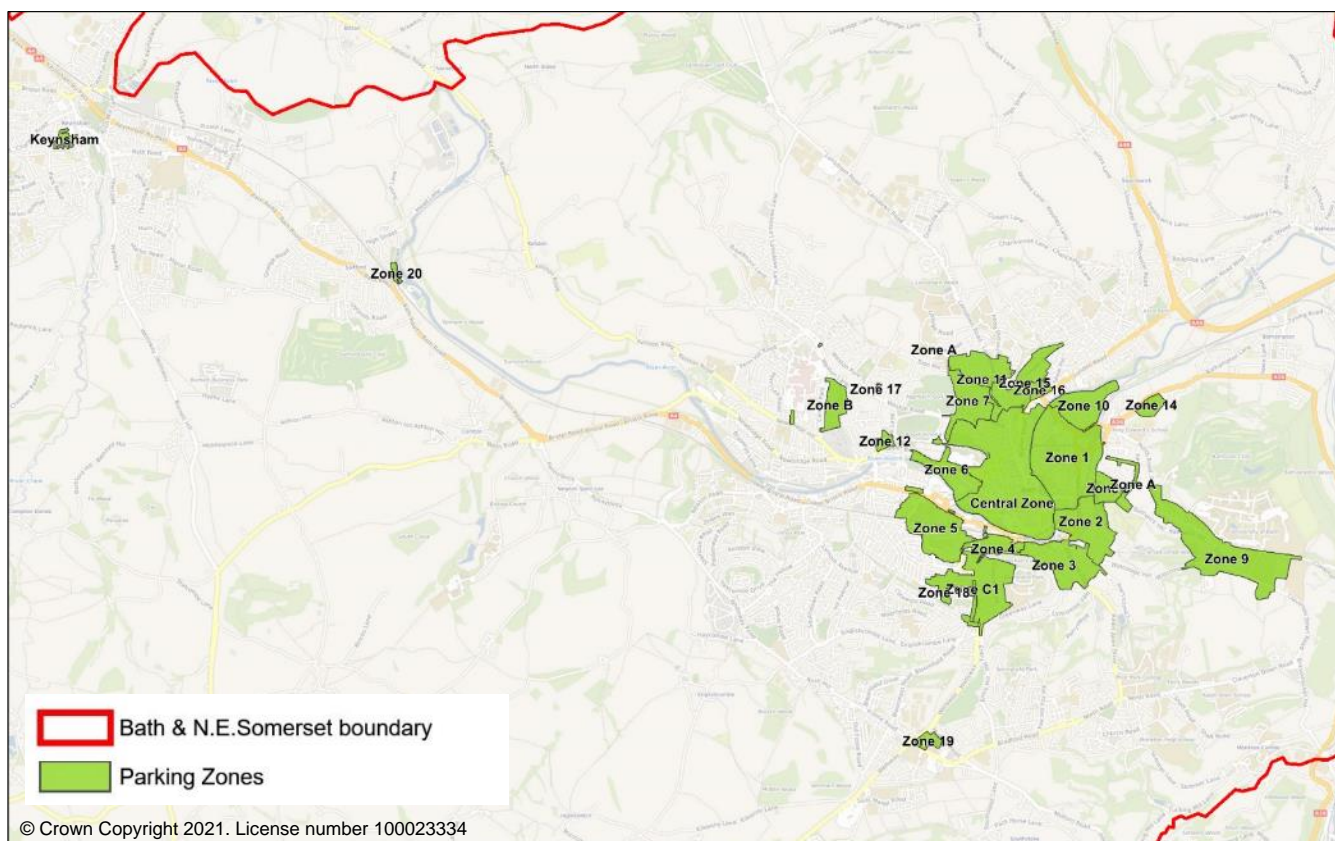
Impact Area	Conclusion	Next Step
Affordability	<p>Overall, the proposal will increase the cost of parking permits. The proposed changes to parking permit charges will result in increases for the majority of residents. Analysis of existing permits issues, with the new charging regime applied, indicates that around two thirds of existing parking permits will increase in price (assuming no response from residents to dispose of or replace more polluting, and hence higher permit cost vehicles). Only a small number of existing permit holders will see their permit costs reduce (around 1%), though the remaining approx. 30% will see no change.</p> <p>Distributional impacts assessed.</p>	Progress to step 2

3. Step 2: Assessment

3.1 Step 2a: Confirmation of areas impacted by the intervention

Figure 3.1 shows the impact area of the scheme, consisting of the population resident within the parking zones that will see changes to the charges for residents' parking permits.

Figure 3.1: Impact area – B&NES RPZ locations



3.2 Step 2b: Identification of social groups in the impact area

This section provides an assessment of the social groups affected by the proposals, based on the potential impacts identified in the screening assessment in Step 1 and the 'affected areas' identified in Step 2a.

The social groups considered in relation to each impact follow the guidance provided in TAG Unit A4.2. Table 3.1 reproduces Table 2 from TAG Unit A4.2, which shows all impacts and all demographic groups for completeness. In this report, demographic information has been considered for all social groups in the table, not just restricted to those directly related to impacts taken forward for distributational impact assessment.

3.2.1 Population Size

The population of B&NES was estimated at 188,678 in 2017 (ONS Population Estimates), an increase of more than 9% since 2007. Just over 25,000 people live in the RPZ areas (14% of the total population of B&NES). Population density varies between the city centre core and the rural hinterland. The city centre core, which is the location of most RPZs, is the most densely populated region within the local authority area. Based on 2011 Census data, the three most densely populated lower super output areas (LSOAs) are located within the city centre core and will be directly affected by implementation of changes to RPZs.

Table 3.1: Impact on Social Groups

Dataset/ Social Group	User Benefits	Noise	Air Quality	Accidents	Security	Severance	Access- ibility	Afford- ability
Income Distribution	✓	✓	✓				✓	✓
Children: % under 16		✓	✓	✓	✓	✓	✓	
Young Adults: % aged 16-25				✓			✓	
Older People: % aged 70+		✓		✓	✓	✓	✓	
Disabled People: % of pop					✓	✓	✓	
Black or Minority Ethnic origin: % of pop					✓		✓	
No Car or Van: % of households						✓	✓	
Carers: % of hh with dependent children							✓	

Source: Reproduction of Table 2 from TAG Unit A4.2 (Distributional Impact Appraisal) ⁴

3.2.2 Low Income Households

The distribution of low-income groups was determined through analysis of the 2019 Indices of Deprivation's (ID 2019) 'Income Domain'. The ID ranks LSOA areas in terms of levels of income, measured by the number of people that are out-of-work and those that are in work but who have low earnings. The income domain therefore acts as a suitable proxy for defining low-income groups.

Figures 3.2 and 3.3 map the distribution of low income LSOAs, and by proxy, low-income households across the impact area, where Figure 3.2 provides the distribution of income deprivation across the West of England, and Figure 3.3 is based on national (England) levels of income deprivation. Both figures demonstrate that generally, the impact area is a relatively affluent location. The analysis shows that most of the RPZs are in the middle or upper quintiles of income deprivation (i.e. middle to least deprived). Indeed, RPZ areas do not contain any areas in the nationally defined quintile of the most income deprived (though a section of the city centre covered by RPZ areas is in the most deprived quintile across the WoE).

3.2.3 Children

Figure 3.4 presents the distribution of children (aged under 16) across the impact area and demonstrates that there are few immediate RPZ areas have a high concentration of children, generally having a low concentration of children. Those that do are concentrated at the west and southern edges of Bath.

3.2.4 Young people

Figure 3.5 presents the distribution of young people (aged 16-25) across the impact area and demonstrates that most immediate RPZ areas have a relatively high concentration of young people.

⁴ Dark shading in Table 3.1 denotes impacts and demographic groups that are not linked in Table 2 of TAG A4.2. Light shading denotes impacts and demographic groups that are linked, have been discussed in this report for the study area, but are not material to distributional assessment of the scheme. Only affordability and income distribution is directly related to this scheme – as outlined in 'Screening' (section 2 of this report).

3.2.5 Elderly People

Figure 3.6 presents the distribution of elderly people (aged over 70) across the impact area and shows that the immediate RPZ areas are mixed in terms of their elderly population. The elderly population is primarily concentrated on the peripheral areas of Bath City, outside the RPZ boundaries. That said, there is a concentration of elderly people in a central and eastern areas that falls within.

3.2.6 Disabled People

Figure 3.7 presents the distribution of disability deprivation across the impact area, measured using the Census statistics of people whose day-to-day activities are limited. The map indicates that communities with a high disability ratio are located principally in the centre of Bath.

3.2.7 Ethnic Minorities

Figure 3.8 presents the distribution of ethnic minority populations across the impact area. The map indicates that communities are located principally in the centre of Bath.

3.2.8 Car ownership

Figure 3.9 presents the distribution of households without access to a car or van across the impact area. Clearly the change to residents' parking charges will have no impact on people who do not have a car or van available, though the map indicates that communities are located principally in the centre of Bath.

3.2.9 Dependent children

Figure 3.9 presents the distribution of households with dependent children across the impact area. The map indicates that communities are located principally in the centre of Bath.

3.2.10 Summary of demographic data

Table 3.2 summarises the identification of social groups in the area, with respect to impacts assessed.

Table 3.2: Step 2 Output Summary

Social group & amenities indicators			Affordability	B&NES	England
Resident population in impact area	Income distribution quintiles	1 (most deprived)	0%	4%	20%
		2	8%	12%	20%
		3	39%	21%	20%
		4	10%	28%	20%
		5 (least deprived)	43%	35%	20%
	Indicator population in the impact area		25,031	188,678	53.01m
Amenities present within the impact area	Schools/nurseries		✓		
	Playgrounds/sports field		✓		
	Parks and open spaces		✓		
	Surgery/Hospital		✓		
	Care homes/day centres		✓		
	Community centre		✓		

Figure 3.2: Concentration of low-income households relative to WoE levels

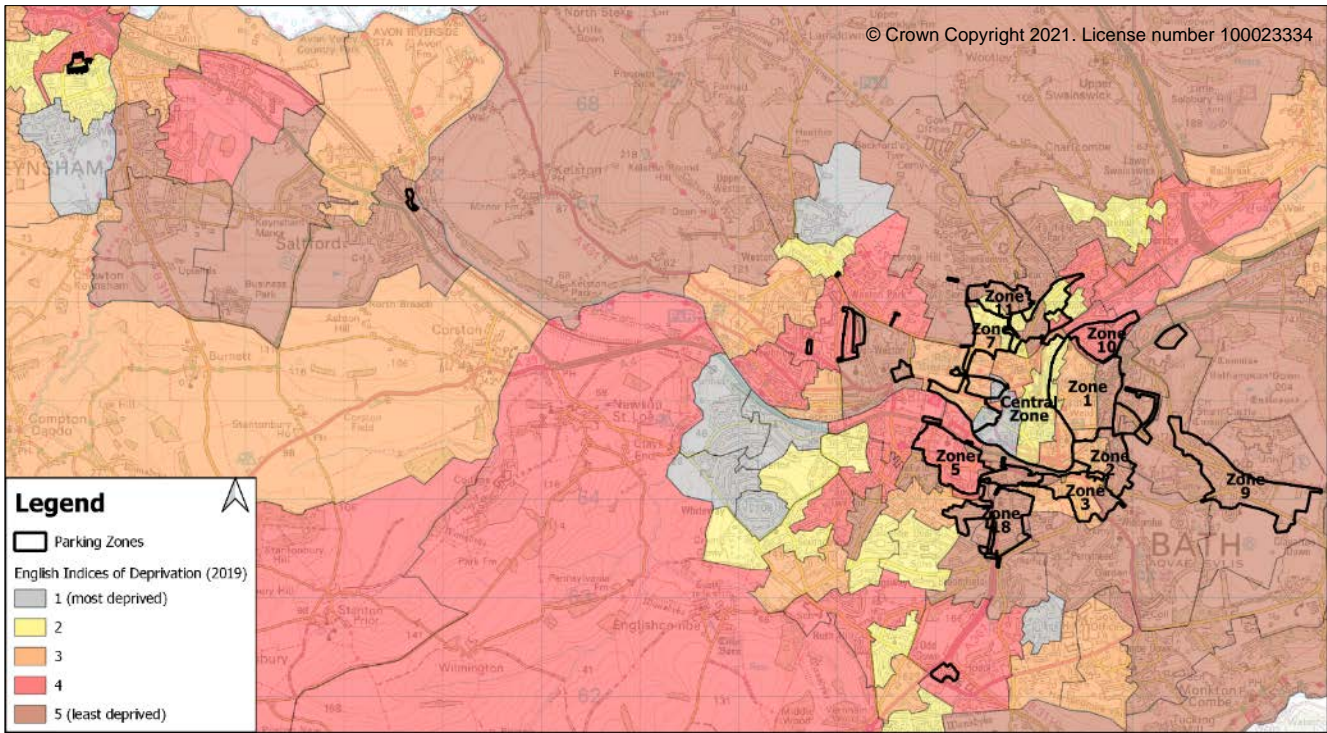


Figure 3.3: Concentration of low-income households relative to national (England) levels

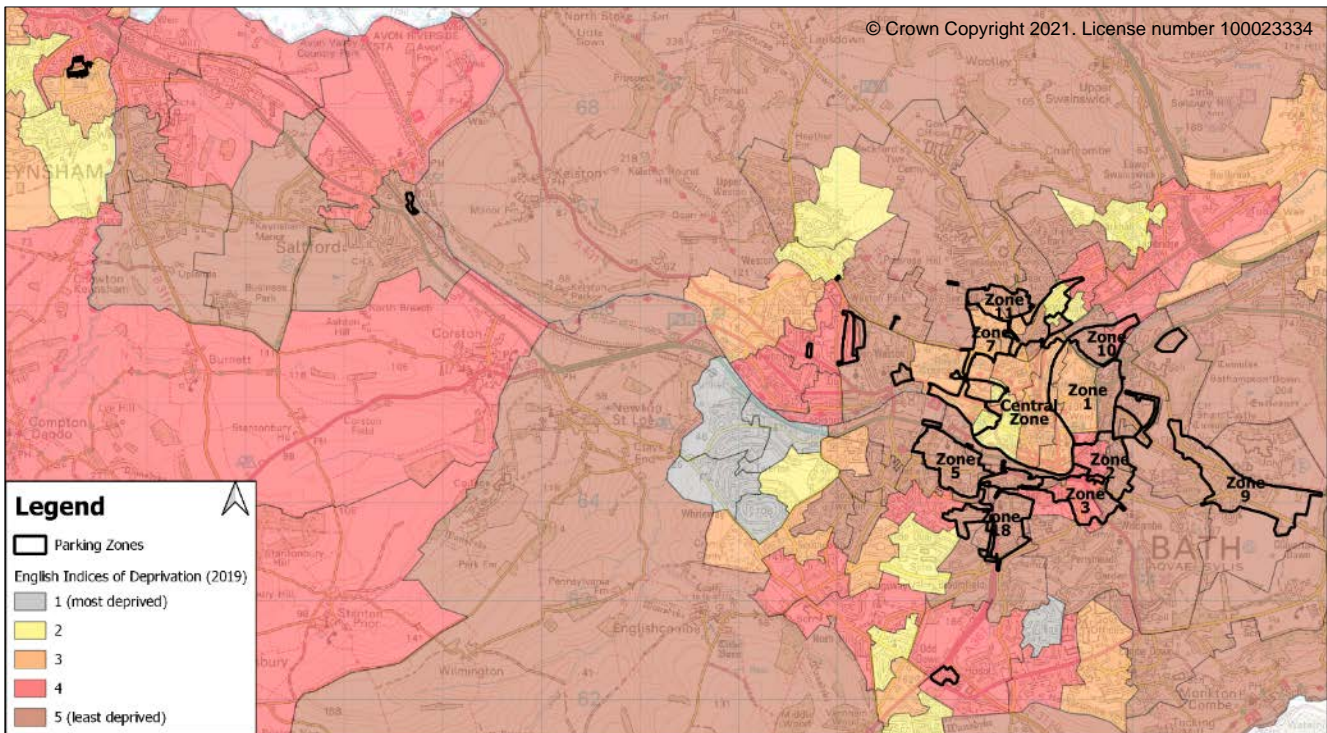


Figure 3.4: Concentration of children (age under 16)

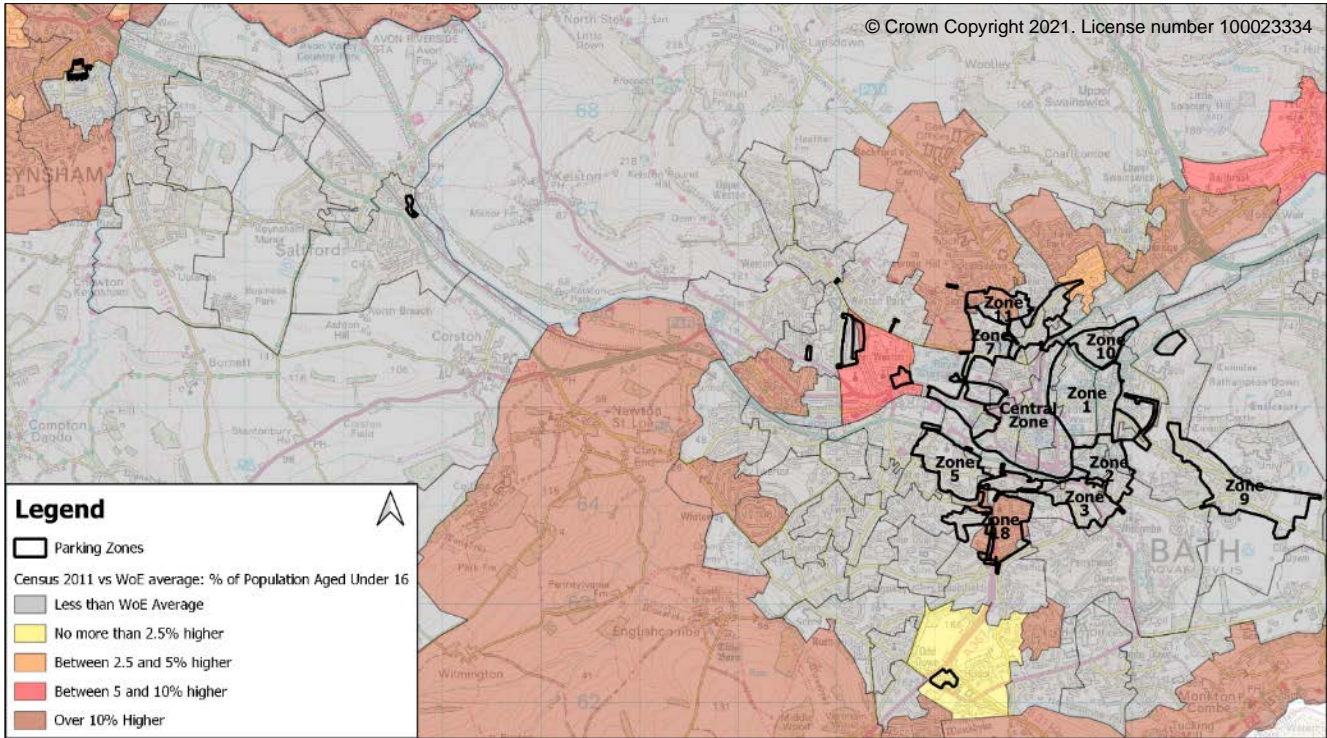


Figure 3.5: Concentration of young people (age 16-25)

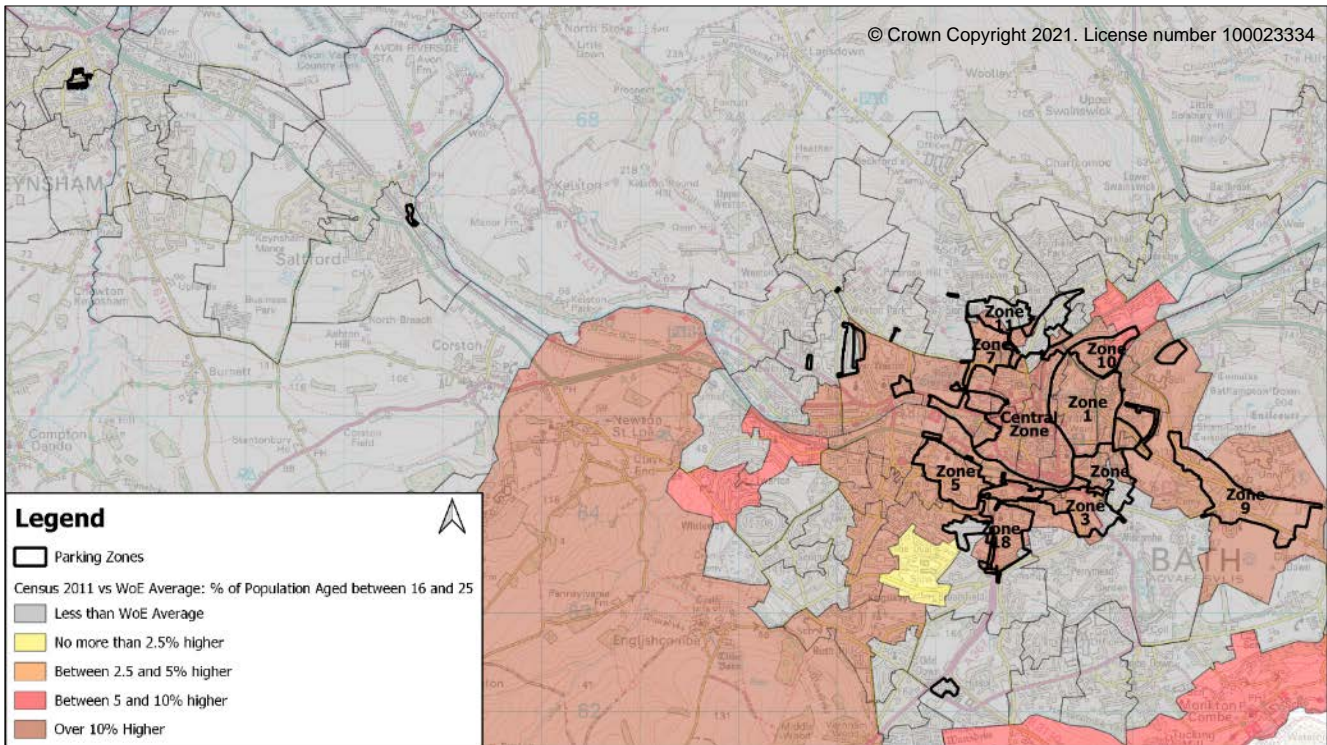


Figure 3.6: Concentration of elderly people (age >70)

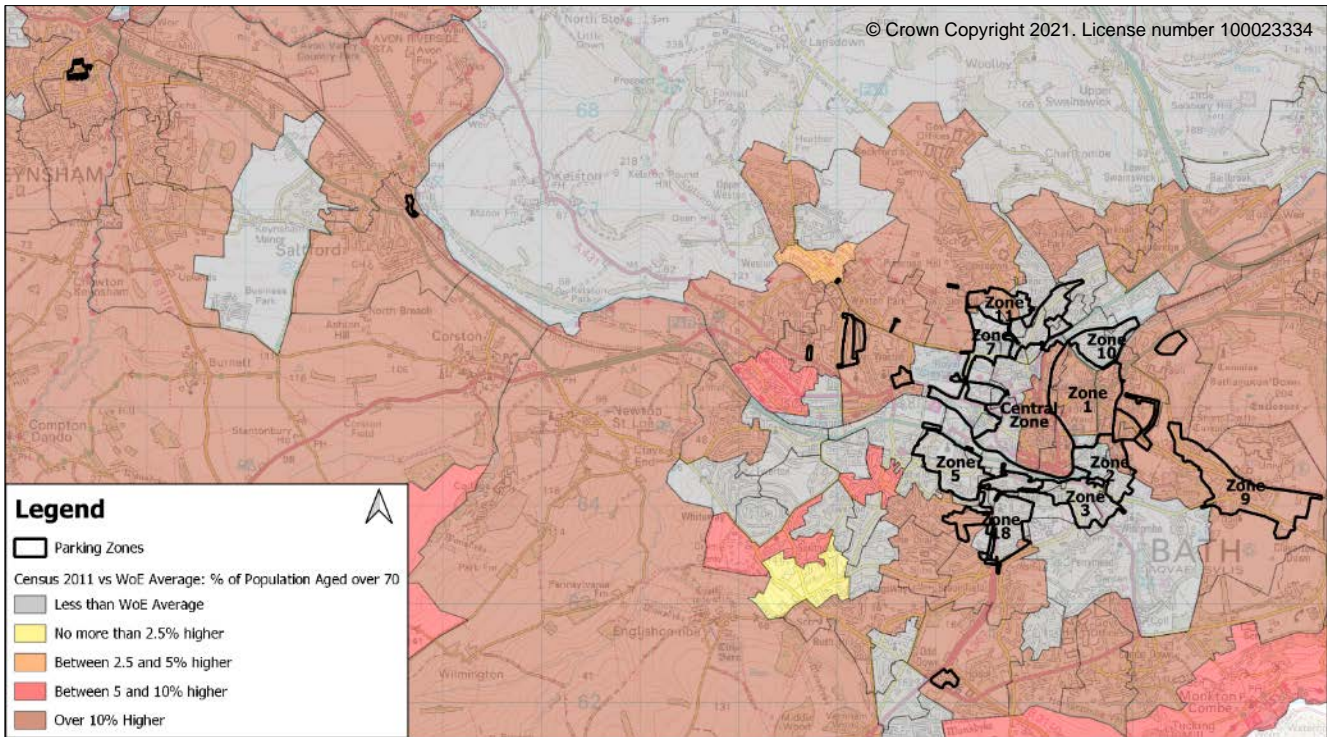


Figure 3.7: Concentration of disabled people

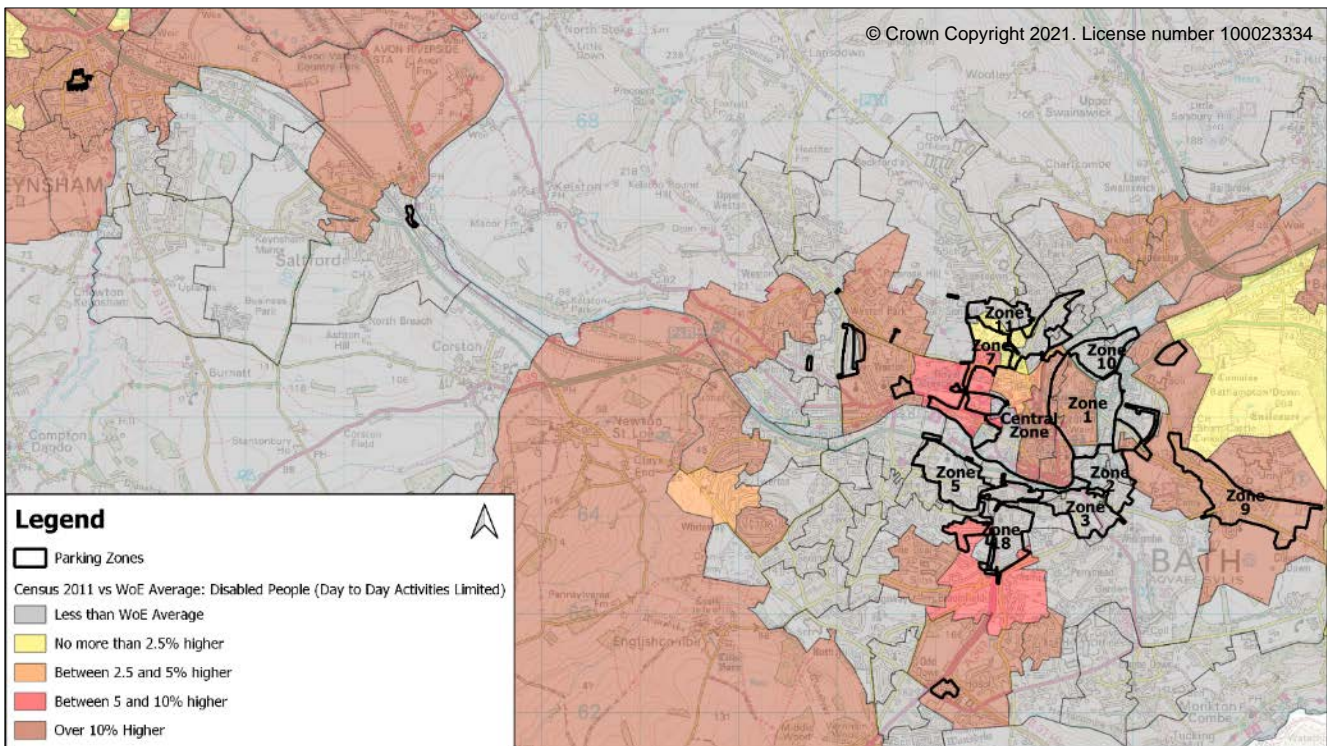


Figure 3.8: Concentration of ethnic minorities

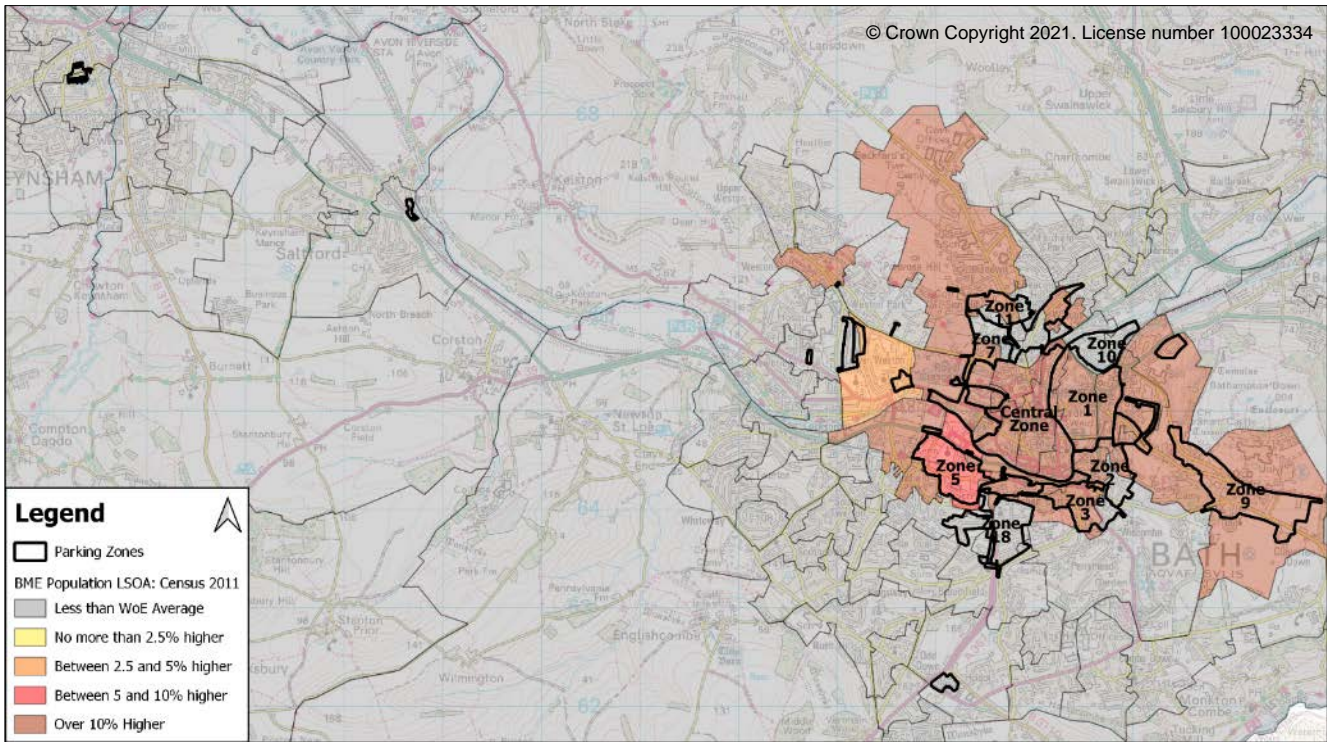


Figure 3.9: Concentration of households with no access to a car or van

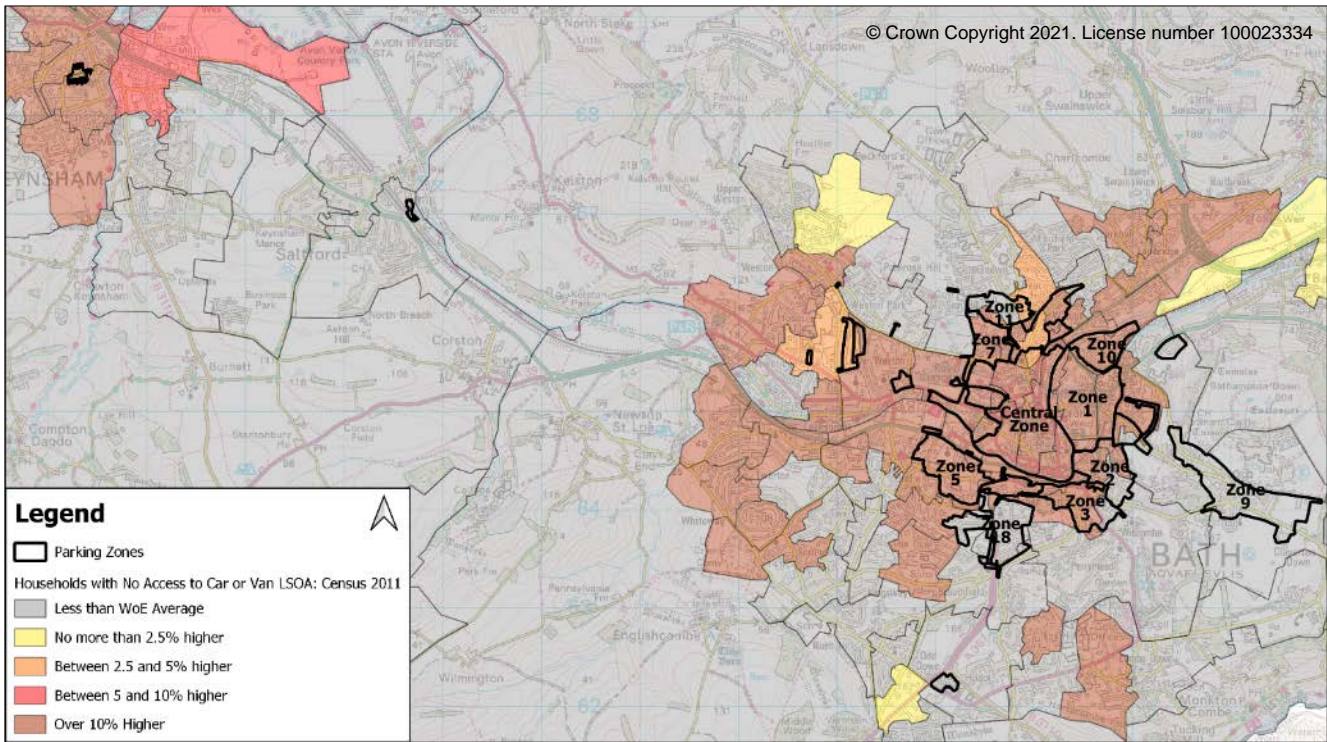
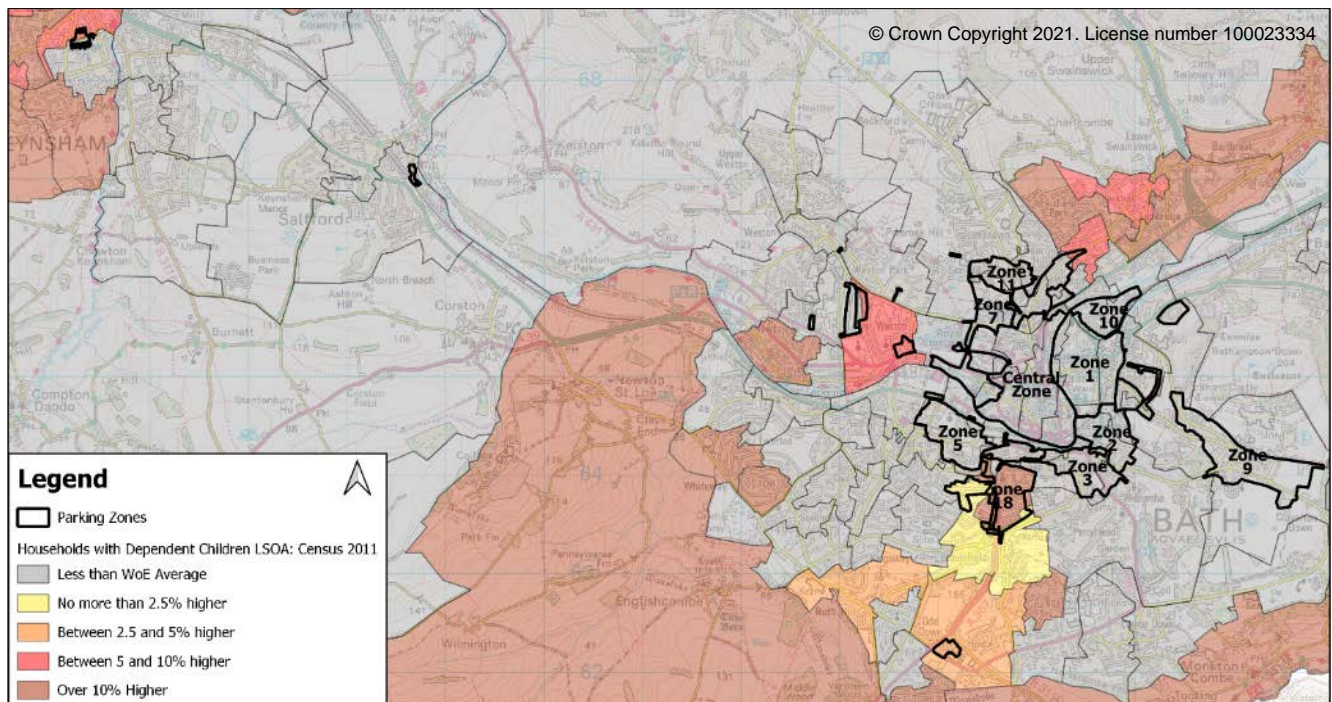


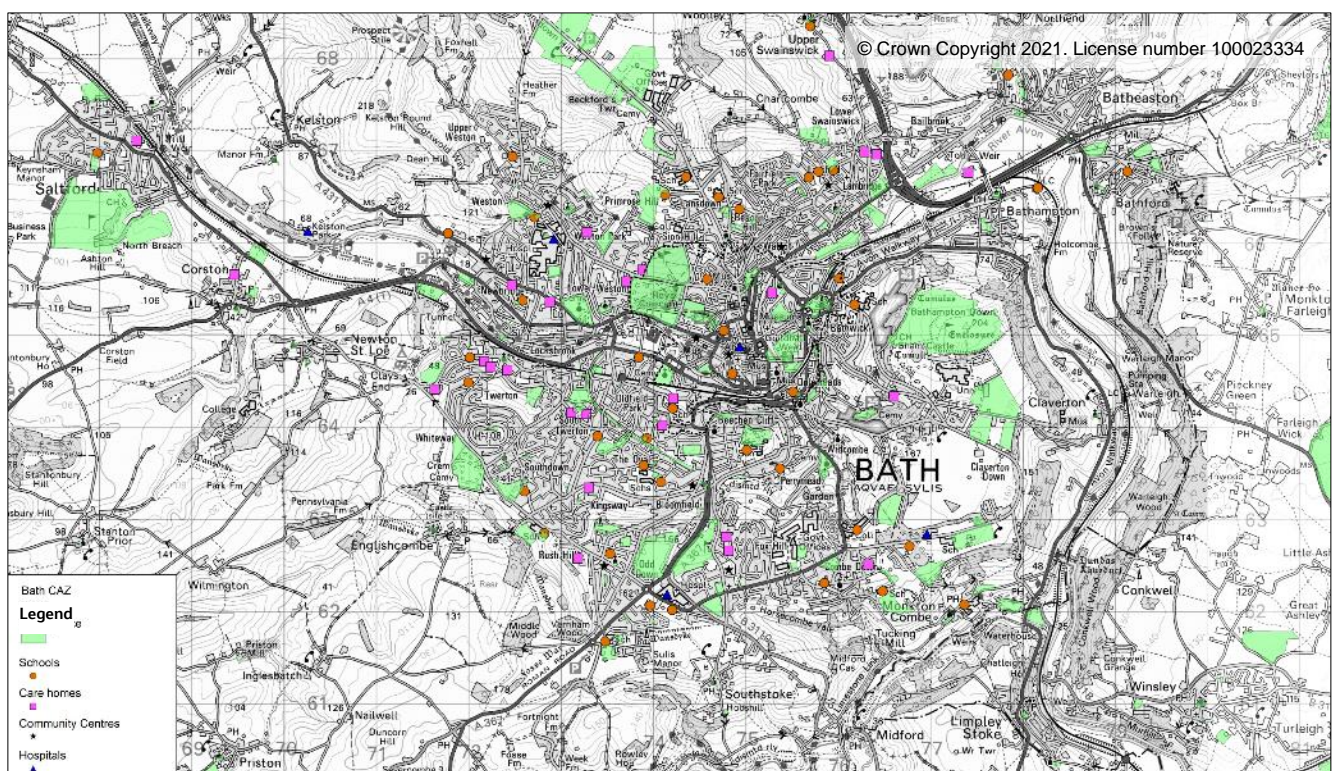
Figure 3.10: Concentration of households with dependent children



3.3 Step 2c: Identification of Amenities in the Impact Area

Figure 3.11 highlights the distribution of amenities and social infrastructure across Bath, for reference, as no trip-making impacts are anticipated and locations of amenities in the study area are not material to the assessment. There are though schools, community centres, care homes and green space all located within the RPZs, and in addition the main retail and employment core of the city is covered by RPZs.

Figure 3.11: Key social infrastructure



4. Step 3: Appraisal

The purpose of this section is to assess whether the impact areas identified in Step 2a are likely to significantly affect the social groups/establishment set out in Step 2b and 2c, and as such determine whether a full appraisal is necessary for each impact.

The only impact that was taken through screening is affordability.

4.1 Affordability

The distribution of the impacts on affordability are taken through to Step 3; this is the only impact considered thus, as outlined in section 2, screening. As outlined in Section 3, the area affected is the population of the RPZs themselves, with commensurate reference to wider B&NES population for reference.

Parking permit costs are set out in Table 4.1, including current and proposed future charging regimes. This indicates that existing prices are £100 for the 1st permit in a household, rising to £160 for the second. The proposed changes to permit costs will introduce a sliding scale of charges based on CO₂ emissions categories or engine capacities. Zero emission vehicles will still be charged for permits, though the price will reduce from current levels. Low emission non-diesel vehicles (up to CO₂ emissions of 111-130 g/km) will see unchanged permit prices; above this level, prices rise with emissions. All diesel vehicles will be subject to supplements on top of the basic charge, meaning that all diesel vehicle owners will experience an increase in permit costs from the current situation. The biggest charge for a 1st vehicle permit is £250 for a pre-2001 registered diesel vehicle over 2951 cc (with £400 for a second similar vehicle).

Table 4.1: Parking permit costs

permit >>	BASE		Increase	Electric & Petrol		Diesel supplement		Diesel TOTAL	
	1 st	2 nd		1 st	2 nd	1 st	2 nd	1 st	2 nd
CO2 emissions (g/km)									
0	£100	£160	50%	£50	£80	£12.50	£20	£62.50	£100
1-50	£100	£160	100%	£100	£160	£25	£40	£125	£200
51-75	£100	£160	100%	£100	£160	£25	£40	£125	£200
76-90	£100	£160	100%	£100	£160	£25	£40	£125	£200
91-100	£100	£160	100%	£100	£160	£25	£40	£125	£200
101-110	£100	£160	100%	£100	£160	£25	£40	£125	£200
111-130	£100	£160	100%	£100	£160	£25	£40	£125	£200
131-150	£100	£160	105%	£105	£168	£26.25	£42	£131.25	£210
151-170	£100	£160	110%	£110	£176	£27.50	£44	£137.50	£220
171-190	£100	£160	115%	£115	£184	£28.75	£46	£143.75	£230
191-225	£100	£160	120%	£120	£192	£30	£48	£150	£240
226-255	£100	£160	125%	£125	£200	£31.25	£50	£156.25	£250
Over 255	£100	£160	130%	£130	£208	£32.50	£52	£162.50	£260
Engine capacity (pre-2001)									
0-1550	£100	£160	125%	£125	£200	£31.25	£50	£156.25	£250
1550-1950	£100	£160	150%	£150	£240	£37.50	£60	£187.50	£300
1951-2950	£100	£160	175%	£175	£280	£43.75	£70	£218.75	£350
Over 2951	£100	£160	200%	£200	£320	£50	£80	£250	£400

Applying these charges to existing permit holders (assuming there are no changes in vehicles the permits apply to in the first instance) indicates that just over 30% of permits would remain the same price in the future, and 1% of permits would be cheaper. Others would increase, with almost 65% increasing cost by up to 50%, and the remainder more than this.

This is illustrated by RPZ area in Table 4.2.

Table 4.2: Parking permit cost changes – for selected zones⁵

Zone	Proportion of permits for which the cost would...			
	...reduce	...stay the same	...increase up to 50%	...increase more than 50%
Central Zone	1.3%	26.0%	67.3%	5.2%
Zone 1	0.6%	29.2%	66.2%	4.0%
Zone 2	0.9%	32.8%	62.5%	3.4%
Zone 3	1.6%	31.4%	61.2%	5.5%
Zone 4	0.6%	35.2%	58.6%	5.6%
Zone 5	0.3%	38.9%	58.9%	1.9%
Zone 6	0.6%	30.9%	64.0%	4.5%
Zone 7	1.0%	30.9%	64.2%	3.6%
Zone 10	0.4%	28.2%	67.5%	3.8%
Zone 11	3.5%	24.3%	66.1%	5.7%
Zone 15	0.9%	36.5%	60.0%	2.4%
Zone 18	0.6%	29.9%	64.8%	4.8%
ALL	1.0%	30.2%	64.4%	4.3%

Note: figures do not all sum to 100%, as a result of rounding and a small number of unknown vehicle types in source data

As such, there is a clear increase in the cost of car ownership for the majority of car owning people living in the RPZ areas, which affects affordability. The pattern of cost changes is broadly similar across the individual RPZ areas, and also broadly similar to the total of all permits across all zones, suggesting there is not a significant difference in the private permitted vehicle fleet across the RPZ areas.

There is no direct mitigation for this proposal, though car owners could mitigate cost increases in the medium to longer term by relinquishing and/or replacing the vehicles that incur the higher permit charges. This is, in effect, a key anticipated outcome of the policy, to encourage ownership, and hence also use, of less polluting cars in the permitted areas. Demographic analysis in section 3 indicates that car ownership is already lower than regional averages in the RPZ areas within B&NES.

To understand the change in permit charges across the city more fully, and assess the distributional impact on affordability, the RPZ areas and vehicles currently listed in the B&NES database as having permits in the various RPZ areas, have had their locations cross-referenced with Index of Deprivation (ID 2019) income deprivation statistics for LSOAs. This allows identification of income deprivation in RPZ areas in quintiles of deprivation statistics from 'most' to 'least' income deprived, and more pertinently the permits located in these areas, from which changes in cost can be cross-referenced with income deprivation quintiles. This is a key aspect of the distributional assessment of affordability impacts, in that this is seeking to understand if there are any areas of income deprivation that are disproportionately impacted by the proposals compared to the distribution of population in these areas.

⁵ Selected zones – only show figures for zones where there are more than 100 permits in the source data

Table 4.3 illustrates the distributional impacts of affordability of permit changes. In the first instance, it is notable that income deprivation in the RPZ is not reflective of B&NES as a whole. No areas in the RPZs fit into the most deprived quintiles (across England), although some 4% of the population of B&NES are. More people are in the least income deprived quintile in the RPZ areas than B&NES, though far fewer proportionally in the 4th quintile and significantly more in the middle (3rd) quintile.⁶

Table 4.3: Distributional impacts assessment– affordability

	IMD Income Domains (quintiles)					Total
	most deprived	← →	least deprived			
	1	2	3	4	5	
Permit costs reducing	-	5	26	6	23	60
...share of reducing permit costs	-	8.3%	43.3%	10.0%	38.3%	100%
Permit costs unchanged	-	150	700	139	838	1,827
...share of unchanged permit costs	-	8.2%	38.3%	7.6%	45.9%	100%
Permit costs increasing	-	300	1,741	301	1,820	4,162
...share of increasing permit costs	-	7.2%	41.8%	7.2%	43.7%	100%
Net impact (increase/decrease)	-	145	1,015	156	959	2,275
...share of net impact	-	6.4%	44.6%	6.9%	42.2%	100%
Population in impact area (RPZs)	-	1,992	9,648	2,637	10,754	25,031
...share of pop. In impact area	-	8.0%	38.5%	10.5%	43.0%	100%
Share of total population In B&NES	4.0%	11.9%	21.0%	27.9%	35.2%	100%
Distributional Assessment ⁷	-	×	×××	×	××	

Comparison between the net impact on permit charges across the RPZs indicates that the distributional impact of affordability is slightly uneven compared to the distribution of income deprivation. Increases in permit cost have a lower proportional impact on the more deprived quintiles (1 and 2), though proportionally more permit holders will see an increase in cost in the middle quintile (3) than there are residents, and far lower proportionally in quintile 4; the least deprived quintile (5) sees a proportional share of change.

Overall therefore, while the distributional assessment of affordability indicates a slightly uneven appraisal, it is the middle/upper quintiles (3 & 4) that are inconsistent with the proportions of population in those quintiles. Importantly, given that affordability is intrinsically linked with income deprivation in the distributional impact appraisal, the most income deprived quintiles (1 & 2) are less proportionally impacted compared to the proportion of population in those quintiles.

⁶ It should be noted that this could be at least partly related to the granularity of the source data for income deprivation, in comparing LSOAs for ID 2019 to the RPZ areas themselves. Unsurprisingly the boundaries do not exactly match in many (if any) locations, and there is sometimes a reasonable disparity between sizes of LSOAs and RPZ areas. As such, interpretation of the intersections has been required,

⁷ × = slight: adverse impact; proportion of the population impacted is smaller than the proportion of the population of the income quintile overall
 ×× = moderate: adverse impact; proportion of the population impacted is broadly in line with proportion of the population of the income quintile
 ××× = large: adverse impact; proportion of the population impacted significantly greater than proportion of the population of the income quintile

5. Summary

A matrix of distributional impact assessment is presented in Table 5.1.

Table 5.1: Distributional Impact – appraisal matrix

	Distributional impact of income deprivation					Are impacts distributed evenly?	Key impacts - Qualitative statements
	1 (most deprived)	2	3	4	5 (least deprived)		
User benefits							Not assessed.
Noise							Not assessed.
Air quality							Not assessed.
Affordability	-	x	x x x	x	x x	x	The net impact on permit charges across the RPZs indicates that the distributional impact of affordability is slightly uneven compared to the distribution of income deprivation. Importantly though, given that affordability is intrinsically linked with income deprivation, the most income deprived quintiles (1 & 2) are less proportionally impacted compared to the proportion of population in those quintiles. The impact on the upper (4) and middle (3) quintiles are the most uneven, being under and over-represented respectively; impact on the least deprived quintile is proportionate to its share of population.
Accessibility							Not assessed.

AST entry	Social groups						User groups				Qualitative statement (including any impact on residential population AND identified amenities)
Impact	Children & young	Older people	Carers	Women	Disabled	BME	Peds	Cyclists	Motor-cyclists	Young male drivers	
Noise											Not assessed.
Air Quality											Not assessed.
Accidents											Not assessed.
Security											Not assessed.
Severance											Not assessed.