

Exeter
City Council

Exeter City Council Air Quality Action Plan

In fulfilment of Part IV of the
Environment Act 1995
Local Air Quality Management

2019

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Executive Summary

This Air Quality Action Plan (AQAP) has been produced as part of our statutory duties required by the Local Air Quality Management framework. It outlines the action we will take to improve air quality in Exeter City Council between 2019 and 2024.

This action plan replaces the previous action plan which ran from 2011. Projects delivered during the last action plan period include:

- Exeter Low Emissions Strategy.
- Newcourt station.
- Cranbrook station.
- Tithebarn link for new bus route to Cranbrook.
- Car clubs on new areas of development.
- Extensions and improvements to the cycling network.
- Personal exposure projects to highlight the beneficial effects of alternative travel modes, or travel routes on personal exposure to PM_{2.5}.
- Taxi emissions licensing standards.
- Reductions in Exeter City Council fleet fuel use and roll out of electric pool cars.
- 6 diesel vans in the ECC fleet have been replaced with electric.
- Bridge Road widening.
- Car club electric bike hire scheme (Co-Bikes).
- Devon-wide Ecostars scheme to reduce emissions from commercial vehicle fleets.

Over the same period, nitrogen dioxide concentrations have generally reduced or remained stable in the city.

Air pollution is associated with a number of adverse health impacts. It is recognised as a contributing factor in the onset of heart disease and cancer. Additionally, air pollution particularly affects the most vulnerable in society: children and older people, and those with heart and lung conditions. There is also often a strong correlation with

equalities issues, because areas with poor air quality are also often the less affluent areas^{1,2}.

The annual health cost to society of the impacts of particulate matter alone in the UK is estimated to be around £16 billion³. Exeter City Council is committed to reducing the exposure of people in Exeter to poor air quality in order to improve health. The Corporate Strategy for 2018 to 2021 and the emerging Exeter Vision for 2040 commit the Council to tackling congestion, improving accessibility and increasing activity levels (including active travel). This Action Plan is highly complementary to these existing corporate priorities, and the measures identified in section 5 are listed under headings from this strategy:

- Tackling congestion and accessibility;
- Promoting Active & Healthy Lifestyles;
- Building Great Neighbourhoods.

The Corporate Plan and emerging Vision contain a key aspiration for the city which is relevant to this plan. This is that by 2021 cycling to work will have doubled (from 6% to 12%), and 50% of people will be walking or cycling to work within the city.

The Action Plan focuses on the Heavitree corridor, where the greatest reductions in emissions are required. An integrated plan for this whole area will be developed that will increase active travel and change the way that existing roads are used (including filtered permeability). As part of this process care will be taken that any traffic displaced from the Heavitree corridor does not compromise the effectiveness of other city-wide measures to achieve compliance at the other locations.

In this AQAP we outline how we plan to effectively tackle air quality issues within our control. However, we recognise that there are a large number of air quality policy areas that are outside of our influence (such as vehicle emissions standards agreed in Europe), but for which we may have useful evidence, and so we will continue to work with regional and central government on policies and issues beyond Exeter City Council's direct influence.

¹ Environmental equity, air quality, socioeconomic status and respiratory health, 2010

² Air quality and social deprivation in the UK: an environmental inequalities analysis, 2006

³ Defra. Abatement cost guidance for valuing changes in air quality, May 2013

Responsibilities and Commitment

This AQAP was prepared by Environmental Health and Licensing at Exeter City Council with the support and agreement of the following officers and departments:

Senior Management Board

This AQAP has been approved by:

Senior Management Board

This AQAP will be subject to an annual review, appraisal of progress and annual reports to Scrutiny Committee (Place). Progress each year will be reported in the Annual Status Reports (ASRs) produced by Exeter City Council, as part of our statutory Local Air Quality Management duties.

If you have any comments on this AQAP please send them to Alex Bulleid at:

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1 Introduction

This report outlines the actions that Exeter City Council will deliver between 2019 and 2024 in order to reduce concentrations of air pollutants and exposure to air pollution; thereby positively impacting on the health and quality of life of residents and visitors to the city.

It has been developed in recognition of the legal requirement on the local authority to work towards Air Quality Strategy (AQS) objectives under Part IV of the Environment Act 1995 and relevant regulations made under that part and to meet the requirements of the Local Air Quality Management (LAQM) statutory process.

This Plan will be reviewed every five years at the latest and progress on measures set out within this Plan will be reported on annually within Exeter City Council's air quality Annual Status Report.

2 Summary of Current Air Quality in Exeter City Council

Please refer to the latest Annual Status Report from Exeter City Council (www.exeter.gov.uk/airpollution) for full details of all monitoring undertaken.

There are two national objectives for levels of nitrogen dioxide. These are for the average level over a whole year, which should be below 40 $\mu\text{g}/\text{m}^3$, and the average level for one hour, which should be below 200 $\mu\text{g}/\text{m}^3$. It is not easy to measure the average level for one hour, so a proxy has been developed by the Department for Environment, Food and Rural Affairs (DEFRA) which is that the average over a whole year should be below 60 $\mu\text{g}/\text{m}^3$. The annual average objective applies to residential, hospital and educational sites. The hourly average objective applies to these sites and to busy streets and workplaces as well.

Exeter City Council has a monitoring network that is designed to identify the areas with the highest levels of nitrogen dioxide, at the locations where the objectives apply. Most of the monitoring sites are therefore on residential properties in close proximity to the busiest roads and junctions in the city. The results of the monitoring conducted by the City Council is not representative of typical or average conditions across the city. Instead it is indicative of the worst case locations.

In recent years the annual average objective has not been met at a number of places in the city. These are Alphington Street, the junction of Blackboy Road and Pinhoe Road, and along the Heavitree corridor into the city. The highest levels are measured on the Heavitree corridor, at East Wonford Hill. Here levels are close to also exceeding the hourly objective, but have not (in the last three years) been above that target. The measured results can be found in table A.3 of the Annual Status Report (www.exeter.gov.uk/airpollution). Trends in annual nitrogen dioxide concentrations can also be seen in Figure A.1 of that report.

A few sites have levels between 35 and 40 $\mu\text{g}/\text{m}^3$ (i.e. are close to but not above the objective level of 40). These are York Road, Barrack Road at Livery Dole, Sidmouth Road and Topsham Road near Tollards Road. Away from these locations, but still along the busy routes into and around the city, concentrations of nitrogen dioxide are in the range between 25 and 35 $\mu\text{g}/\text{m}^3$.

As you move away from busy roads, levels fall below 25 $\mu\text{g}/\text{m}^3$. Typical suburban streets with only local traffic flows experience levels of between 13 and 25 $\mu\text{g}/\text{m}^3$. The majority of the population of Exeter therefore live in locations with concentrations of nitrogen dioxide well below the objective, but a small number are exposed at home to levels above the objective. No schools in Exeter experience levels above the objective.

The Annual Status Report also summarises the results of particulate pollution measurements (PM_{10}). No areas in the city are thought to exceed the objectives for this type of air pollution. Measurements of $\text{PM}_{2.5}$ have been made in Exeter since July 2018 following the replacement of the fixed air quality monitoring equipment. This data will be presented in future annual reports on air pollution.

3 Exeter City Council's Air Quality Priorities

3.1 Public Health Context

The air quality objectives were designed to be protective of human health so at the most basic level we can say that harm to health occurs where people live in areas which exceed the nitrogen dioxide objective.

It has not been possible to look directly at the health of these people to see whether they have a particular prevalence of those medical problems associated with poor air quality. This is because of the relatively small number of households affected, which means that statistical approaches would not be able to reliably identify any air quality impact on health. There is also a concern that such a study would reveal the medical histories of the individuals involved. (The small number of people included would make identification of individuals with specific diseases more likely than would be the case in a study of a larger group).

The evidence for health impacts below the nitrogen dioxide objective of 40 $\mu\text{g}/\text{m}^3$ has recently been reviewed by COMEAP (the Committee on the Medical Effects of Air Pollution). There is considerable range of scientific opinion but it seems possible to say that some harm will occur below this objective (although not necessarily caused by the NO_2 itself). The committee did not produce a recommended method to assess the burden of exposure to long-term NO_2 alone on mortality, although the majority of the committee did support methods to allow the assessment of the health benefits of cutting NO_2 concentrations. Therefore we cannot say with confidence what harm occurs below the NO_2 objective or whether harm occurs to the whole population or just to those who are particularly sensitive. We also cannot say whether there is a threshold below which no harm occurs.

The understanding of the health effects of NO_2 is so difficult because of the limited number of studies to draw from, and the presence of other pollutants (including $\text{PM}_{2.5}$) which tend to co-vary with NO_2 and which have health impacts of their own. Thus there remains a probability that some (and possibly the majority or even the whole of) the harm is caused not by NO_2 , but by these other pollutants which are not measured but which are found in association with the NO_2 . Practically, this uncertainty makes little difference to the AQAP as measures will in the main reduce

all co-related pollutants as well as NO₂. The exception to this would be any measures which involve increased uptake of electric vehicles. These have zero local NO_x emissions, and zero tailpipe PM_{2.5} emissions but do still produce some particulate matter from road, brake and tyre wear.

Some efforts have been made by Public Health England to quantify the impact of air pollution on health for individual local authority areas, (although this has not been updated following the recent COMEAP report referred to above). This is based upon modelled pollution data, and estimates of the increased risk of certain diseases or increased risk of mortality which occur with increases in pollution. These are known as risk coefficients.

PHE have used risk coefficients for PM_{2.5} to show that it has an impact in Exeter which is equivalent to shortening the life of 42 people per year. This statistic is not easy to understand, and the exact figure is affected by the age and health of the Exeter population as well as by PM_{2.5} concentrations.

This assessment of mortality also ignores the impacts of air pollution throughout people's lives. Research by Public Health England has modelled the impact of air pollution on the prevalence of certain diseases to which poor air quality has been linked (Table 3.1). The model also estimates the likely cost of these diseases to the healthcare system.

Table 3.1 Modelled Disease Prevalence in Exeter in 2017

	Number of individuals in Exeter in 2017 living with disease (per 100,000 of the population)	Pollutants thought to contribute to disease
Asthma	13800	NO ₂ and PM _{2.5}
Diabetes	4580	NO ₂ and PM _{2.5}
Lung cancer	132	NO ₂ and PM _{2.5}
Coronary Heart Disease	2020	PM _{2.5}
COPD	1740	PM _{2.5}
Stroke	2320	PM _{2.5}
Costs	£20.3M per 100,000 of the population	

The model, and the other approaches discussed above, are all highly technical. They are based on estimates and assumptions about pollution levels, disease prevalence and costs. As such, although it is important for decision makers to understand the results, it is not easy for the lay public to understand either the outputs, or the

limitations of the models. Simpler messages need to be developed to explain the impact of air pollution on health to local people. This is included as a specific measure in table 5.1 of this Action Plan.

3.2 Planning and Policy Context

In recognition of scale of development beyond the City Council's boundaries, and the need for the neighboring authorities to work together, a Greater Exeter Strategic Plan (GESP) is currently being prepared. This sits above the individual Local Authority Core Strategies, to guide development across Exeter, Mid Devon, East Devon and Teignbridge. It is expected that an initial consultation will take place in 2019.

This action plan contains ambitious measures which the City Council will seek to have included in the emerging GESP (table 5.1).

3.3 Source Apportionment

The AQAP measures presented in this report are intended to be targeted towards the predominant sources of emissions within Exeter's area.

A source apportionment exercise was carried out by Exeter City Council in 2018. This identified that within the AQMA, the percentage source contributions were as follows:

Heavitree Corridor

Figure 3.1 shows that cars make up 84% of the traffic flow at East Wonford Hill, and release 49% of the NOx emissions. The next highest emissions at this location are from Bus & Coach (23%) and then LGVs (19%). The pattern is very similar on Fore Street at the Butts Road junction (which is close to the Fore Street Heavitree (inbound) air quality monitoring point) and at Fore Street east of Homefield Road (which is close to the monitoring point at Salutory Mount).

On Heavitree Road there are measured exceedences of the air quality objective near Rowancroft and west of Barrack Road. At these two locations cars make up approximately 82% of the flow, and cause 40% of the emissions. Bus & Coach is the next largest emitter of pollution, creating 35% of the emissions at Rowancroft and 40% to the west of Barrack Road.

Alphington Street

Cars make up 95% of the traffic flow on Alphington Street (figure 3.2), and release 73% of the NOx emissions (figure 3.3). The next highest emissions are from HGVs (19%) and then Bus & Coach (7%).

Pinhoe Road / Polsloe Road / Blackboy Road / Mount Pleasant Road junction

Cars make up 85% of the traffic flow at this junction (figure 3.4), and release 56% of the NOx emissions (figure 3.5). The next highest emissions are from LGVs (20%), Bus & Coach (16%) and then rigid HGVs (7%).

Figure 3.1 The percentage of different vehicle types making up the total vehicle flow and total emissions at key locations along the Heavitree corridor

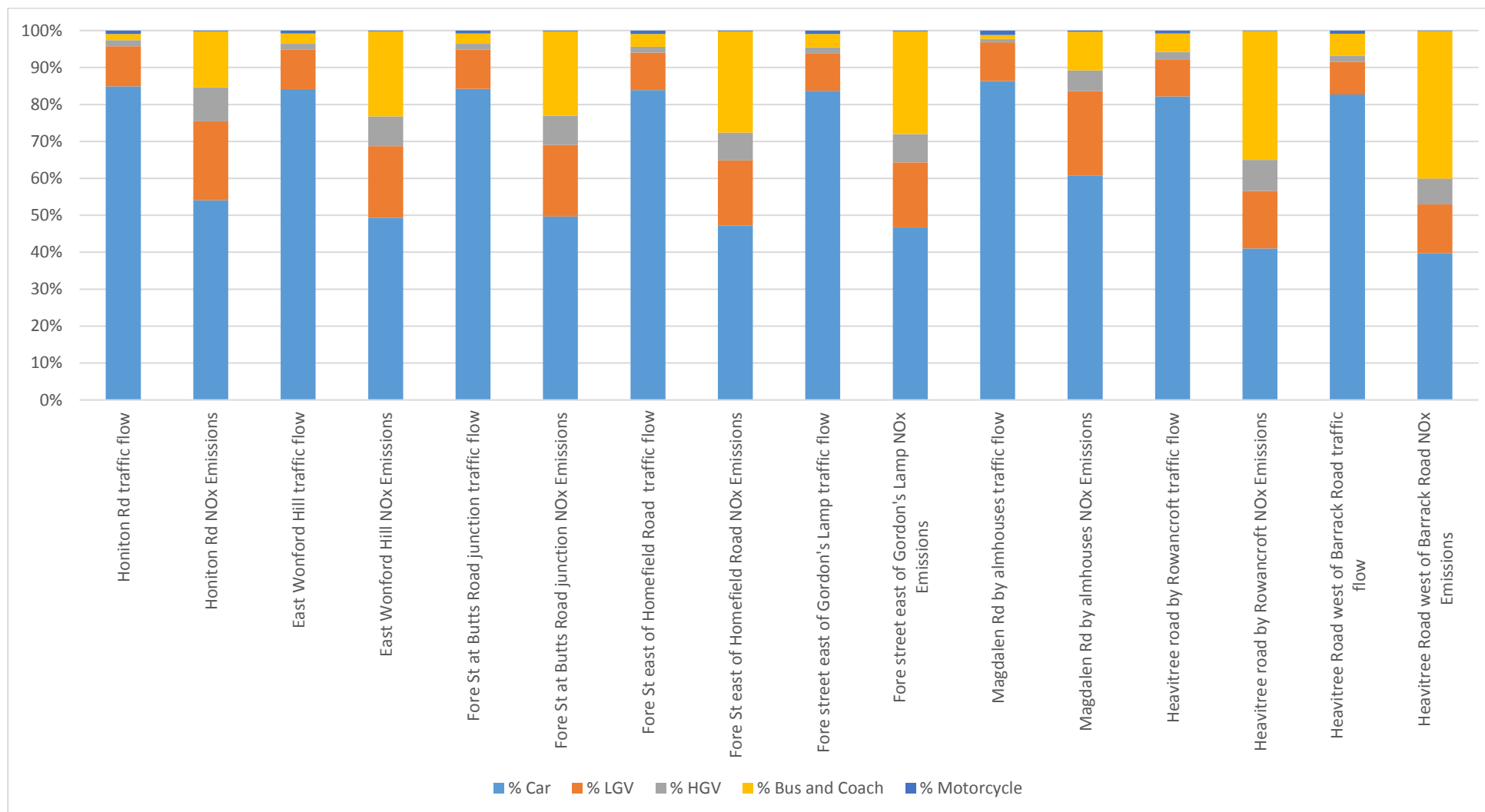


Figure 3.2 The percentage contributions of different vehicle types to total flow on Alphington Street

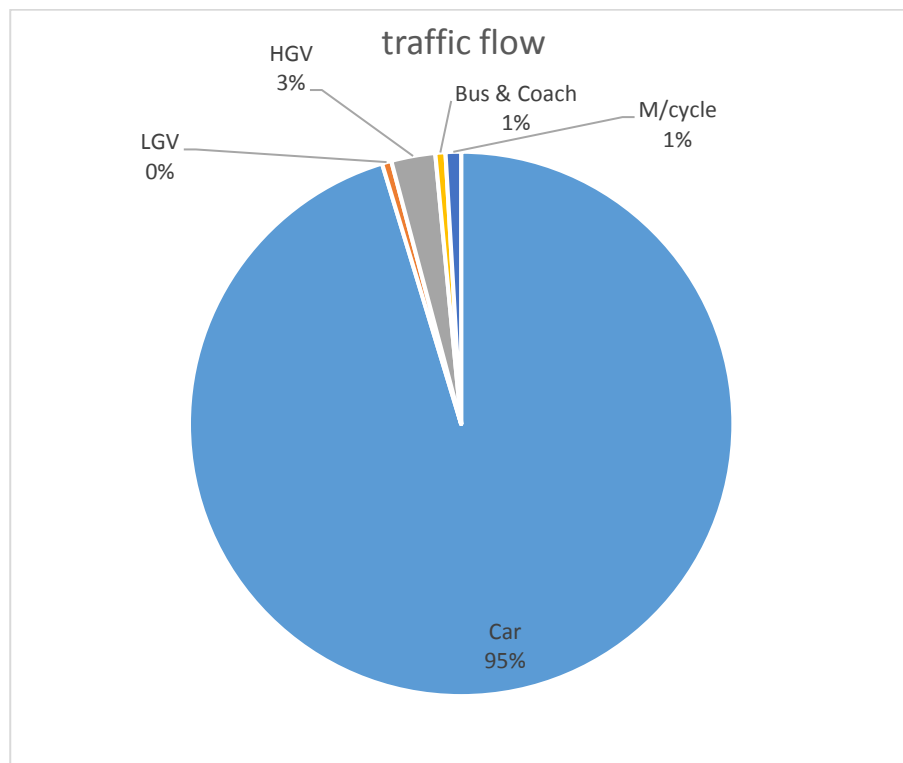


Figure 3.3 The percentage contributions of different vehicle types to total NOx emissions on Alphington Street

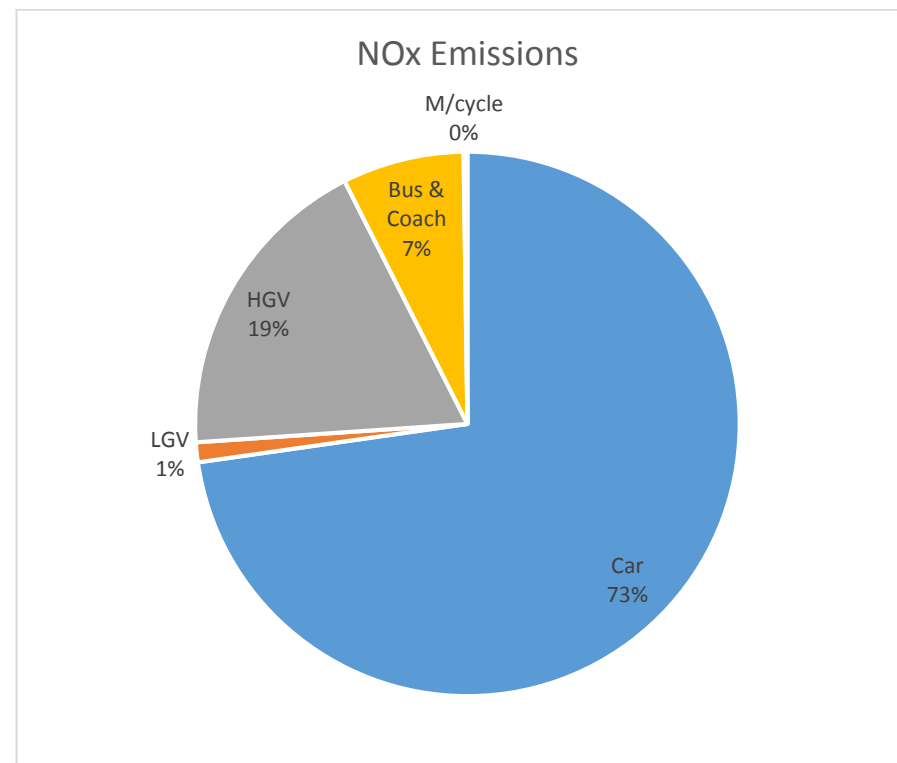


Figure 3.4 The percentage contributions of different vehicle types to total flow at the Pinhoe Road / Polsloe Road / Blackboy Road / Mount Pleasant Road junction

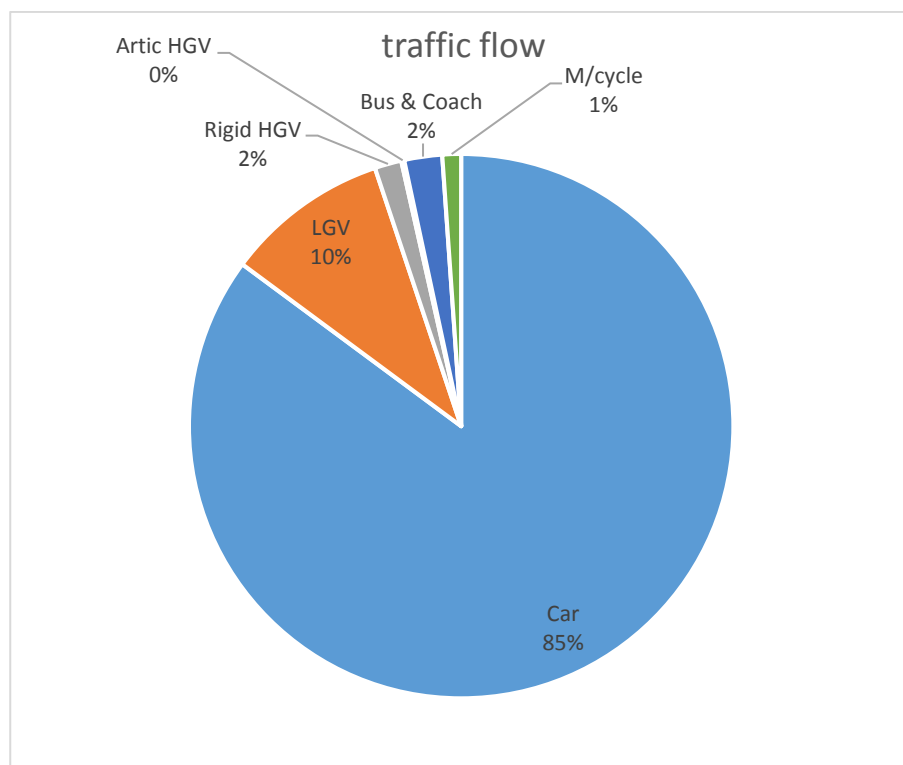
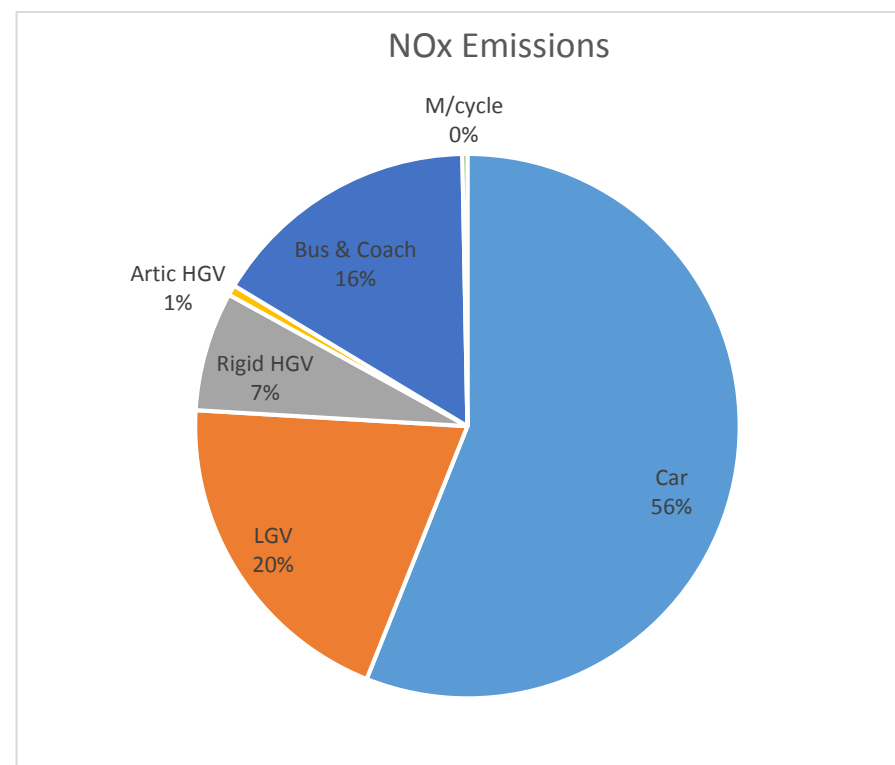


Figure 3.5 The percentage contributions of different vehicle types to total NOx emissions at the Pinhoe Road / Polsloe Road / Blackboy Road / Mount Pleasant Road junction



3.4 Required Reduction in Emissions

Table 3.2 below shows the required reduction in NO₂ concentrations and Road NO_x emissions, based on the 2017 measured levels at those monitoring locations where the objective was exceeded. For information, Table 3.3 shows the required reduction at East Wonford Hill to be able to remove the short-term objective from the AQMA declaration. In order to do this concentrations would need to be stable for three years at less than 90% of the proxy for exceedance of the short term objective (i.e. less than 54 µg/m³ or 90% of an annual average concentration of 60µg/m³).

Table 3.2 The Required Reduction in Road NO_x Emissions to meet the NO₂ Annual Average Objective

Location	NO ₂ concentrations (µg/m ³)		Road NO _x Emissions
	2017 measured concentration	Required Reduction	Percentage Reduction Required
East Wonford Hill	59	19	78%
Salutary Mount (Heavitree)	53	13	51%
Livery Dole (Heavitree)	50	10	39%
Honiton Road (Heavitree) (Nb objective is not exceeded at nearest relevant location)	49	9	36%
Rowancroft	44	4	12%
Fore Street Heavitree (inbound)	41	1	3%
Pinhoe Road/Blackboy Road	41	1	5%
Alphington Street	41	1	3%

Table 3.3 The Required Reduction in Road NO_x Emissions to meet the NO₂ Short Term Objective

Location	NO ₂ concentrations (µg/m ³)		Road NO _x Emissions
	2017 measured concentration	Required Reduction	Percentage Reduction Required
East Wonford Hill	59	5	14%

The Department for the Environment, Food and Rural Affairs (DEFRA) predict that vehicle emissions will reduce over time, as vehicle standards improve

(<https://laqm.defra.gov.uk/review-and-assessment/tools/emissions-factors-toolkit.html>). Using these factors suggests that the small exceedances of the

objective at Alphington Street and at the Pinhoe Road / Polsloe Road / Blackboy Road / Mount Pleasant Road junction will be resolved by 2019 because of a predicted 6 to 7% fall in emissions. If this were the case, no specific measures would be required from this Action Plan in order to achieve compliance with the objective at these locations.

However, although concentrations at these locations have generally reduced in the last 15 years, the reduction in pollution concentrations that has been measured has not been as great as would be expected based on the DEFRA predicted reduction in emissions. For this reason the Council is not content to simply wait for improvements in the vehicle fleet to resolve the exceedance at these locations and will instead take actions to reduce emissions as well.

The scale of the exceedance of the objective, and therefore the required reduction in emissions on the Heavitree corridor is much greater (table 3.1). The DEFRA emission factors predict that East Wonford Hill would continue to exceed the objective in 2030, but that the objective would be met at other locations along this corridor between 2020 and 2025. For the purposes of this Action Plan it has been assumed that half of the expected reduction in emissions will be achieved in the lifetime of the plan. This is thought to be conservative without ignoring the fact that some reduction in emissions is likely to occur as the vehicle fleet changes. (nb for the purposes of this assessment there has been no assumed growth in total traffic flows, as recommended by Devon County Council).

This means that by 2024 emissions at key locations along the Heavitree corridor will have fallen by the amounts shown in Table 3.4 below. The remaining reduction that will need to be achieved by this plan is also shown.

Table 3.4 The expected reduction in emissions at key locations along the Heavitree corridor using a conservative assessment of the effect of improved vehicle standards

	Total required reduction in emissions (2017 baseline)	Reduction in emissions by 2024 if half of DEFRA's predicted improvements are realised (2017 baseline)	Reduction in emissions required to 2024 as a result of measures in this plan (2017 baseline)
East Wonford Hill	78%	25%	53%
Salutary Mount	51%	26%	25%
Livery Dole	39%	27%	12%

Key Priorities

Exeter City Council has committed to tackling congestion, improving accessibility and increasing activity levels (including active travel). Figure 3.6 is an extract from the corporate plan for 2018 to 2021 showing the City Council's strategy for this period. This Action Plan is highly complementary to these existing corporate priorities, and the measures identified in section 5 are listed under headings from this strategy.

Figure 3.6 Extract from Exeter City Council's Corporate Plan for 2018 to 2021



Tables 3.2, 3.3 and 3.4 show the scale of the challenge which faces Exeter if we are to meet the objective level for nitrogen dioxide at all residential locations in the city.

This plan intends to reduce concentrations of nitrogen dioxide below the objective, because that is the City Council's legal duty, and it is a challenging target. However the Council recognises that this may not be the complete extent of the health impacts of air pollution, because the objective level may not be the lower limit of health impacts for nitrogen dioxide, and because particulate matter can also have health impacts below the relevant objectives (COMEAP 2018). The Council therefore aspires to reduce harm to health from air pollution further than this in the future.

The Council's Corporate Plan and emerging Vision contain a key aspiration for the city which is relevant to this plan. This is that by 2021 cycling to work will have doubled (from 6% to 12%), and 50% of people will be walking or cycling to work within the city.

In order to meet the needs identified in section 3.4 above and to contribute to the Council's vision for active travel in the city, the priorities of this plan are that:

- Actions will focus on the Heavitree corridor, where the greatest reductions in emissions are required. An integrated plan for this whole area will be developed that will increase active travel and change the way that existing roads are used (including filtered permeability).
- Care will be taken that any traffic displaced from the Heavitree corridor as a result of measures that are specific to that location does not compromise the effectiveness of other city-wide measures to achieve compliance at other locations.
- A comparison of the required reduction in emissions from Table 3.2 with the emissions breakdown in Figures 3.3 and 3.5 shows that action to bring nitrogen dioxide concentrations below the objective could be focussed on just a single class of vehicle at Alphington Street and the Mount Pleasant Road /Pinhoe Road / Blackboy Road / Polsloe Road junction. However this is not an approach that would realistically work on the Heavitree corridor. The Council therefore plans to take measures which will reduce emissions from all classes of vehicles.

4 Development and Implementation of Exeter City Council AQAP

4.1 Consultation and Stakeholder Engagement

In developing/updating this AQAP, we have worked with other local authorities, agencies, businesses and the local community to improve local air quality. Schedule 11 of the Environment Act 1995 requires local authorities to consult the bodies listed in Table 4.1. In addition, we have undertaken a comprehensive stakeholder engagement process which generated nearly 3000 responses. The following points summarise the results of the survey:

- 66 per cent agreed that the impact of private cars needs to be reduced by reducing numbers of journeys;
- The vast majority (88 per cent) agreed air quality should be treated as a public health priority;
- More than half (55 per cent) back a switch to electric cars;
- 58 per cent support measures to reduce the attractiveness of driving into the city centre;
- Measures to increase the attractiveness of travel by means other than private car is strongly supported - by 90 per cent;
- A majority (52 per cent) disagree with increasing the cost of driving into the city centre - a third (33 per cent) agree with measure;
- More than half (55 per cent) would support closure of roads to through traffic if their neighbourhood if there are improvements to public transport;
- A similar number would back the same measure if there were improvements to walking routes (53 per cent) and improvements to cycle routes (53 per cent);
- A big majority (80 per cent) support an increase in park and ride sites. Almost three quarters (73 per cent) believe the move would cut private car journeys from those living outside the city;
- More than half (53 per cent) supported the aim of reducing the impact of travel for business purposes. Only 26 per cent disagreed;

- 61 per cent support restrictions on accessing certain parts of the city for certain types or ages of vehicles. Only 27 per cent disagreed;
- 41 per cent agreed that businesses within a defined area should pay a fee for private vehicle parking, 34 per cent opposed the measure;
- 76 per cent thought developers should be held to account if developments create more traffic than predicted in planning applications;
- 82 per cent agree that making public space more attractive will encourage people to be more active. Nearly three quarters (72 per cent) agree that active and healthy people will use active and healthy travel options.

Further detail of the response to the engagement process is given in Appendix A.

Table 4.1 – Consultation Undertaken

Yes/No	Consultee
Yes	the Secretary of State
Yes	the Environment Agency
Yes	the highways authority
Yes	all neighbouring local authorities
Yes	other public authorities as appropriate, such as Public Health officials
Yes	bodies representing local business interests and other organisations as appropriate

4.2 Steering Group

In drafting the Air Quality Action Plan Environmental Health and Licensing identified and engaged with partners that have a key interest in air quality. These include:

- Public Health (Public Health England and Public Health Devon);
- Devon County Council Highways;
- Neighbouring Districts (Teignbridge, East Devon and Mid Devon);
- Exeter City Council colleagues (Communities Engagement, Sustainable Transport and Economic Development, City Development, Communications, Corporate Policy, Fleet and the Sport England Local Delivery Pilot team);
- Exeter and East Devon Low Carbon Task Force;
- Exeter University (Greenpeace laboratories);
- Exeter City Futures;
- Public Health South West Air Quality Network.

The final plan is an update to the previously published draft plan, taking into account the responses to the consultation and engagement process, and the emerging Exeter Vision for 2040. The measures within the final plan were discussed and finalised by the Senior Management Board, assisted by officers from Environmental Health & Licensing and the Sport England Local Delivery Pilot team.

5 AQAP Measures

Table 5.1 shows the Exeter City Council AQAP measures. It contains:

- a list of the actions that form part of the plan
- the responsible individual and departments/organisations who will deliver this action (abbreviations are GESP – Greater Exeter Strategic Plan, LP – Local Plan review, SELDP – Sport England Local Delivery Pilot, ECF – Exeter City Futures)
- expected benefit in terms of NO₂ emissions
- the timescale for implementation
- how progress will be monitored
- relevant sections from the Corporate Plan and Exeter Vision (comments column)

NB: Please see future Annual Status Reports for regular annual updates on implementation of these measures

The modelling which has been undertaken to predict the reduction in emissions which the measures will achieve is summarised in Appendix C.

Table 5.1 – Air Quality Action Plan Measures

Measure No.	Measure	EU Category	EU Classification	Lead Authority	Planning Phase	Implementation Phase	Key Performance Indicator	Target Pollution Reduction in the AQMA	Progress to Date	Estimated Completion Date	Comments
Tackling Congestion and Accessibility											
1	Filtered permeability projects to be considered for the city with an initial focus on the Heavitree corridor area and including a feasibility study for corridor improvements	Policy Guidance and Development Control	Other policy	DCC Via Transport Strategy Exeter City Futures (ECF)	In consultation with communities, develop plans for individual areas	2019 start challenge definition and feasibility assessment	12% cycle to work and 50% walk or cycle to work Heavitree corridor improvements designed to achieve compliance with the objective	The target for design of changes to the Heavitree corridor area will be to eliminate exceedences. Details will be finalised as the design emerges, but it is currently expected that a reduction in emissions of between 39 and 78% will be required	ECF Community engagement project commenced for Heavitree, and initial work by Exeter Cycle Campaign	Rolling programme	Transport will not be a barrier to economic or social activities, and sustainable means of travel will be cheaper, quicker and more convenient than private car ownership A comprehensive network of safe routes will ensure that most everyday journeys are made by walking and cycling

Measure No.	Measure	EU Category	EU Classification	Lead Authority	Planning Phase	Implementation Phase	Key Performance Indicator	Target Pollution Reduction in the AQMA	Progress to Date	Estimated Completion Date	Comments
2	Consider access restrictions which will reduce the dominance of private cars, including in the city centre	Policy Guidance and Development Control	Other policy	DCC Via Transport Strategy & Exeter City Futures	Development of plans as part of Transport Strategy for the city, consultation and obtaining relevant permissions, consents and traffic orders	2021 start implementation	Less than 50% private car commute	4% reduction in emissions at East Wonford Hill (shared across all measures which will in combination achieve the targeted reduction in private car commutes)		Ongoing programme	<p>The impacts of growth will be managed and mitigated and communities will lead development, helping to create a city where everyone has access to the places and services which enable them to meet their needs and lead fulfilling lives.</p> <p>Local supply chains will be stronger, supporting the city's businesses and social enterprises and keeping more money within the local economy</p> <p>A comprehensive network of safe routes will ensure that most everyday journeys are made by walking and cycling</p> <p>Transport will not be a barrier to economic or social activities, and sustainable means of travel will be cheaper, quicker and more convenient than private car ownership</p>

Measure No.	Measure	EU Category	EU Classification	Lead Authority	Planning Phase	Implementation Phase	Key Performance Indicator	Target Pollution Reduction in the AQMA	Progress to Date	Estimated Completion Date	Comments
3	New transport links and Park & Change facilities to make it easier for those living outside the city to choose active and sustainable travel modes	Transport Planning and Infrastructure	Other	DCC Via GESP & Transport Strategy	2021 start formalisation of plans through Transport Strategy and GESP	2023 start implementation of plans, once relevant permissions, consents and traffic orders obtained, and funding is in place	Publication of Transport Strategy Less than 50% private car commute	4% reduction in emissions at East Wonford Hill (shared across all measures which will in combination achieve the targeted reduction in private car commutes)	GESP work is progressing	Ongoing programme	Transport will not be a barrier to economic or social activities, and sustainable means of travel will be cheaper, quicker and more convenient than private car ownership
4	Changes to parking charges to discourage car travel in peak times, encourage longer stays in the city centre and support other measures in this plan, such as active travel	Traffic Management	Other	ECC Via Local Plan	2019 commission relevant changes to software and/or hardware (if cost effective to achieve)	2020 implement new charging scheme (if approved)	New charging scheme in place	<1% reduction in emissions. This measure is expected to have an indirect effect on emissions, such that it is not possible to reliably quantify the impact of this measure alone	Identified that this would be most effective at 'pay on foot' car parks, rather than pay & display ones. However currently these are short stay only and peak hours are already 10 – 11am and 2-3pm	2021	Transport will not be a barrier to economic or social activities, and sustainable means of travel will be cheaper, quicker and more convenient than private car ownership
5	Maximise efficiency of existing highway network	Transport Planning and Infrastructure	Other	DCC via GESP, Transport Strategy & Exeter City Futures	2020 identify areas for specific improvement and develop detailed models to assess solutions	TBC, depending on outcome of planning phase and funding availability	TBC in subsequent annual air quality status reports	TBC, based on predicted changes to traffic parameters provided by DCC as plans for specific locations emerge and are consulted upon		Ongoing programme	Transport will not be a barrier to economic or social activities, and sustainable means of travel will be cheaper, quicker and more convenient than private car ownership

Measure No.	Measure	EU Category	EU Classification	Lead Authority	Planning Phase	Implementation Phase	Key Performance Indicator	Target Pollution Reduction in the AQMA	Progress to Date	Estimated Completion Date	Comments
Promoting Active and Health Lifestyles											
6	Access Fund and cycle/walking network, Local Walking and Cycling Infrastructure Plan (LCWIP)	Transport Planning and Infrastructure	Other	DCC Via Transport Strategy	2019 continue to develop and expand plans for cycle network and development of LCWIP	Ongoing, as DCC have current plans for upgrades to cycling and walking infrastructure which will evolve as the LCWIP develops	12% cycle to work and 50% walk or cycle to work	4% reduction in emissions at East Wonford Hill (shared across all measures which will in combination achieve the targeted reduction in private car commutes)	DCC's current programme being implemented as funding is obtained	Ongoing programme	A comprehensive network of safe routes will ensure that most everyday journeys are made by walking and cycling
7	Expand school and community projects, car free events and events promoting active travel, building on the success of the Heavitree pilot	Promoting Travel Alternatives	Other	ECC Via Sport England Local Delivery Pilot & Exeter City Futures	2019, develop initial programme with communities	Ongoing programme, which evolves as previous events and projects are evaluated	12% cycle to work and 50% walk or cycle to work	4% reduction in emissions at East Wonford Hill (shared across all measures which will in combination achieve the targeted reduction in private car commutes)	Heavitree community have conducted local monitoring and awareness campaigns and are seeking funding to support them in projects to encourage behavioural change	Ongoing programme	Exeter will be healthy and happy and local services will support people to live their lives well, in the ways that matter to them.
8	Use social prescribing and community building to help individuals get and stay active	Public Information	Other	ECC Via Sport England Local Delivery Pilot & Wellbeing Exeter	2019, expand on existing Wellbeing Exeter programme	Ongoing programme, which evolves as previous events and projects are evaluated	12% cycle to work and 50% walk or cycle to work	4% reduction in emissions at East Wonford Hill (shared across all measures which will in combination achieve the targeted reduction in private car commutes)		Ongoing programme	Exeter will be healthy and happy and local services will support people to live their lives well, in the ways that matter to them.

Measure No.	Measure	EU Category	EU Classification	Lead Authority	Planning Phase	Implementation Phase	Key Performance Indicator	Target Pollution Reduction in the AQMA	Progress to Date	Estimated Completion Date	Comments
9	High quality parks, play areas, sport and leisure facilities	Promoting Travel Alternatives	Other	ECC Via Physical Activity Strategy, Sport England Local Delivery Pilot & Local Plan	2019 formal consultation on draft Physical Activity Strategy	2020 start to implement plans, after obtaining necessary permissions and consents, and funding	Exeter the most active city in England	4% reduction in emissions at East Wonford Hill (shared across all measures which will in combination achieve the targeted reduction in private car commutes)		Ongoing programme	Exeter will be healthy and happy and local services will support people to live their lives well, in the ways that matter to them.
10	Communications plan, to support measures that will achieve modal shift	Public Information	Other	ECC Via Sport England Local Delivery Pilot & Exeter City Futures	2019 develop communications plan to promote behavioural change as part of existing programmes	2019 onwards implement and evolve plan	12% cycle to work and 50% walk or cycle to work	<1% reduction in emissions. The purpose of this measure is to enable the Council to explain why it is taking action. The measure itself is unlikely to have significant impact on its own.	Work on baseline evidence report commenced. Lessons from Commute Exeter project will contribute to development of plan	Ongoing (iterative process of developing and implementing communications / messages)	Active, engaged citizens and communities will be empowered to create, share and use data to respond to shared problems and needs.
11	Promote and expand Co-Bikes network, and support the roll out of electric car club vehicles to more locations	Promoting Travel Alternatives	Other	DCC, ECC Via Transport Strategy & Sport England Local Delivery Pilot & Exeter City Futures	2019	Ongoing programme, dependent on funding availability	ULEV Co-Car fleet and expanded network of Co-Bikes	<1% reduction in emissions This measure will have indirect benefits for air quality by facilitating active travel and supporting a change in car ownership patterns. It is not possible to reliably model the impact of this measure alone on emissions	DCC have planned upgrades to the Co-Bikes network	Ongoing programme	A comprehensive network of safe routes will ensure that most everyday journeys are made by walking and cycling

Measure No.	Measure	EU Category	EU Classification	Lead Authority	Planning Phase	Implementation Phase	Key Performance Indicator	Target Pollution Reduction in the AQMA	Progress to Date	Estimated Completion Date	Comments
Building Great Neighbourhoods											
12	An improved multi-modal public transport network, incorporating cleaner bus technologies	Transport Planning and Infrastructure	Other	DCC Via GESP, Transport Strategy & Exeter City Futures	2020	TBC	Less than 50% private car commute	4% reduction in emissions at East Wonford Hill (shared across all measures which will in combination achieve the targeted reduction in private car commutes) As an example, 33% bus electrification would achieve 5% fall in emissions at East Wonford Hill and 66% electrification would achieve 10% reduction		Ongoing programme	Transport will not be a barrier to economic or social activities, and sustainable means of travel will be cheaper, quicker and more convenient than private car ownership
13	Developers to mitigate the effects of their development on air quality	Policy Guidance and Development Control	Other policy	GESP team, ECC Via GESP & Local Plan	2019/20 start formalisation of new policies, plans, emerging GESP and updates to Local Plan	2019 continue to implement policies in existing planning policy in a robust manner 2022 start implementation of new policies	Incorporation of new policies into GESP and Local Plan review	The purpose of this measure is to limit the impact of new development. It is not intended to reduce emissions on the current baseline (although some reduction may be achieved as a result in practice)	GESP work is progressing. Local Plan work to be supported by the Sport England Local Delivery Pilot	Ongoing	The impacts of growth will be managed and mitigated and communities will lead development, helping to create a city where everyone has access to the places and services which enable them to meet their needs and lead fulfilling lives.

Measure No.	Measure	EU Category	EU Classification	Lead Authority	Planning Phase	Implementation Phase	Key Performance Indicator	Target Pollution Reduction in the AQMA	Progress to Date	Estimated Completion Date	Comments
14	Policies deliver development where private car use is not the only realistic travel choice	Policy Guidance and Development Control	Other policy	GESP team, ECC Via GESP & Local Plan	2019/20 start formalisation of new policies, plans, emerging GESP and updates to Local Plan	2019 continue to implement policies in existing planning policy in a robust manner 2022 start implementation of new policies	12% cycle to work and 50% walk or cycle to work	The purpose of this measure is to limit the impact of new development. It is not intended to reduce emissions on the current baseline (although some reduction may be achieved as a result in practice)	GESP work is progressing Local Plan work to be supported through the Sport England Local Delivery Pilot	Ongoing	A high-quality and accessible built environment and green spaces, with great arts and cultural facilities, will encourage healthy, active lifestyles A comprehensive network of safe routes will ensure that most everyday journeys are made by walking and cycling
15	More things to see/do in the City Centre, encouraging longer stays and supporting events which promote sustainable travel, active and healthy lifestyles	Policy Guidance and Development Control	Other policy	ECC Via Local Plan	2019 start to update current City Centre Strategy.	TBC once strategy adopted	Adoption of new City Centre Strategy	<1% reduction in emissions. This measure will not have a significant direct impact on emissions, but will support the step change in behaviour which will be required to meet the City Council's aspirations for active and healthy travel		Ongoing programme	Local supply chains will be stronger, supporting the city's businesses and social enterprises and keeping more money within the local economy Exeter will be a liveable city, with a thriving city centre A high-quality and accessible built environment and green spaces, with great arts and cultural facilities, will encourage healthy, active lifestyles

Measure No.	Measure	EU Category	EU Classification	Lead Authority	Planning Phase	Implementation Phase	Key Performance Indicator	Target Pollution Reduction in the AQMA	Progress to Date	Estimated Completion Date	Comments
16	Better information to raise awareness and improve the level of understanding of air pollution and transport issues within communities	Public Information	Other	ECC	2019 develop plan, to raise understanding of air quality (identified in consultation as a key barrier)	2020 onwards implement and evolve plan	12% cycle to work and 50% walk or cycle to work	Enable the Council to explain why it is taking action. Measure itself is unlikely to have significant impact on its own.	Work commenced on baseline evidence report, on which communication's messages can be based	Ongoing (iterative process of developing and implementing communications / messages)	Active, engaged citizens and communities will be empowered to create, share and use data to respond to shared problems and needs.
17	An air pollution monitoring network that supports the measures in this action plan	Public Information	Other	ECC Via Local Plan	2019 Identify gaps in the ability of the current network to achieve the aims of this action plan, and specify new or changed elements that are required	2021 new network on line (once necessary funding in place, and the tender process, installation and commissioning are complete)	The monitoring network provides the data required to inform the development and implementation of the actions in this plan	This measure would not in itself deliver reductions in emissions, but would support the other measures in this plan		Ongoing evolution of network may be required, as needs change	An innovative and analytical culture will support communities, businesses, civil society and public bodies to work together to solve the city's challenges and achieve its ambitions.

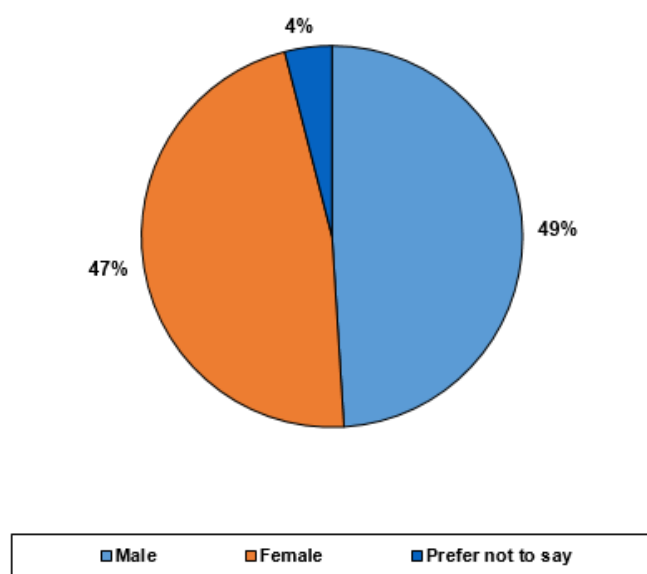
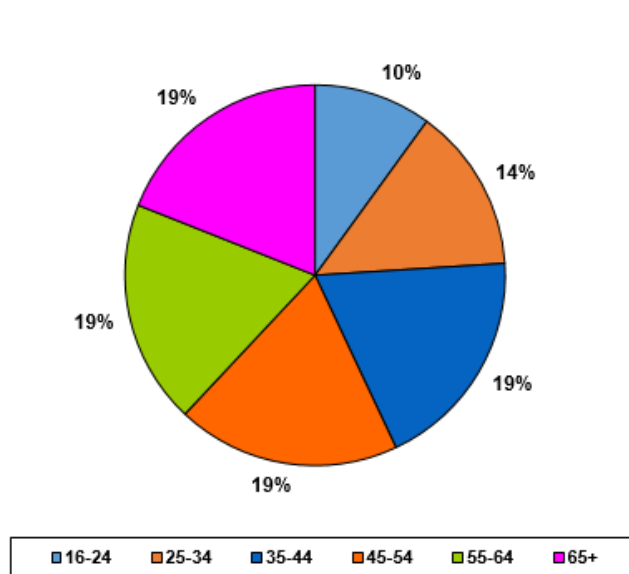
Appendix A: Response to Consultation

Table A.1 – Summary of Responses to Consultation and Stakeholder Engagement on the AQAP

A three month consultation was undertaken between February 11 and May 11 2018, on the draft Air Quality Action Plan. An online survey was hosted on the Council's website and promoted through the media, social media and public events. A total of 1,722 responses were completed. In addition, 1,100 street surveys (550 with residents and 550 with commuters) were undertaken in and around Exeter by consultants. The Council also conducted its own consultation with statutory bodies and through public events. More than 300 people attended a consultation event at the Guildhall. In total 2,873 online, street and self-completion surveys were completed and five focus groups were also held with businesses and residents.

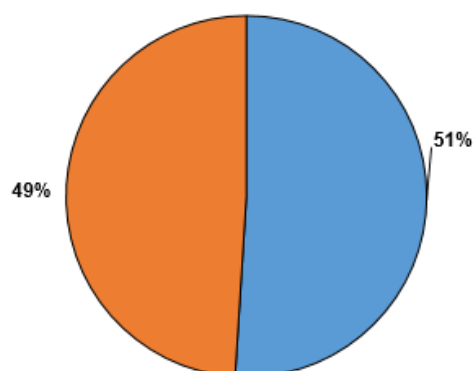
Survey Results

Who responded?



Who responded? – Residents or commuters

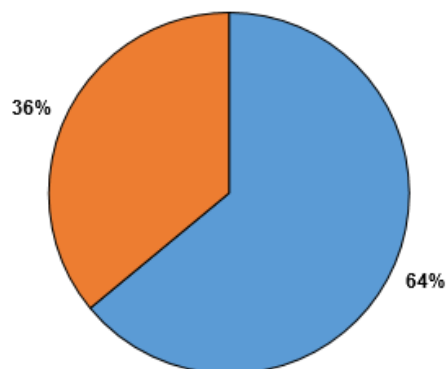
Street



Residents

Commuters

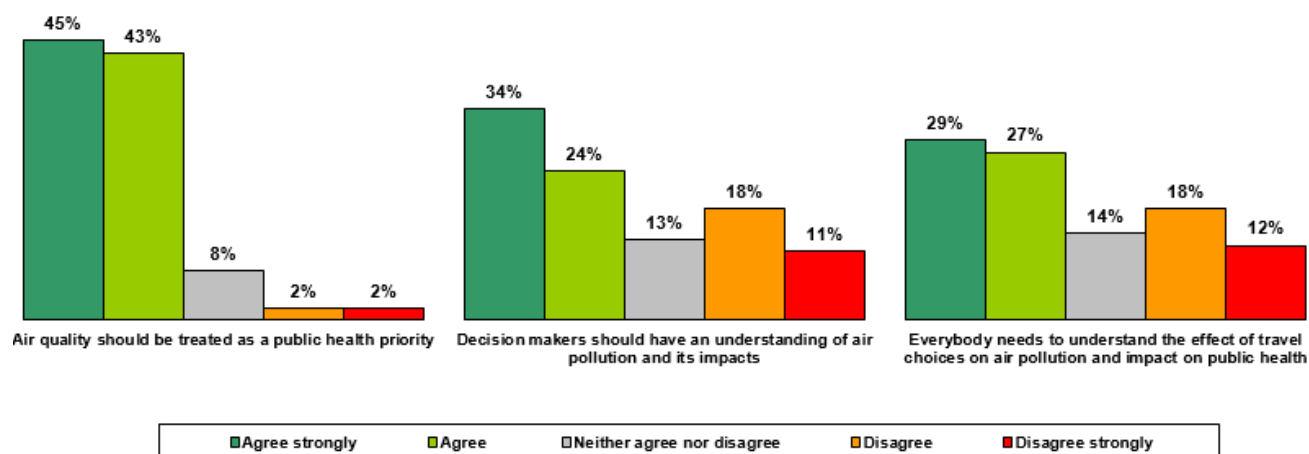
Online



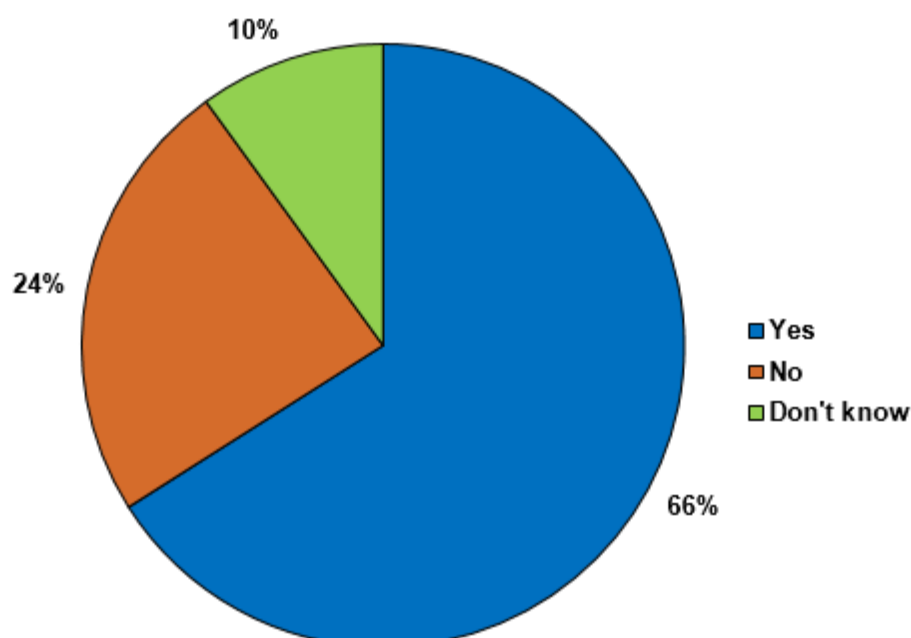
Residents

Commuters

Views on air quality

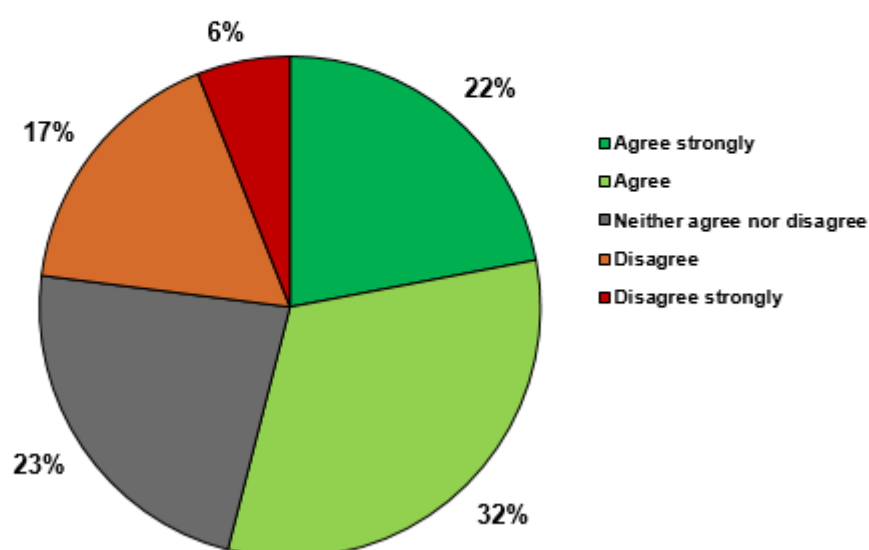


Do you support the aim to reduce the impact of cars by reducing car journeys?

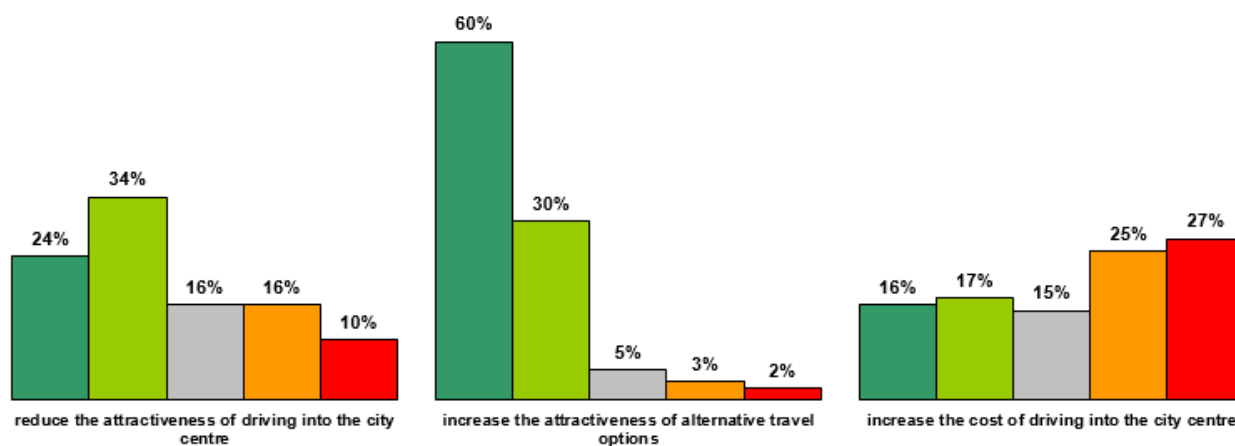


Private car use – focus on electric cars

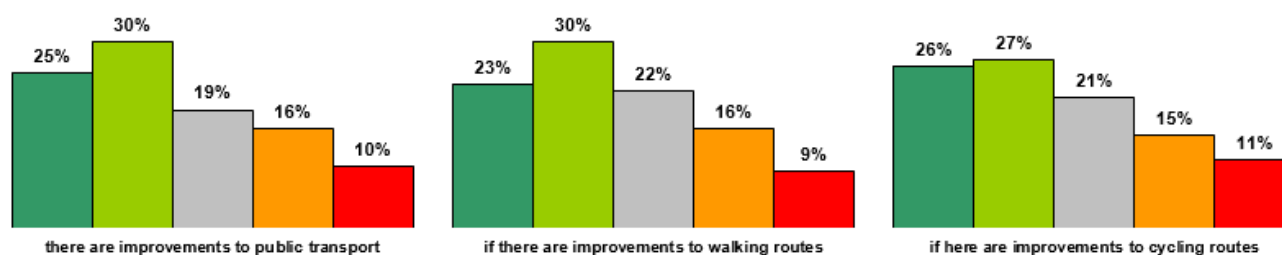
Whilst just over 50% agree to some extent with encouraging a switch to electric cars, 23% of people neither agree nor disagree.



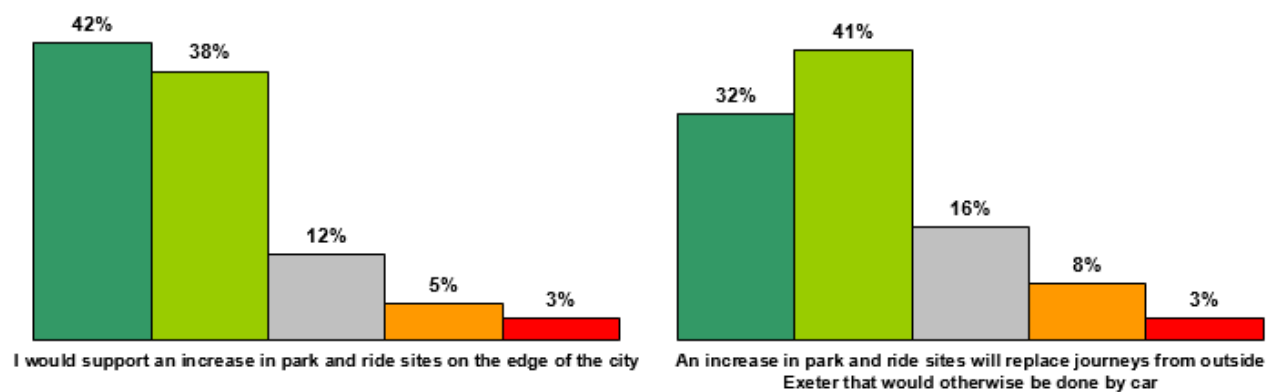
I would support measures which.....



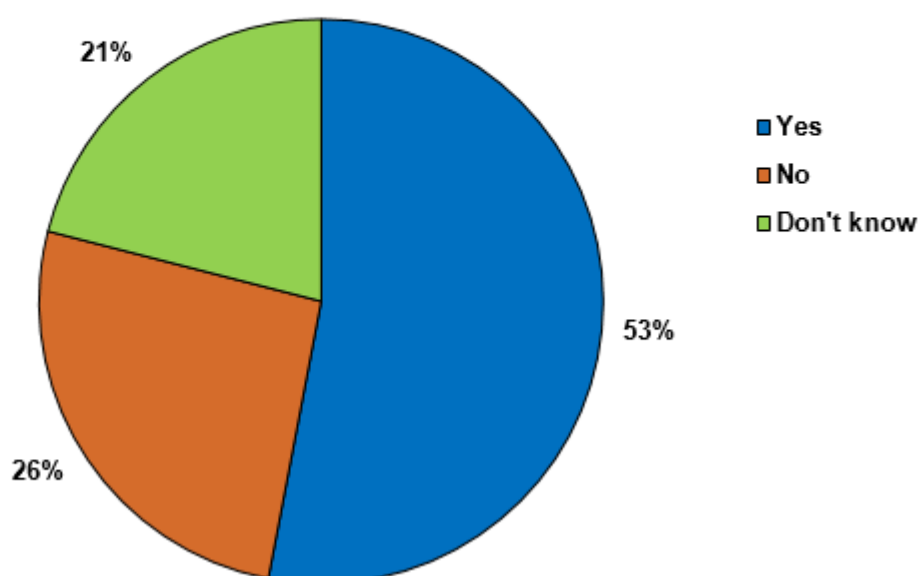
I would support the closure of roads to through traffic in my neighbourhood if.....



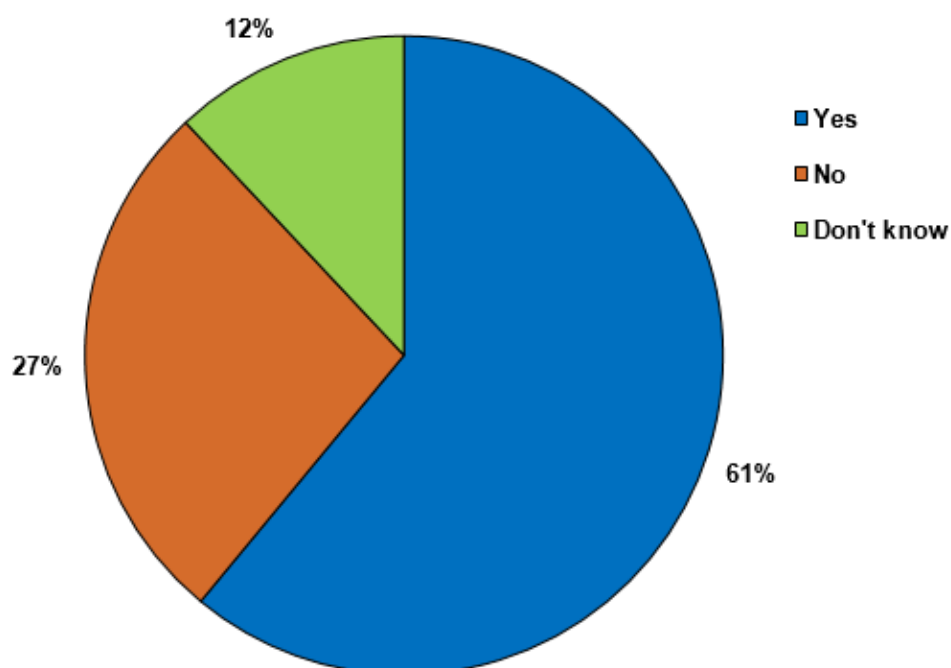
Levels of support for park and ride schemes



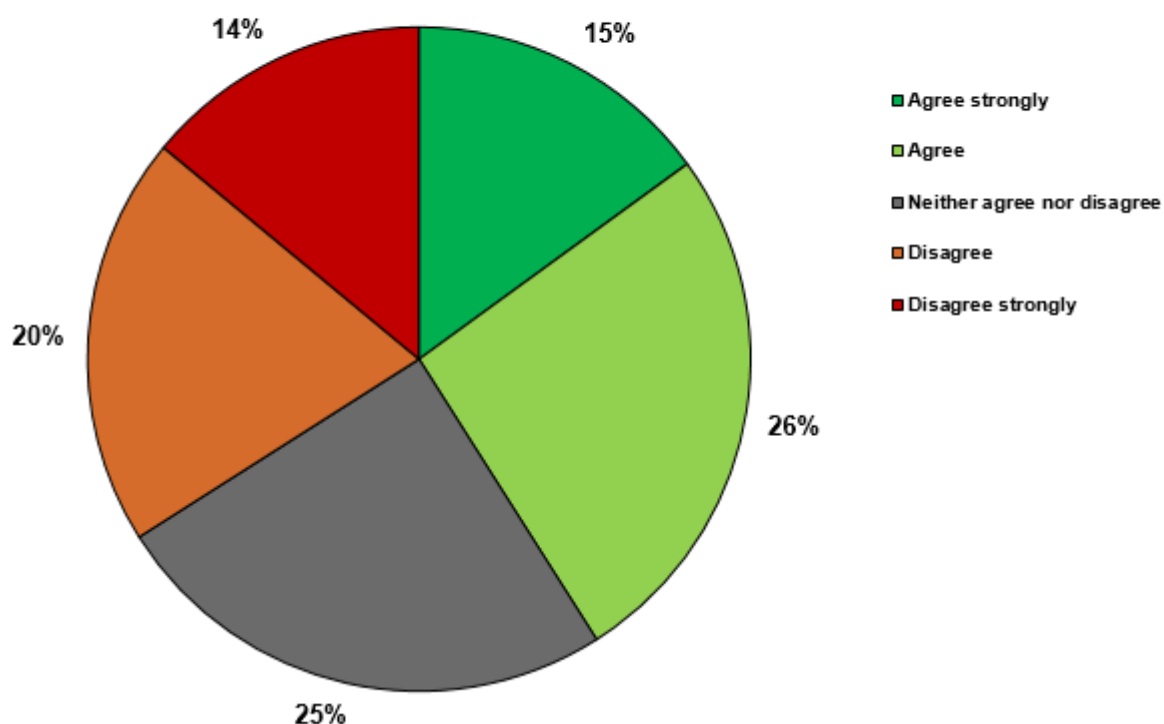
Do you support the aim to reduce the impact of travel for business purposes?



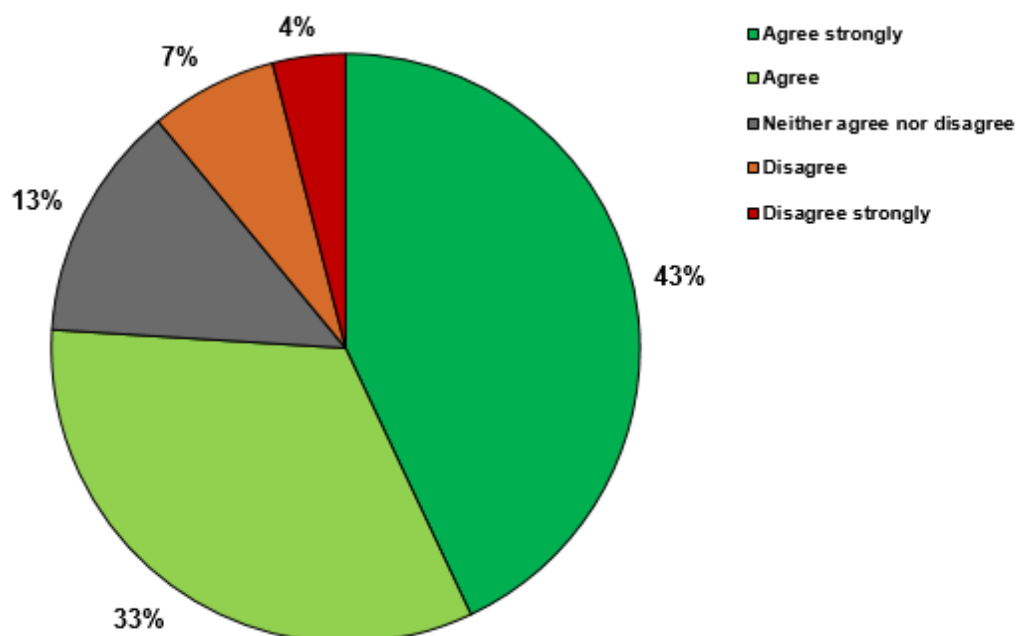
Would you support restrictions on access to certain parts of the city for certain types or ages of vehicles?



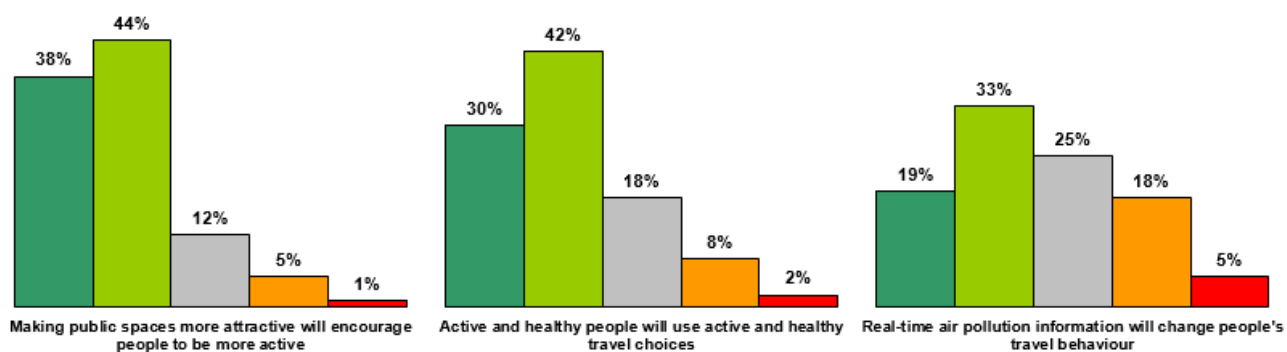
Businesses within a defined area should pay a fee for private car parking



Developers should be held to account if developments create more traffic than they predicted in their planning application



To what extent do you agree or disagree with the following...?



Focus Groups

5 focus groups were held, with the following audiences:

- 2 Residents' groups
 - Heavitree residents
 - St Thomas residents
 - A mix of ages and genders attended both groups
- 3 Business' groups
 - Exeter Business Network members – working in and around Exeter
 - Exeter Chamber of Commerce members – predominantly City Centre based
 - Exeter Marsh Barton forum – based on Marsh Barton
 - The focus for the business groups was predominantly small to medium sized businesses across a mix of sectors.
 - The Princesshay Manager attended one of the groups to represent the retail sector.
 - Exeter BID declined to attend as we understand that they are putting together their own response to the consultation.

Summary of findings:

- People are concerned about air quality and the impact of pollution on health
- More information and education is needed about how “bad” the levels are and what is causing the problems
- People must be given affordable, flexible, easy to use public transport (including park and ride schemes) if there is to be a reduction in private car travel
- Whilst some were in favour of charging to go into the city, the general view was that people should not be penalised/taxed if they don't have alternative ways of getting into town
- Any penalties will merely push the problem further out into the suburbs

- People can be encouraged to walk and cycle but again infrastructure particularly for cyclists needs to be there – paths, showers, storage.....
- Businesses can encourage but perhaps some form of incentives to the businesses should be considered if they are to make changes e.g. using co cars, changing to electric vehicles
- Tackle the worst polluters first – diesel buses and taxis
- Join up the planning – developers need to provide the infrastructure earlier and be required to make their developments more sustainable
- Promote schemes more e.g. car share, Co cars

Written Responses

Consultee	Category	Response
Devon County Council	Local Government	<p>Points out long term downward trend in concentrations of NO₂, despite growth of housing and jobs in travel to work area. Daily traffic use has reduced on the main corridors, while use of sustainable travel has increased</p> <p>Traffic is busy in peak periods and Devon is working to support economic development through GESP, while tackling pollution on 'problematic corridors'. This should be done through new infrastructure, innovation and behavioural change initiatives</p> <p>New developments should be sustainable and well planned</p> <p>Exeter has comparatively low car use, and high levels of walking and cycling and bus use. But a number of daily short distance commuter trips need to be converted to sustainable modes</p> <p>Exeter has second highest geographical travel to work area in the country, and the second highest proportion of its workforce travelling from outside – 36,000 commuters, compared to 38,000 commutes within the city. 80 per cent of commuters from outside the city drive</p> <p>It needs to be clear who is the lead authority in which area. For example, a workplace levy, for example, it would need to be Devon</p> <p>Devon has previously considered a form of congestion charge for Exeter, but ruled this out, largely on cost grounds</p>
Public Health Devon	Local Government	<p>Public Health Devon supports the proposed measures to improve air quality in Exeter, particularly those which also encourage active travel and reduce health inequalities.</p> <p>The Action Plan is comprehensive, and supported.</p>
Exeter Cycle Campaign	Local Special Interest Group	<p>Produced a 27 page report. It welcomes measures to reduce private car use</p> <p>But it says a comprehensive, city-network of protected, connected and convenient paths is needed. The response includes a 17-point package of proposed measures to boost cycling</p>

		<p>Summary:</p> <p>AQAP has high aspirations, but measures are mixed, goals are weak and priorities are missing. Wholescale shift from private car to cycling is most effective way of tackling air quality</p> <p>‘Encouraging’ cycling won’t work – it needs to be enabled through the building of safe infrastructure</p>
Exeter Green Party	Political Party	<p>In summary, the council must:</p> <p>Take a strategic approach to improving air quality</p> <p>Adopt the High Court ruling standard for Exeter AQAP</p> <p>Provide accurate information about air pollution in Exeter</p> <p>Take immediate action to improve air quality</p> <p>Have political leadership in relation to the realities of joint working with DCC</p> <p>Continue to educate on the need for radical change</p> <p>Stop saying that ‘encouraging’ and ‘supporting’ action will make any difference</p>
Exeter Civic Society	Local Special Interest Group	<p>The ambitions of cutting pollution hotspots and evolving as a car free city should be separated – the timescales are different</p> <p>The link between traffic levels and poor air quality needs to be clearer</p> <p>The majority of congestion problems are caused by those commuting into the city</p> <p>Not enough resource is being put in to tackling the problems</p> <p>New developments on the outskirts of the city will make congestion worse</p> <p>The AQAP should be incorporated into the Greater Exeter Strategic Plan (GESp)</p> <p>Commuters need to have benefits for not using the car</p> <p>Major increase in public transport infrastructure needed – although it is unlikely to be viable</p>
Members of Public (direct correspondence)	Public	<p>Two letters from residents in Mid Devon concerned about effects of any congestion charge – they claim it would be very unfair to drivers</p>

rather than online survey)		<p>Exeter resident living in St David's Hill says it is noisy with traffic day and night – would support measures to close it to traffic</p> <p>Two letters complaining of bonfires being a major pollutant and nuisance, calling on the council to closely regulate this as elsewhere (Croydon quoted)</p> <p>Exeter resident is calling for the council to provide electric charging points in residential areas – those in terraced houses need to be able to charge</p> <p>Residents calls for better provision for cyclists, dedicates lane five feet away from cars</p>
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Appendix B: Reasons for Not Pursuing Action Plan Measures

Table B.1 – Action Plan Measures Not Pursued and the Reasons for that Decision

Ref in DRAFT plan	Measure	Detail	Taken forward? Y/N	Ref in FINAL plan	Stakeholder views, and reason action is not being pursued
The private car is seldom used for journeys within the city					
1	Anti-Idling Campaign	Program of anti-idling education, and consideration of enforcement in the future	N	n/a	Respondents supported this type of measure, but were doubtful that it would have much impact, or could be enforced widely Given the uncertainty over effectiveness this has not been included in the action plan, although some element of anti-idling education may be included within the education and communications actions and could be taken forward by communities.
2	Promote Car Clubs and Co-Bikes	Support significant expansion of car clubs and electric bike hire network, potentially as part of changes to planning policies and seamless multi-modal travel	Y	11	n/a
3	Design and implement a new and enhanced public transport network and seamless multi-modal travel	Support significant upgrade to public transport provision, including single ticketing platform where possible, new routes and an enhanced passenger experience Consider ULEV PSVs where appropriate	Y	12	n/a
4	Design and implement a filtered permeability plan and corridor improvements	Develop a plan which is most likely to deliver defined outcomes of emissions reduction, in conjunction with improved public transport. Initial work to focus on the Heavitree corridor and surrounding areas.	Y	1	n/a
Business travel and servicing is by ULEV and shared					
5	Workplace Parking Levy	Incentivise employers to adopt best practice and discourage use of private car, whilst generating income to support delivery of other aspects of the AQAP. ECC to lead by example by providing EV pool cars	N	n/a	Many respondents did not understand this mechanism or replied to suggest that businesses should not face additional financial burdens. There was a feeling that alternative modes of transport should be provided first, and this should not just be a money-raising scheme for general council budgets. This has not therefore been included as a specific measure at this stage, but may be reconsidered at a later date. ECC to continue to operate and expand electric pool cars fleet.
6	Business support and accreditation schemes using levy income	Provide advice and support to companies to change their travel habits and reduce emissions, showing the link to increased profitability and productivity. Expansion of Eco Stars, subject to funding ECC to lead by example, replacing diesel vehicles with ULEV where this can be cost effective. Investigate possibility of setting emission standards for private hire vehicles.	N	n/a	Dependent on income from Workplace Parking Levy (above)

7	Support businesses with sustainability advice, possibly through the LEP	Further phase of support, with accreditation or award schemes to highlight good performance, in conjunction with partners and covering a wider geographic area. DCC, University and hospital to convert diesel vehicles to ULEV as part of work by the Low Carbon Task Force ULEV group, and work towards a Devon-wide EV charging network.	N	n/a	Respondents supported this type of measure, but were doubtful that it would have much impact. For this reason it has not been included as a measure in this plan. Exeter City Futures are engaging with businesses on air pollution however, and the Sport England Local Delivery Pilot has a strand on healthy workplaces which would include healthy business travel.
8	Access restrictions/ charging	Restrictions on what vehicles can enter certain parts of the city at certain times of day, potentially with a charge for vehicles that do not meet the relevant criteria (focusing on goods vehicles)	Y	2	Some were supportive, whilst others replied that car drivers should not be the subject of such 'stick' measures. For private individuals, there were worries over cost and accessibility to services. For businesses there were concerns over profitability. These types of measures will be included for consideration in the development of a Transport Strategy for the city.
Development creates sustainable car-free communities					
9	Require developers to demonstrate a financial contribution to mitigation which matches the harm caused	Require developers to predict the health costs of vehicle emissions and match this cost with spending on mitigation Update local planning validation checklist to reflect the information we expect to see in an application	Y	13	This was supported in principle, but many respondents felt that it would not be achievable in practice. The wording has changed since the draft AQAP, but these types of measures will be considered within the GESP themed actions in this plan.
10	Policies deliver development where car travel is not needed	Develop planning guidance as part of Core Strategy or in annex to AQAP which sets out how we want development to be as car-free as possible. Work to ensure that the GESP is as robust as possible about allocating development in sustainable locations and mitigating air quality impacts. Review options for making green travel plans more effective, especially in the longer term (Green Travel Plans and Planning Conditions Spotlight Review Group)	Y	14	This was supported in principle, but many respondents felt that it would not be achievable in practice. The wording has changed since the draft AQAP, but these types of measures will be considered within the GESP themed actions in this plan.
11	Connections to new transport network mean it is easier, more attractive and more cost effective for those living outside the city to access the city by public and active travel	Implement new network of transport routes and infrastructure, connected to new development areas. Consider recommendations of Green Travel Plans and Planning Conditions Spotlight Review Group	Y	3	This was supported in principle, but many respondents felt that it would not be achievable in practice. The wording has changed since the draft AQAP, but these types of measures will be considered within the GESP themed actions in this plan.
12	Planning policy means it is hard for those living in new development outside the city to access the city entirely by private car	Develop park and ride and new public transport routes. Consider the use of traffic management or access restrictions which make park and ride, public transport or active travel more attractive than driving into the city centre. Consider recommendations of Green Travel Plans and Planning Conditions Spotlight Review Group	Y	2, 3	This was supported in principle, but many respondents felt that it would not be achievable in practice. The wording has changed since the draft AQAP, but these types of measures will be considered within the GESP themed actions in this plan.
Internal combustion engines are discouraged in a vibrant centre, where active or ULEV travel is the norm					
13	Changes to parking charges to discourage car travel in peak times.	Ensure that parking policy discourages travel at peak times, and encourages visitors to stay into the evening. Consider recommendations of Green Travel Plans and Planning Conditions Spotlight Review Group.	Y	4	n/a
14	More things to see and do are developed in the City Centre to encourage longer stays	Increase the attractiveness of the city centre, and the length of time people spend in the city centre, for example changes in the South Street area, Corn Exchange and the bus station redevelopment	Y	15	n/a

15	New and enhanced transport network means it is easier, more attractive and more cost effective for those living in the city to travel public and actively	Support significant upgrade to public transport provision, including single ticketing platform where possible, new routes and an enhanced passenger experience Consider ULEV PSVs where appropriate	Y	3 and 12	n/a
16	Access restrictions/ charging	Restrictions on what vehicles can enter certain parts of the city at certain times of day, potentially with a charge for vehicles that do not meet the relevant criteria Focussing on PSV and HGV in the city centre	Y	2	Some were supportive, whilst others replied that car drivers should not be the subject of such 'stick' measures. For private individuals, there were worries over cost and accessibility to services. For businesses there were concerns over profitability. These types of measures will be included for consideration in the development of a Transport Strategy for the city.
Exposure Reduction Vision					
17	Public health data provides estimate of impact of transport emissions alongside data on benefits of active lifestyles.	Request that Public Health Devon undertake an evidence review to provide estimate of impact of traffic emissions on the population of Exeter (including noise) Brief ECC members and senior managers as part of Communications and Engagement Plan	N	n/a	This information is already available in the Joint Strategic Needs Assessment.
18	Promote community monitoring projects, car free events and active travel.	Through Wellbeing Exeter and Sport England Local Delivery Partner Pilot promote community monitoring projects, car free events and active travel. Continue to work with Sustrans in local schools Support research by Exeter University into sustainable travel and behavioural change Further improve the air quality data available on ECC's website	Y	7	
19	Target social prescribing and community building for those most likely to benefit for getting and staying active	Through Wellbeing Exeter and Sport England Local Delivery Partner Pilot develop and implement programs which increase active lifestyles, and active travel.	Y	8	
20	High quality destination parks, play areas, sport and leisure facilities across the City. Promote and encourage Parklife activities and active lifestyles.	Ensure that parks and public open space are attractive places to spend time, encourage active lifestyles and active travel, and maximise wider natural capital benefits. Support local groups which are based around shared public space.	Y	9	
21	Communication & Engagement Plan	Develop a formal communications plan for air quality.	Y	10 and 16	
Devon County Council					
22	Access Fund and cycle/walking network	Promotional activities to increase walking and cycling (working with large employers, schools to improve skills and activity). Planned improvements in the strategic walking and cycling networks.	Y	6	Respondents commented that this was not a new measure, which is correct, DCC already do this work and would continue to do it in the absence of the AQAP. It has however been included as a specific measure, so that all relevant actions are recorded in the plan. The development of the LCWIP has also been included in the final measure.
23	InnovaSUMP	Develop a standalone transport plan for Exeter of low carbon transport options to improve sustainable mobility alongside the major growth plans. Will connect to the GESP and provide an update to the LTP3 for the Greater Exeter area.	N	n/a	Respondents were not clear on what this involved. The project will continue, lead from within DCC and its outputs will feed into the development of the GESP Transportation Strategy. As such there seemed little need to include it as a separate measure.

24	Maximise efficiency of existing highway network	Network review to optimise junctions and signals Utilise real-time technology and new forms of network control to smooth flow and provide information to travellers	Y	5	
Monitoring					
25	Monitoring	Monitoring in parks and on cycle routes to demonstrate the exposure reduction benefits of avoiding congested routes. Installation of replacement continuous monitoring equipment, at RAMM and Alphington Street, including PM2.5 analysers.	Y	17	
Additional measures put forward by respondents to consultation					
	Bike hub in city centre	Showers and bike parking facilities for those who work in the city centre but whose employers cannot or do not provide suitable facilities	Y	9	This was supported by respondents. It will be considered as part of the SELDP and LCWIP actions within the plan, but has not been included as a specific measure at this stage.
	Bonfires	Additional controls over domestic bonfires	N	n/a	This was suggested by some respondents. It has been decided that the Action Plan should focus on traffic emissions of nitrogen dioxide since these have been shown to be the cause of the exceedences of the air quality objective.
	Bypass	Bypass route around west and north of city	N	n/a	This was identified by respondents to the public consultation as a measure which should be considered. It has not been included in the AQAP because it would encourage more road travel, and have a negative impact on actions to encourage modal shift
	Car free days	Run regular, city-wide, planned and well-publicised car free days	Y	7	This was supported by respondents. It will be considered as part of the SELDP actions within the plan, but has not been included as a specific measure at this stage.
	Car-free development	Develop planning guidance as part of Core Strategy or in annex to AQAP which sets out criteria for car-free development	Y	14	This was supported in principle, but many respondents felt that it would not be achievable in practice. The wording has changed since the draft AQAP, but these types of measures will be considered within the GESP themed actions in this plan.
	Clean Air Zone	A Low Emission Zone following a proscribed DEFRA pattern, with nationally-set emission standards and limited flexibility over pricing and the classes of vehicles included	N	n/a	It may displace non-compliant traffic onto other roads, and may not effectively target the worst polluters (e.g. if real world emissions do not match the expected Euro standards). It is also likely to affect the poorest motorists most significantly and the infrastructure required can be expensive. The CAZ standards for hackney carriages are actually less stringent than those already set by ECC Licensing requirements. It is seen as not sufficiently flexible to meet Exeter's needs.
	Congestion charge	A charge levied on all vehicles entering a certain area, regardless of vehicle type, emissions or age	N	n/a	Some were supportive, whilst others replied that car drivers should not be the subject of such 'stick' measures. For private individuals, there were worries over cost and

					<p>accessibility to services. For businesses there were concerns over profitability.</p> <p>These types of measures may be included for consideration in the wider action to identify enhancements for the Heavitree corridor.</p>
	Dock-less Bike Hire	Develop a policy on dock-less bike hire			<p>Respondents commented that the Councils need a policy on dock-less bike hire before a company brings them to the city. ECC agrees that this would be useful, but is not currently a priority for officer time.</p>
	E bikes	Significant expansion in electric bike use			<p>Some respondents were concerned about cost of electric bikes.</p> <p>Respondents supported use of E bikes, which are seen as more attractive to many current non-cyclists or for those with children, or cargo to carry.</p> <p>Measures to support uptake of E-Bikes may be included in the SELDP work, but these programs have not yet been finalised. For this reason E-bikes have not been included as a measure at this stage of the AQAP.</p>
	ECC fleet	Replacing diesel vehicles with ULEV where cost effective	N		<p>Respondents supported this type of measure, but were doubtful that it would have much impact city-wide.</p> <p>Some review of ECC vehicles will be included in the Council's Agile and Flexible working project, and the current program to replace diesel vehicles with electric ones where practical will continue. No specific measure has been included in the action plan.</p>
	ECC grey fleet	New electric and hybrid pool cars to reduce use of private cars for journeys on Council business.	N		<p>Respondents supported this type of measure, but were doubtful that it would have much impact city-wide.</p>
	Eco Stars	Expand the Devon Eco Stars scheme to reduce emissions from business vehicle fleets	N	n/a	<p>Respondents supported this type of measure, but were doubtful that it would have much impact. It is also funded by the public sector and only supports a small number of businesses.</p> <p>For these reasons it has not been included in the AQAP.</p>
	Exposure monitoring	Conduct exposure monitoring projects to raise awareness and understanding	N	n/a	<p>This was supported by respondents. It will be considered as part of the SELDP, education, communications and monitoring actions within the plan, but has not been included as a specific measure at this stage.</p> <p>The equipment required is expensive and care would have to be taken not to simply shift responsibility for pollution to the receptor (and not the polluter).</p>
	Freight Quality Partnership	Work together to resolve specific problems with freight industry	N	n/a	<p>Respondents supported this type of measure, but were doubtful that it would have much impact.</p> <p>For this reason it has not been included in the AQAP.</p>

	GESP	Ensure that the GESP is as robust as possible about allocating development in sustainable locations and mitigating air quality impacts	Y	2, 3, 12, 13 and 14	This was supported in principle, but many respondents felt that it would not be achievable in practice. These types of measures will be considered within the GESP themed actions in this plan.
	Green travel Plans	Make green travel plans more effective, especially in the longer term	Y	13 and 14	This will be included in wider actions relating to GESP policy on emissions and transport.
	Hackney carriages	Tighter emission standards for hackney carriages, and restriction on idling at ranks.	N	n/a	This measure was suggested by respondents to the public consultation. The impact is expected to be low because hackney licences in Exeter already require ULEV and idling is not permitted. It may reduce local emissions when idling enforcement is taking place, but is not likely to have a prolonged or widespread effect.
	Home working and flexible working	Reduce the need to travel, and smooth the peaks in travel	N	n/a	Respondents supported measures that reduced the need to travel, particularly during the peak periods No specific measure has been included in the AQAP, but aspects of this will be included in the SELDP measures and ECC is currently developing an Agile and Flexible working Project for its own workforce.
	Incentives for EV car drivers	For example all EV car drivers could pay less in car parks	N	n/a	This was suggested in the consultation. This type of action was discounted in the city's Electric Vehicle Strategy because it would be difficult to maintain and support once EVs become mainstream.
	Information on costs of car use	Better information on total costs of car travel, including parking and health costs	Y	10 and 16	Respondents wanted the public to be better informed about air pollution and the costs of private car use. This will be considered as part of the education and communications actions within the plan.
	Large public sector fleets	DCC, University and hospital to convert diesel vehicles to ULEV where cost effective	N	n/a	Respondents supported this type of measure, but were doubtful that it would have much impact. For this reason it has not been included in a specific action, however the Council would hope to influence other large employers, particularly once its own agile and flexible working project is complete.
	Local travel and advice website	E.g. http://myjourneysouthampton.com	N	n/a	This was suggested during the consultation. It could be considered as part of the SELDP, education, communications and monitoring actions within the plan, but has not been included as a specific measure at this stage.
	Low Emission Zone	An area that vehicles which do not meet specified emission standards must pay a charge to enter	N	n/a	Some were supportive, whilst others replied that car drivers should not be the subject of such 'stick' measures. For private individuals, there were worries over cost and

					<p>accessibility to services. For businesses there were concerns over profitability.</p> <p>It may not effectively target the worst polluters (e.g. if real world emissions do not match the expected Euro standards). It is also likely to affect the poorest motorists most significantly and the infrastructure required can be expensive.</p>
	Pollution event alerts	Issue alerts about high pollution events	Y	10 and 16	This was supported by respondents. It will be considered as part of the education, communications and monitoring actions within the plan, but has not been included as a specific measure at this stage.
	Private Hire	Tighter emission standards for private hire vehicles and restrictions on idling.	N	n/a	<p>This measure was suggested by respondents to the public consultation.</p> <p>Age standards are already set for private hire vehicles, and legal advice suggests that it is not possible to set emission standards. Idling is already prohibited in private hire licenses. It may reduce local emissions when idling enforcement is taking place, but is not likely to have a prolonged or widespread effect.</p>
	Real Time Traffic Information	Utilise real-time technology and new forms of network control to smooth flow and provide information to travellers	Y	10, 16 and 17	<p>Respondents supported this type of measure and were keen to have more information about pollution levels and impacts. This will be included for consideration in the actions for education, communications and expanding the monitoring network.</p>
	Research	Actively support research by Exeter University (and others) into sustainable travel and behavioural change	N	n/a	This will continue, as research projects come forward, but was not considered suitable for inclusion as a separate measure in the AQAP.
	Roads	New roads within the city	N	n/a	<p>This was identified by respondents to the public consultation as a measure which should be considered.</p> <p>It has not been included in the AQAP because it would encourage more road travel, and have a negative impact on actions to encourage modal shift</p>
	Servicing	Reduce emissions from vehicles delivering to businesses in the city, and collecting from them	N	n/a	<p>Respondents supported this type of measure, but were doubtful whether it could be achieved in practice. Some were wary of measures that would place additional costs on businesses, particularly small businesses.</p> <p>These types of measures any be included for consideration in the wider action to identify enhancements for the Heavitree corridor. Exeter City Futures are also engaging with businesses on sustainable transport of goods and waste.</p>

	Schools	Work with Sustrans to deliver education programs in local schools	Y	7	This work will continue at the request of Sustrans but was not considered to merit a separate action in this plan. SELDP is also developing an Active School Communities programmes which will promote active travel.
	Street design	Best practice street design, including for walking, cycling and buses	Y	1, 2, 6, 13 and 14	This was suggested by respondents. These types of measures will be considered within the GESP and Local Plan themed actions in this plan.
	Traffic Lights	Reduce the number of traffic lights to smooth traffic flow	Y	5	This was identified by respondents to the public consultation as a measure which should be considered. Depending on what other measures were implemented, this could encourage modal shift to active travel modes, or it could discourage active travel. This would need careful review and is included within the action to maximise the efficiency of the highway network.
	Trams	Implement a new, high quality tram network	N		Respondents proposed this measure. ECC will press DCC to formally evaluate it, but it is too early to include this as a measure in the AQAP. If a review concludes that this may be a viable options for the city then it will be included in later versions of the AQAP.
	Transportation Group	High level regular meetings between ECC and DCC to discuss strategic transport policy and network performance	N	n/a	Respondents said that the two authorities should be working closely and effectively together. The Exeter and Devon Transport Steering Group is well established and continues to meet to discuss over-arching transport strategy. As such it has not been included as a particular measure in the AQAP.
	Tunnels	New road tunnels to carry traffic	N	n/a	This was identified by respondents to the public consultation as a measure which should be considered. It has not been included in the AQAP because it would encourage more road travel, and have a negative impact on actions to encourage modal shift
	Work with sufferers	Help those who are particularly vulnerable to air pollution to avoid high exposure	N	n/a	This will be considered as part of the SELDP actions within the plan, but has not been included as a specific measure at this stage.

Appendix C: Emissions Modelling

The required reduction in road emissions at each location where the NO₂ objective is exceeded was calculated using the method described in LAQM.TG(16). The DEFRA NO_x to NO₂ calculator was used, and background levels from the LAQM tools website.

Traffic flow and vehicle mix data was provided by Devon County Council for all the locations where the objective level for NO₂ is exceeded. Road link lengths were standardised to 1km for the Alphington Street and Blackboy Road / Polsloe Road / Pinhoe Road and Mount Pleasant Road junction models. Along the Heavitree corridor link lengths between each traffic count location have been measured from maps. Because these models have only been used to quantify the change in emissions that would occur as a result of changes to traffic parameters, the modelled link length is not in fact important. Total emissions are affected by the link length, but this modelling is not concerned with total emissions, only the percentage change. Average speeds for the 12 hour period from 7am to 7pm were provided by DCC and were adjusted to 24 averages assuming vehicles travel at the speed limit for the road between 7pm and 7am. The input data to the baseline models is shown in Figures C1 to C3 below.

The emissions model used was DEFRA's Emissions Factor Toolkit v.8.0.1. The default emission standards for each model year have been used except where described below for specific scenarios.

The alternative scenarios modelled were:

- Future years (with no change in traffic parameters). In these models only the emission year was changed in the Emission Factors Toolkit.
- A conservative assumption of the reduction in emissions caused by improved vehicle technology during the lifetime of the AQAP. For this model the year was changed to 2024 in the Emission Factors toolkit and then half of the predicted improvement compared to the 2017 baseline has been quoted in the Action Plan.

- The impact of an increase in active internal commutes to 50%. The input data for this model for the Heavitree corridor are shown in Figure C.4. These data are based on DCC's measurements that currently 19% of all car journeys are internal commutes, and 31% of internal commutes are made by walking or cycling. This rate has been increase to 50% at the expense of car commutes, which means private car commutes fall from 45% to 26%.
- The impact of 33% or 66% bus electrification (FCEV – Fuel Cell Electric Vehicle). For this model, the default bus / coach split from the Emission Factors Toolkit has been used, and only the relevant percentage of bus emission standards have been changed. The coach emission standards and the remaining proportion of the bus fleet have been kept at the standard emissions within the Emission Factors Toolkit.

All emissions changes as a result of these scenarios have been calculated as a percentage reduction in total emissions compared to the 2017 baseline models.

The currently anticipated reduction that will be required from measure 1 has been shown as a range between 39 and 78%. 78% is the required reduction based on 2017 measured pollution levels and assuming no improvement in vehicle emissions standards or impact from other measures. 39% is the remaining reduction which would be required from measure 1 allowing for a conservative 50% of DEFRA's predicted improvements in emissions standards over the lifetime of the action plan, and including the predicted impact of achieving a 50% active internal commute rate, and 66% bus fleet electrification.

Figure C1 Input data to the baseline 2017 emission model for Alphington Street

	all models			baseline model							
	Road Type	No of Hours	Link Length (km)	Traffic Flow	% Car	% Taxi (black cab)	% LGV	% HGV	% Bus and Coach	% Motorcycle	Speed(kph)
A377 N N	Urban (not London)	24	1	14572	94.86	0	0.72	2.32	1.13	0.97	40.485
A377 N S	Urban (not London)	24	1	13572	95.28	0	0.75	1.98	1.09	0.9	40.485
Haven Rd E	Urban (not London)	24	1	4307	93.8	0	1.07	2.33	2.14	0.66	40.485
Haven Rd W	Urban (not London)	24	1	4224	92.98	0	1.23	2.46	2.46	0.87	40.485
A377 S S	Urban (not London)	24	1	13870	95.38	0	0.6	2.55	0.58	0.89	16.23
A377 S N	Urban (not London)	24	1	13939	95.23	0	0.52	2.68	0.62	0.95	16.16
Ser Rd W	Urban (not London)	24	1	1014	99.06	0	0.12	0.47	0.12	0.23	40.485
Ser Rd E	Urban (not London)	24	1	2026	98.83	0	0.41	0.47	0	0.29	40.485

Although all arms of the junction have been modelled, only the 'A377 S' emissions have been used for the emissions calculations because the monitoring point is on this section of Alphington Street.

Figure C2 Input data to the baseline 2017 emission model for Blackboy Road / Polsloe Road / Pinhoe Road / Mount Pleasant Road junction

	all models			baseline model							
	Road Type	No of Hours	Link Length (km)	Traffic Flow	% Car	% LGV	% rigid HGV	% Artic HGV	% Bus and Coach	% Motorcycle	Speed(kph)
Pinhoe Road westbound	Urban (not London)	24	1	7466	83.5	10.2	2.1	0.2	2.9	1.0	29.1
Pinhoe Road eastbound	Urban (not London)	24	1	41	82.4	11.2	1.8	0.3	3.1	1.1	29.7
Polsloe Road southbound	Urban (not London)	24	1	4141	89.5	8.4	0.8	0.0	0.1	1.2	40.5
Polsloe Road northbound	Urban (not London)	24	1	3401	90.8	7.5	0.8	0.1	0.1	0.8	40.5
Blackboy Road westbound	Urban (not London)	24	1	5578	82.0	10.3	2.0	0.2	4.3	1.3	40.5
Blackboy Road eastbound	Urban (not London)	24	1	5617	80.5	11.6	1.7	0.3	4.4	1.5	40.5
Mountpleasant Road southbound	Urban (not London)	24	1	4118	87.4	9.4	1.3	0.1	0.7	1.0	40.5
Mount Pleasant Road northbound	Urban (not London)	24	1	3842	87.5	9.0	1.7	0.2	0.8	0.8	40.5

Total emissions from all arms of the junction have been combined, because the monitoring point is right at the junction and all traffic movements in the model will pass the monitoring point.

Figure C3 Input data to the baseline 2017 emission model for Heavitree Corridor

	all models			baseline model						
	Road Type	No of Hours	Link Length (km)	Traffic Flow	% Car	% LGV	% HGV	% Bus and Coach	% Motorcycle	Speed(kph)
Honiton Rd EB	Urban (not London)	24	1	13954	84.97	10.75	1.75	1.68	0.85	28.3
Honiton Rd WB	Urban (not London)	24	1	13690	84.87	10.86	1.61	1.72	0.94	25.5
East Wonford Hill EB	Urban (not London)	24	1	10549	84.28	10.60	1.57	2.82	0.73	28.3
East Wonford Hill WB	Urban (not London)	24	1	11000	84.05	10.67	1.61	2.80	0.87	25.5
Fore St at Butts Road junction EB	Urban (not London)	24	1	10347	84.59	10.23	1.60	2.84	0.74	28.3
Fore St at Butts Road junction WB	Urban (not London)	24	1	11439	83.96	10.92	1.53	2.70	0.89	25.5
Fore St east of Church Road EB	Urban (not London)	24	1	10202	84.51	10.08	1.71	2.87	0.83	28.3
Fore St east of Church Road WB	Urban (not London)	24	1	11490	84.35	10.50	1.51	2.67	0.97	25.5
Fore Street west of Church Road EB	Urban (not London)	24	1	10232	83.89	10.00	1.65	3.60	0.86	28.3
Fore st west of Church Road WB	Urban (not London)	24	1	11212	83.97	10.19	1.47	3.39	0.98	25.5
Fore St east of Homefield Road EB	Urban (not London)	24	1	10246	83.82	10.08	1.64	3.59	0.87	28.3
Fore St East of Homefield Road WB	Urban (not London)	24	1	11195	83.97	10.18	1.48	3.39	0.98	25.5
Fore St West of Homefield Road EB	Urban (not London)	24	1	9997	83.78	9.99	1.66	3.68	0.89	28.3

Fore St West of Homefield Road WB	Urban (not London)	24	1	10877	83.91	10.09	1.52	3.49	0.99	25.5
for street east of Gordon's Lamp EB	Urban (not London)	24	1	10000	83.62	10.18	1.66	3.64	0.90	28.3
Fore St east of Gordon's Lamp WB	Urban (not London)	24	1	10915	83.81	10.20	1.51	3.50	0.98	25.5
Magdalen Rd by almshouses EB	Urban (not London)	24	1	3639	86.01	10.84	1.04	0.97	1.14	28.3
Magdalen Rd by almshouses WB	Urban (not London)	24	1	3957	86.74	10.09	0.83	1.14	1.20	25.5
Heavitree road by Rowancroft EB	Urban (not London)	24	1	6362	82.24	9.81	2.02	5.16	0.77	28.3
Heavitree road by Rowancroft WB	Urban (not London)	24	1	6958	82.13	10.27	1.90	4.84	0.86	25.5
Heavitree Road west of Barrack Road EB	Urban (not London)	24	1	7864	82.66	8.37	1.71	6.49	0.78	28.3
Heavitree Road west of Barrack Road WB	Urban (not London)	24	1	9413	82.69	9.25	1.66	5.50	0.90	25.5

Figure C4 Input data to the emission model for Heavitree Corridor to predict the impact of a 50% active internal commute rate

	50 % active internal commutes										
	19% of total cars	total internal commutes	commute car flow if car commute rate falls to 26%	change in car flows	adjusted total car flow	adjusted total flow with fewer car commuters	adjusted percentage car	adjusted percentage LGV	adjusted percentage HGV	adjusted percentage Bus & Coach	adjusted percentage Motorcycle
Honiton Rd EB	2252.8	5006.2	1301.6	951.2	10905.6	13002.9	83.9%	11.5%	1.9%	1.8%	0.9%
Honiton Rd WB	2207.6	4905.8	1275.5	932.1	10686.9	12758.3	83.8%	11.7%	1.7%	1.8%	1.0%
East Wonford Hill EB	1689.2	3753.7	976.0	713.2	8177.2	9835.4	83.1%	11.4%	1.7%	3.0%	0.8%
East Wonford Hill WB	1756.7	3903.8	1015.0	741.7	8504.1	10258.7	82.9%	11.4%	1.7%	3.0%	0.9%
Fore St at Butts Road junction EB	1663.0	3695.6	960.8	702.2	8050.5	9645.0	83.5%	11.0%	1.7%	3.0%	0.8%
Fore St at Butts Road junction WB	1824.8	4055.0	1054.3	770.5	8833.5	10668.3	82.8%	11.7%	1.6%	2.9%	1.0%
Fore St east of Church Road EB	1638.1	3640.2	946.5	691.6	7929.9	9510.2	83.4%	10.8%	1.8%	3.1%	0.9%
Fore St east of Church Road WB	1841.5	4092.1	1063.9	777.5	8914.3	10712.5	83.2%	11.3%	1.6%	2.9%	1.0%
Fore Street west of Church Road EB	1630.9	3624.3	942.3	688.6	7895.3	9543.7	82.7%	10.7%	1.8%	3.9%	0.9%
Fore st west of Church Road WB	1788.7	3975.0	1033.5	755.2	8659.2	10456.4	82.8%	10.9%	1.6%	3.6%	1.1%
Fore St east of Homefield Road EB	1631.7	3626.1	942.8	689.0	7899.1	9556.8	82.7%	10.8%	1.8%	3.8%	0.9%
Fore St East of Homefield Road WB	1786.0	3968.9	1031.9	754.1	8646.0	10440.5	82.8%	10.9%	1.6%	3.6%	1.1%
Fore St West of Homefield Road EB	1591.3	3536.2	919.4	671.9	7703.4	9324.8	82.6%	10.7%	1.8%	3.9%	1.0%

Fore St West of Homefield Road WB	1734.1	3853.6	1001.9	732.2	8394.8	10144.9	82.7%	10.8%	1.6%	3.7%	1.1%
for street east of Gordon's Lamp EB	1588.8	3530.8	918.0	670.8	7691.5	9329.5	82.4%	10.9%	1.8%	3.9%	1.0%
Fore St east of Gordon's Lamp WB	1738.1	3862.4	1004.2	733.9	8413.9	10181.1	82.6%	10.9%	1.6%	3.8%	1.1%
Magdalen Rd by almhouses EB	594.6	1321.4	343.6	251.1	2878.6	3387.6	85.0%	11.6%	1.1%	1.0%	1.2%
Magdalen Rd by almshouses WB	652.2	1449.3	376.8	275.4	3157.3	3682.0	85.7%	10.8%	0.9%	1.2%	1.3%
Heavitree road by Rowancroft EB	994.0	2209.0	574.3	419.7	4812.1	5941.9	81.0%	10.5%	2.2%	5.5%	0.8%
Heavitree road by Rowancroft WB	1085.7	2412.7	627.3	458.4	5255.8	6499.1	80.9%	11.0%	2.0%	5.2%	0.9%
Heavitree Road west of Barrack Road EB	1234.9	2744.3	713.5	521.4	5978.2	7342.1	81.4%	9.0%	1.8%	7.0%	0.8%
Heavitree Road west of Barrack Road WB	1478.9	3286.4	854.5	624.4	7159.2	8788.6	81.5%	9.9%	1.8%	5.9%	1.0%

Glossary of Terms

Abbreviation	Description
AQAP	Air Quality Action Plan - A detailed description of measures, outcomes, achievement dates and implementation methods, showing how the local authority intends to achieve air quality limit values'
AQMA	Air Quality Management Area – An area where air pollutant concentrations exceed / are likely to exceed the relevant air quality objectives. AQMAs are declared for specific pollutants and objectives
AQS	Air Quality Strategy
ASR	Air quality Annual Status Report
BID	Business Improvement District
COMEAP	Committee on the Medical Effects of Air Pollution
DCC	Devon County Council
Defra / DEFRA	Department for Environment, Food and Rural Affairs
ECC	Exeter City Council
EU	European Union
FCEV	Fuel Cell Electric Vehicle
GESP	Greater Exeter Strategic Plan
LAQM	Local Air Quality Management
LCWIP	Local Walking and Cycling Infrastructure Plan
LP	Local Plan
NO ₂	Nitrogen Dioxide
NO _x	Nitrogen Oxides
PHE	Public Health England
PM ₁₀	Airborne particulate matter with an aerodynamic diameter of 10µm (micrometres or microns) or less

PM _{2.5}	Airborne particulate matter with an aerodynamic diameter of 2.5µm or less
SELDP	Sport England Local Delivery Plan
TS	Transport Strategy
ULEV	Ultra Low Emission Vehicle

References

- Committee on the Medical Effects of Air Pollution (COMEAP) (2018). Nitrogen Dioxide: Effects on Mortality
- DEFRA (2018). Emission Factors Toolkit v. 8.0.1
<https://laqm.defra.gov.uk/review-and-assessment/tools/emissions-factors-toolkit.html>
- DEFRA (2018). Tools for Local Air Quality Management, including NO_x to NO₂ calculator and background maps <https://laqm.defra.gov.uk/review-and-assessment/tools/tools.html>
- DEFRA (2016). Local Air Quality Management Technical Guidance
- DEFRA (2016). Local Air Quality Management Policy Guidance
- Exeter City Council (2018). Annual Status Report.
- Exeter City Council (2018). Draft Air Quality Action Plan and consultation
www.exeter.gov.uk/aqap
- Public Health England (PHE) (2018). Estimation of Costs to the NHS and Social Care due to the Health Impacts of Air Pollution.
- Public Health England (PHE) (2014). Estimating Local Mortality Burdens associated with Particulate Air Pollution.