
**Bath & North East
Somerset Council**

Public Protection and Health Improvement Services

**Air Quality Action Plans
for Keynsham and
Saltford**

Consultation draft

2015

Keynsham and Saltford

Consultation Draft Air Quality Action Plans

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Executive summary

Keynsham and Saltford each have Air Quality Management Areas (AQMAs) where air pollution levels exceed the governments' objective limit.

The AQMA of Keynsham and Saltford were declared on the basis of annual average nitrogen dioxide concentrations exceeding 40 micrograms per cubic metre [$\mu\text{g}/\text{m}^3$]. In 2013 the annual average level of NO_2 on Keynsham High Street was $44\mu\text{g}/\text{m}^3$ and $44\mu\text{g}/\text{m}^3$ at The Crown in Saltford.

Nitrogen oxides (NO_x) analysers (providing measurements of NO_x and NO_2 data every 15 minutes) were located in Keynsham High Street and at Saltford News temporarily for a year in order to supplement the on-going monitoring using NO_2 diffusion tubes located at 10 locations in Keynsham and 3 locations in Saltford (6 in 2012).

Bath and North East Somerset Council is legally required to review air quality and designate air quality management areas if improvements are necessary under Part IV of the Environment Act 1995 and the Air Quality Management regulations. Where an air quality management area is designated, an air quality action plan describing the pollution reduction measures must then be put in place in pursuit of the achievement of the Air Quality Strategy and Objectives in the designated area.

The draft Transport Strategy 'Developing a Strategy for Keynsham' states as one of its objectives: 'Improving air quality and reducing vehicle carbon emissions'.

The aims of the action plans also tie in with the Fit For Life agenda – it's aims including: '*Creating an environment where people actively choose to walk and cycle as part of everyday life*'.

This document is a consultation-draft, open for comments that will inform the final document due for publication in January 2016. The main stages for developing the air quality action plan are as follows:

- Consultation period 14th September to 4th December 2015
- Final draft December 2015
- Issued for approval to cabinet member January 2016.

There is an estimated 156 people living within the Keynsham AQMA and 48 living in the Saltford AQMA respectively.

In Keynsham, background NO_2 accounts for 41% of the monitored concentration. This means that 59% of the concentrations can be influenced by measures that reduce emissions in the AQMA.

Keynsham High Street has a different composition of vehicle types compared to the AQMA on the A4 in Saltford and the AQMA in Bath. The majority of vehicles on Keynsham High Street are cars at 93.4%. The second largest proportion of vehicles is Light Goods Vehicles at 4.4%. Motorcycles represent 1.4%. Buses, coaches and lorries only represent a combined total 1.6%

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Diesel cars are contributing over 60% to road NO_x in Keynsham whilst constituting an estimated 40% of cars. Petrol cars only contribute about 15% of NO_x emissions, despite constituting an estimated 60% of cars.

The majority of vehicles on the A4 in Saltford are cars at 86.8%. The second largest proportion of vehicles are Light Goods Vehicles at 8%. Of the 5.1% constituted by heavy duty vehicles, 2.8% are rigid HGVs, 1.2% are articulated HGVs and buses and coaches made 1.1% of all traffic.

In Saltford, diesels cars constitute approximately 40% of NO_x emissions, whereas petrol cars only constitute approximately 11%. Cars provide more than 50% of NO_x emissions, but unlike Keynsham, HGVs and buses contribute a higher proportion emitting 27.7% and 8.8% respectively.

Although NO_x emissions overall have been declining as a result of improved engine technology, primary NO₂ emissions have increased due to technology designed to lower the emissions of particles.

In areas where the national air quality objectives are exceeded, there needs to be a reduction of between 17 and 21% in emissions of nitrogen oxides in order to meet the objectives across the Air Quality Management Areas.

A detailed list of potential actions for Keynsham and Saltford is provided that consultees are encouraged to comment on and add to. A questionnaire will be available to fill in on the council's website. Hard copies are available on request. The questionnaire will list a number of measures that are anticipated to be the most deliverable and invite comment and suggestions for the final version of the document.

Two informal 'drop-in' consultation events will be held where there will be displays, technical information and the opportunity for you to provide feedback on the potential measures. The first of these sessions will take place at Key Centre on the 15th September between 2pm and 8pm for the Keynsham Action Plan and for the Saltford Action Plan on 14th October at Saltford Village Hall (Avon Room) between 4pm and 8pm.

The Air Quality Action Plans will be published following approval by the cabinet member for Transport in early 2016. This is a relatively long period for development of the action plans due to the general and location elections.

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1. Introduction

THE ISSUE

The Air Quality Management Areas (AQMA) of Keynsham and Saltford were declared on the basis of an exceedance of the national objective limit for annual average nitrogen dioxide (40 micrograms per cubic metre [$\mu\text{g}/\text{m}^3$]). In 2013 the annual average level of NO_2 on Keynsham High Street was $44\mu\text{g}/\text{m}^3$ and $44\mu\text{g}/\text{m}^3$ at The Crown in Saltford.

Particulate Matter (PM_{10}) has not been considered as part of the action plan as the AQMAs have only been declared for NO_2 . PM_{10} was not measured in either location because measurements in Bath, where pollution levels are generally higher, were substantially below the objective limit for PM_{10} . However, many of the measures considered for reducing NO_2 will also reduce PM_{10} .

MONITORING

Nitrogen oxides (NO_x) analysers (providing measurements of NO_x and NO_2 data every 15 minutes) were located in Keynsham High Street and at Saltford News temporarily for a year in order to supplement the on-going monitoring using NO_2 diffusion tubes located at 10 locations in Keynsham and 3 locations in Saltford (6 in 2012).

HEALTH EFFECTS OF AIR POLLUTION

Air pollution is a factor in an estimated 29,000 early deaths in the UK each year (The Committee on the Medical Effects of Air Pollutants [COMEAP] 2010) and an associated loss to the population of 340,000 life-years. A report by the Cabinet Office estimates that the wider cost of air pollution from transport (in urban areas) alone is between £4.5 and £10.6 billion per annum. The impact of poor air quality on health is unequal with greater effects on unborn and very young children, older people, those with pre-existing heart and lung disease, smokers, the most economically deprived, and those exposed to relatively high levels of pollution due to where they live. Rather than being a single cause of death, air pollution is a factor which can exacerbate underlying health problems including respiratory illnesses like asthma, Chronic Obstructive Pulmonary Disease (COPD), as well as cardiovascular conditions.

NO_2

In the short term, NO_2 can affect pulmonary function and increase allergic inflammatory reactions. Long term exposure can reduce lung function and increase the probability of respiratory symptoms. NO_2 can irritate the lungs and inflame airways, increasing symptoms of those suffering from lung diseases and lowering resistance to respiratory infections such as influenza.

The World Health Organisation (WHO) 'Review of evidence on health aspects of air pollution – Technical Report' states:

'Many studies....have documented associations between day-to-day variations in NO_2 concentration and variations in mortality, hospital admissions and respiratory

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symptoms. Also, more studies have now been published showing associations between long-term exposure to NO₂ and mortality and morbidity. 'some epidemiological studies do suggest associations of long-term NO₂ exposures with respiratory and cardiovascular mortality and with children's respiratory symptoms and lung function'

LEGAL REQUIREMENT

Bath and North East Somerset Council is legally required to review air quality and designate air quality management areas if improvements are necessary under Part IV of the Environment Act 1995 and the Air Quality Management regulations. Where an air quality management area is designated, an air quality action plan describing the pollution reduction measures must then be put in place in pursuit of the achievement of the Air Quality Strategy and Objectives in the designated area. The Local Air Quality Management Policy Guidance (PG09) states that:

'Local authorities must consult on their preparation of an air quality Action Plan after consultation with key players' and 'no consultation exercise should last for less than eight to twelve weeks.'

COUNCIL POLICY CONTEXT

The draft Transport Strategy 'Developing a Strategy for Keynsham' states as one of its objectives: 'Improving air quality and reducing vehicle carbon emissions'. It also lists air quality among the specific Key Performance Indicators.

Air quality is listed in the Core Strategy under Policy KE2 as one of the Placemaking Principles: *'Improve air quality in the town centre as part of the Air Quality Management Area.'* Air Quality is also detailed in paragraph 6.101: *'The reduction of the adverse effects of transport on climate change and air quality, particularly in Air Quality Management Areas (AQMA) in Bath and Keynsham and in future AQMAs, will be managed in accordance with the NPPF.'*

MATERIAL CONSIDERATION

DEFRA states on its Local Air Quality Management web page that *'air quality may be a material consideration where a development would give rise to emissions or increase traffic to such an extent that it would be likely to result in the need to designate an AQMA, or where it would conflict with any proposals in a local Air Quality Action Plan.'*

TIMESCALES

This document is a consultation-draft, open for comments that will inform the final document due for publication in January 2016. The main stages for developing the air quality action plan are as follows:

- Consultation period 14th September to 4th December 2015
- Final draft December 2015
- Issued for approval to cabinet member January 2016.

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Action Plans are periodically reviewed to ensure they remain effective, and where necessary, new plans will be issued. Annual progress reports will be submitted to DEFRA and publicised on the Council website.

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2. Air quality management areas

KEYNSHAM

A detailed assessment in 2008 indicated that an AQMA was required along Keynsham High Street. The area shown in Figure 1 was declared in 2010 following public consultation in July 2010. The monitoring showed that the concentrations exceeded the annual mean NO₂ objective at some locations and a detailed assessment was required. The Detailed Assessment (available on the Council's website <http://www.bathnes.gov.uk/services/environment/pollution/air-quality/reports>) for Keynsham indicated that an AQMA was required for annual average NO₂. Following public consultation an AQMA was declared in July 2010 (Figure 2.1).

Population within AQMA

To estimate the population within the AQMA the residential properties within the AQMA were counted. This was then multiplied by the average number of people per household within the Keynsham North and South wards taken from Census 2011 data(9).

Number of residential properties whose façade is within the AQMA	71
Average number of people per household in Keynsham	2.2
Estimated Total population within the AQMA	156

Table 2.1: Population within AQMA

There are also a large number of shops and offices (including the Civic Centre) within or adjacent to the AQMA. These are not considered in table 1, but will also benefit from any improvements in air quality.

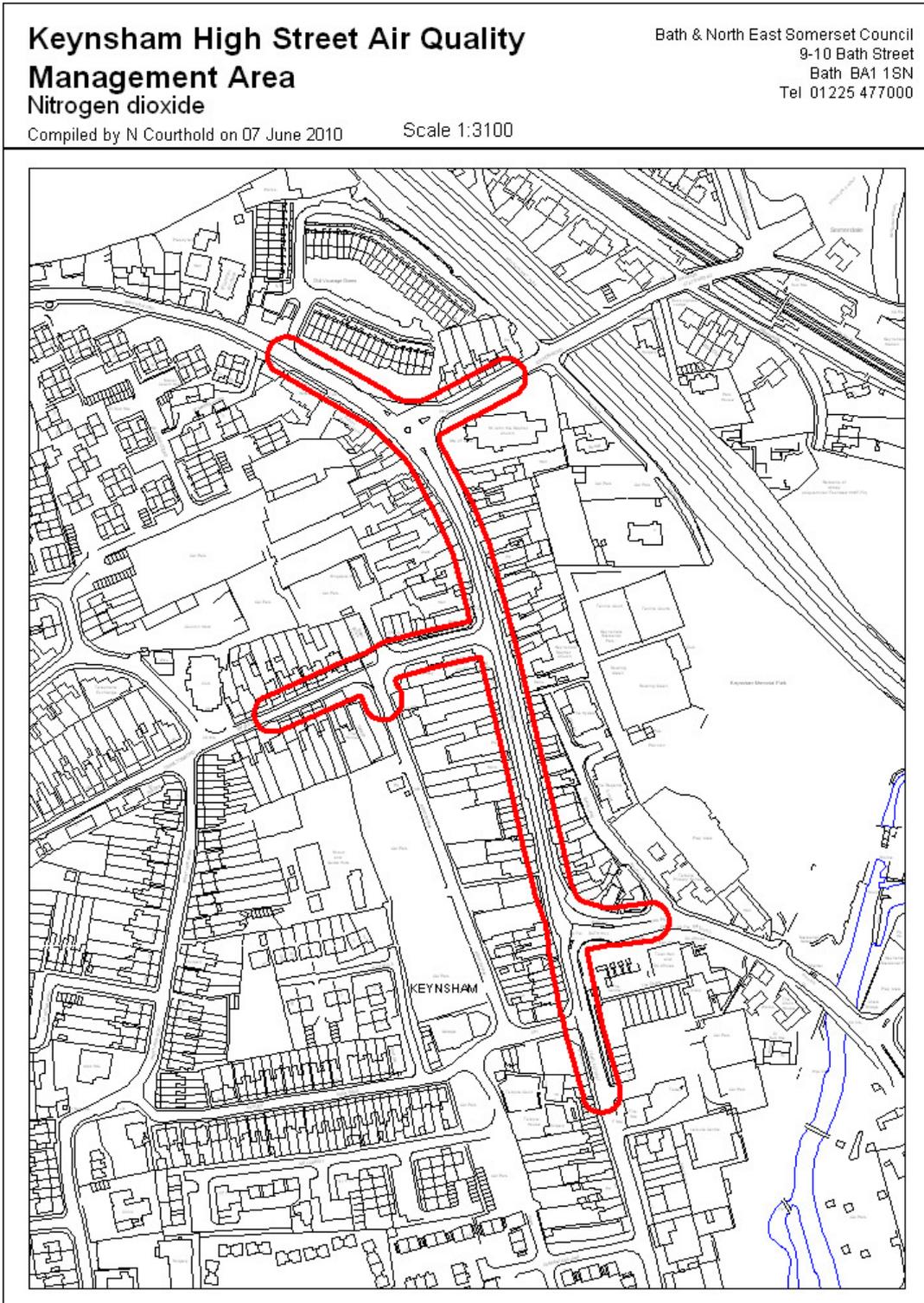


Figure 2.1 Map showing AQMA in Keynsham

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SALTFORD

Following a request from Saltford Parish Council, further nitrogen dioxide diffusion tube monitoring was installed to supplement the existing monitoring site outside the library on the side of the A4. The monitoring showed that the concentrations exceeded the annual mean NO₂ objective at some locations and a detailed assessment was required. The Detailed Assessment (available on the Council's website <http://www.bathnes.gov.uk/services/environment/pollution/air-quality/reports>) for Saltford indicated that an AQMA was required along the A4 for annual average NO₂. Following public consultation an AQMA was declared in July 2013 (Figure 2.2).

Population within AQMA

To estimate the population within the AQMA, the residential properties within the AQMA were counted. This was then multiplied by the average number of people per household within the Saltford ward taken from Census 2011 data.

Number of properties whose façade is within the AQMA	20
Average number of people per household in Saltford	2.4
Estimated Total population within the AQMA	48

Table 2.2: population with Saltford AQMA.

There are also a number of businesses adjacent to the AQMA. These are not considered in table 1, but will also benefit from any improvements in air quality.

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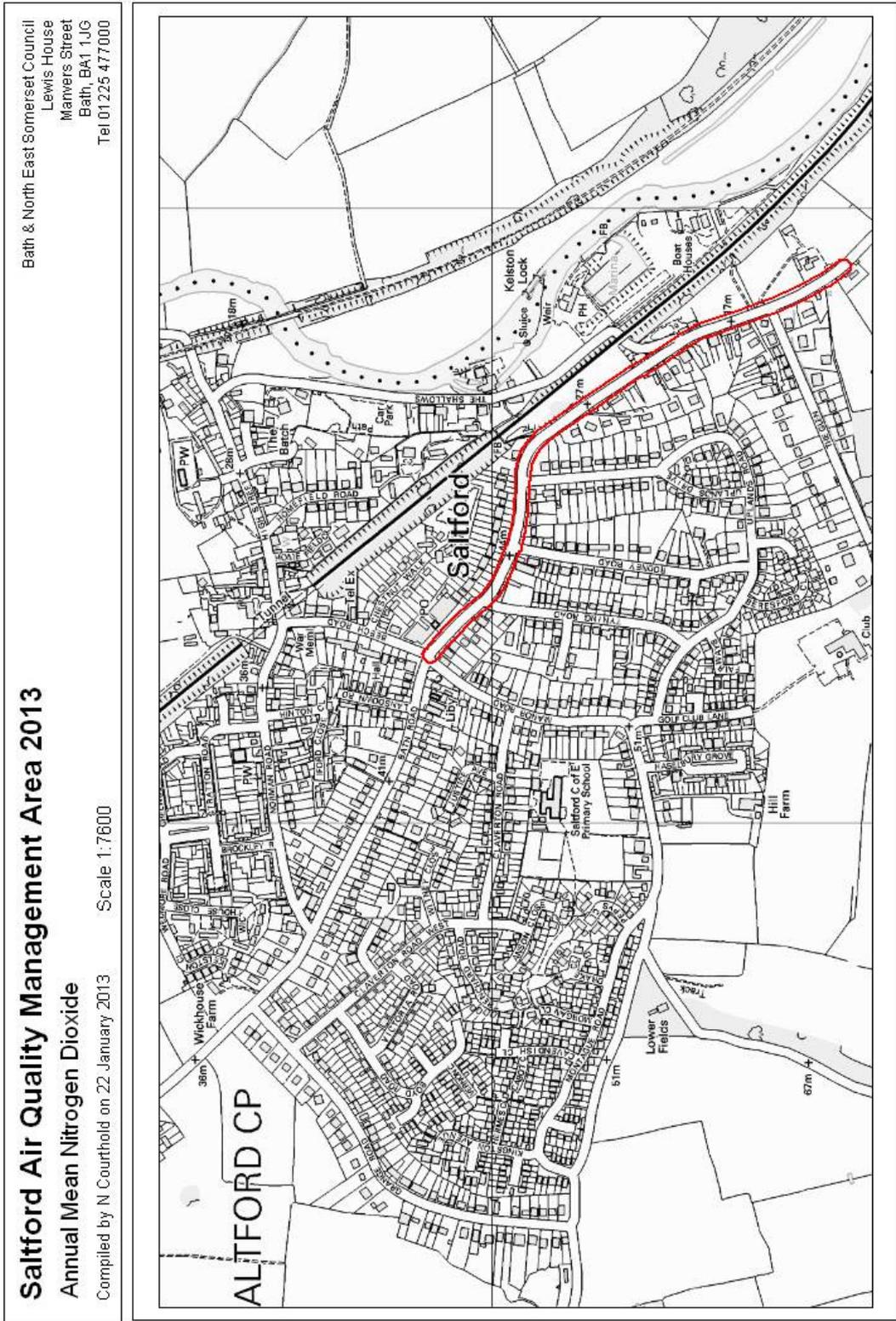


Figure 2.2: Map showing AQMA in Salford

3. Monitoring

KEYNSHAM

Automatic Monitoring

Monitoring of NO_x (nitric oxide and NO₂) was carried out using an analyser located for a 9 month year period (August 2010-June 2011) at what was 'Ronto's' on the High Street, Keynsham adjacent to the Bath Hill mini-roundabout. The automatic NO₂ monitor is a pc-sized box of hardware with an air intake, contained in roadside enclosures or buildings by the roadside. The results of the automatic monitoring of nitrogen dioxide are detailed below in table 3.1:

Location	Within AQMA?	Data Capture Aug 2010-June 2011 (%)	Annual mean concentrations (µg/m ³)	
			2010	2011
Keynsham	Y	95	51	45

Table 3.1: Results of Automatic Monitoring for Nitrogen Dioxide: Comparison with Annual Mean Objective of 40 µg/m³.

The data capture in Keynsham between August 2010 and June 2011 was 95% with annual mean concentrations of nitrogen dioxide of 51µg/m³ and there were 2 exceedences of the hourly mean objective (200µg/m³).

Location	Within AQMA?	Data Capture Aug 2010-June 2011 (%)	Number of exceedences of hourly mean (200 µg/m ³)	
			2010	2011
Keynsham	Y	95	1 (171)	1 (165)

Table 3.2: Results of Automatic Monitoring for Nitrogen Dioxide: Comparison with 1-hour Mean Objective (maximum of 18 exceedences permitted)

Non-automatic monitoring

The non-automatic monitoring is carried out using diffusion tubes. These are pen-size tubes that contain an absorbent gel. They are placed on lamp-posts and road-signs at between 2 and 3 metres above road height on the kerbside. Some are collected fortnightly and some are collected monthly and the gel is analysed for NO₂ concentration, giving an average reading for the period.

Figure 3.1 below shows the diffusion tube and automatic monitoring locations. Details of the monitoring sites are given in Appendix D.

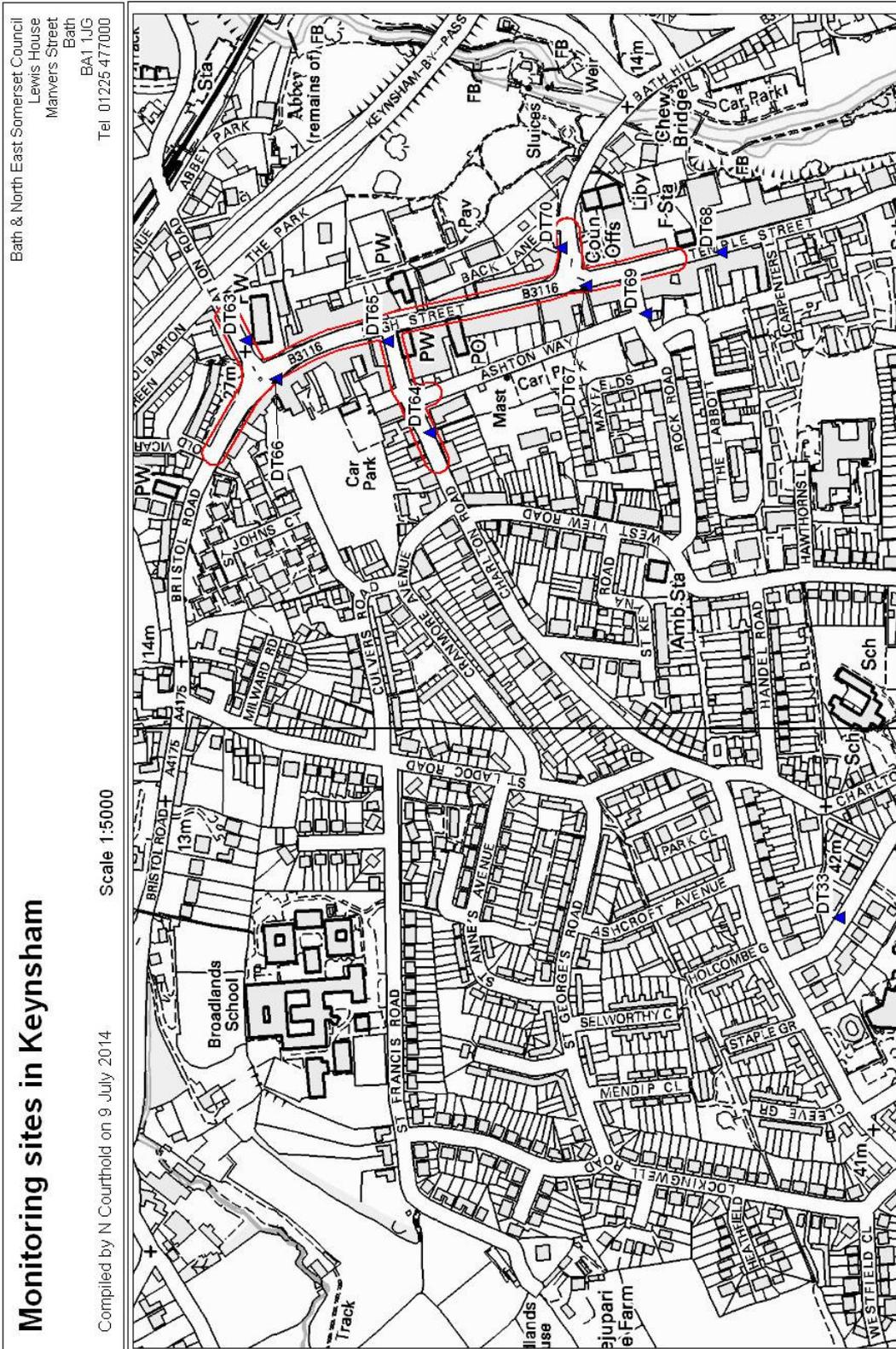


Figure 3.1 Monitoring Sites in Keynsham.

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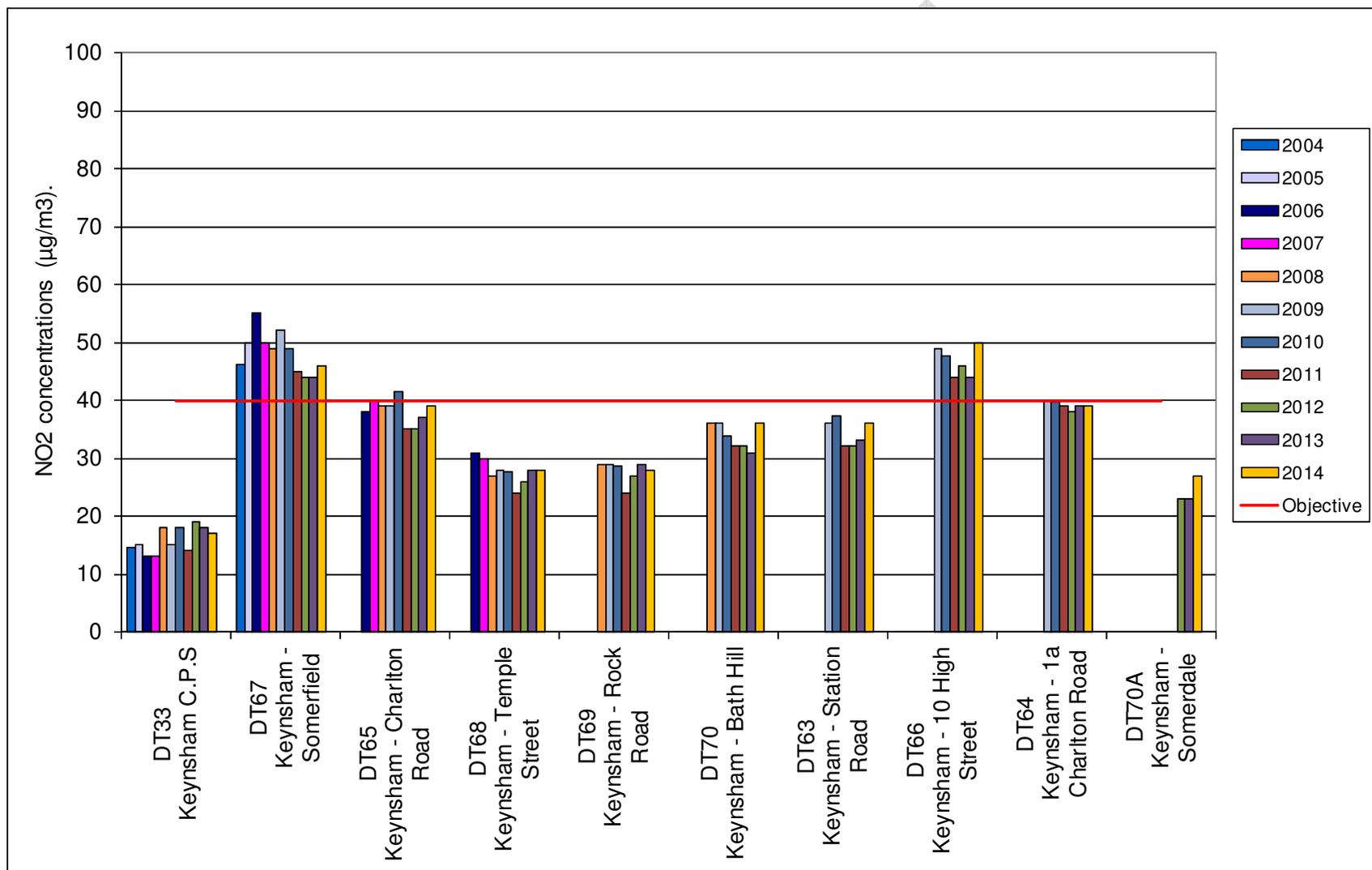


Figure 3.2: Trends in NO₂ Concentrations at Diffusion Tube Sites within Keynsham.

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Figure 3.2 above shows the trend in annual average measurements of NO₂ in Keynsham.

The national annual average objective for NO₂ of 40 µg/m³ was exceeded at two locations within the Keynsham AQMA in 2014. The diffusion tube location adjacent to Peacocks (DT67) was 46 µg/m³. The level of 50 µg/m³ as an annual average of nitrogen dioxide was measured adjacent to number 10, Keynsham High Street (DT66). The full results are contained in Appendix D.

SALTFORD

Automatic Monitoring

Monitoring of NO_x (nitric oxide and nitrogen dioxide) was carried out using a chemiluminescence analyser. The analyser was located for a 17 month period at Saltford News between October 2011 and March 2013.

The results of the automatic monitoring of nitrogen dioxide are detailed below in table 3.3: The data capture in Saltford during 2012 was 86% with annual mean concentrations of nitrogen dioxide of 38 µg/m³ and there were no exceedences of the hourly mean objective (200 µg/m³).

Location	Within AQMA?	Data Capture 2013 (%)	Data Capture 2013 (%) Jan-Mar	Annual mean concentrations (µg/m ³)		
				2011*	2012	2013*
Saltford News	Y	16	87	29	38	32

*partial year

Table 3.3: Results of Automatic Monitoring for Nitrogen Dioxide: Comparison with Annual Mean Objective of 40 µg/m³

Location	Within AQMA?	Data Capture 2013 (%)	Data Capture 2013 (%) Jan-Mar	Number of exceedences of hourly mean (200 µg/m ³) with 98%ile in brackets		
				2011*	2012	2013*
Saltford News	Y	16	87	0 (123)	0 (130)	0 (132)

*partial year

Table 3.4: Results of Automatic Monitoring for Nitrogen Dioxide: Comparison with 1-hour Mean Objective (18 exceedences)

Non-Automatic Monitoring

Diffusion tube monitoring has been carried out at a number of locations within Saltford. Figure 3.3 below shows the monitoring locations. Details of the monitoring sites are

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given in Appendix D. The diffusion tube monitoring is corrected for bias factor, details of the factor used are and detailed analysis methods are given in Appendix C.

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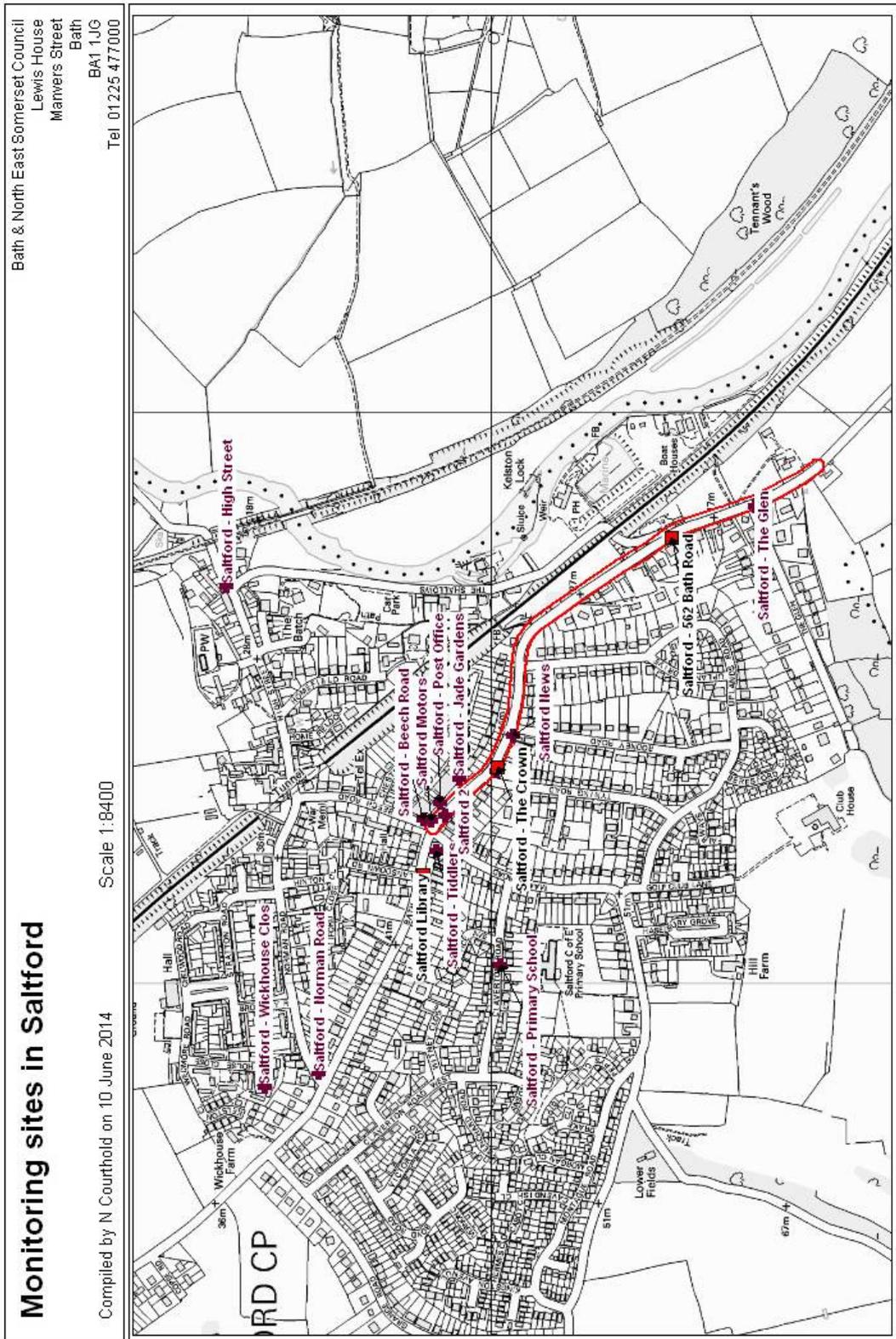


Figure 3.3: Monitoring Locations in Saltford.

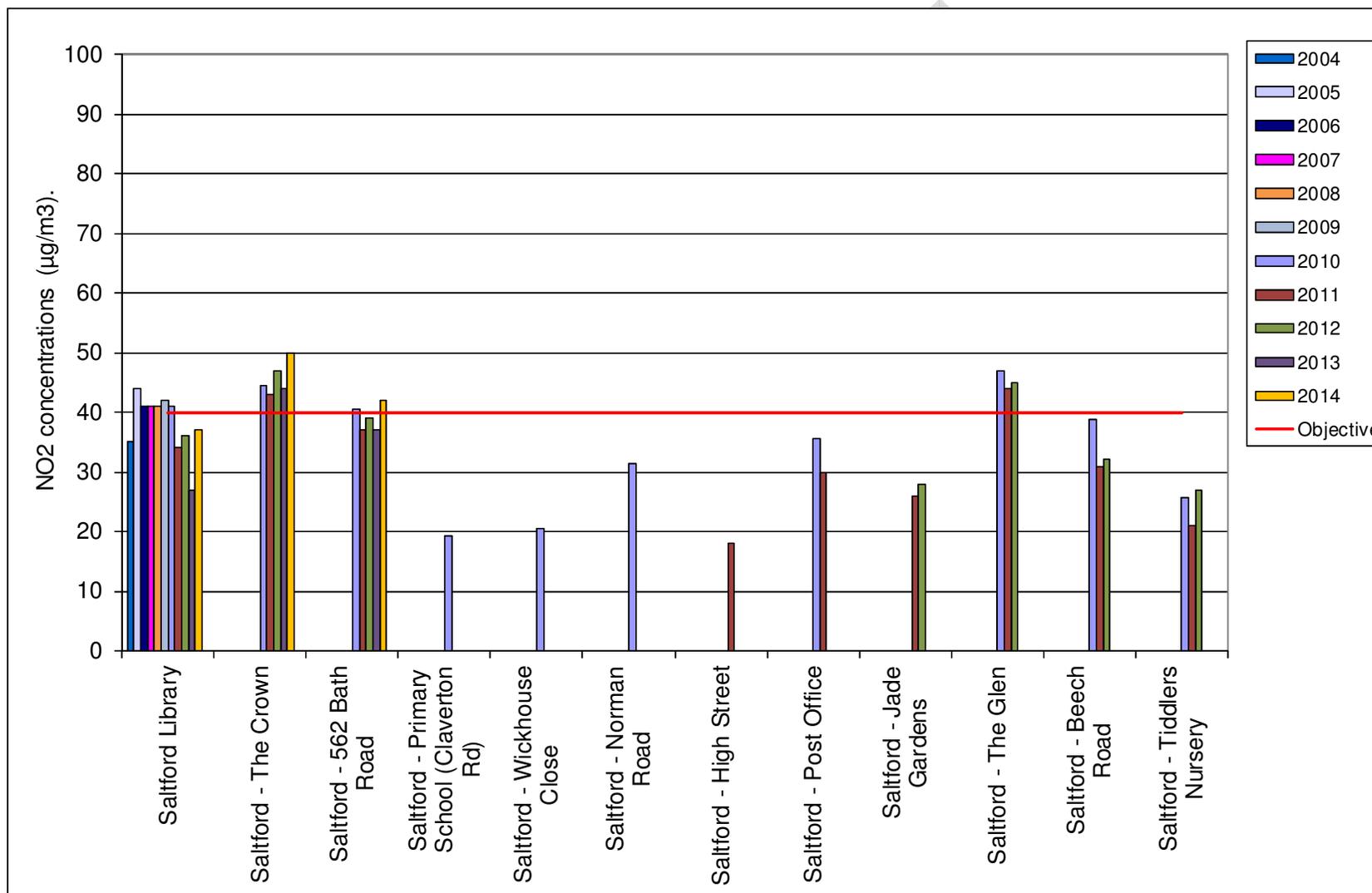


Figure 3.4: Trends in NO₂ Concentrations at Diffusion Tube Sites within Salford.

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Figure 3.4 above shows the trend in annual average measurements of NO₂ in Saltford.

In 2014 the national objective for annual average concentration of NO₂ was exceeded with value of 50 µg/m³ at the Crown (DT75) and 42 µg/m³ at 562 Bath Road (DT77). The full results are contained in Appendix D.

Detail of the measures taken to ensure greatest accuracy of measurement is contained in Appendix C (QA/QC).

DRAFT

4. Source apportionment for oxides of nitrogen emissions

Nitrogen dioxide (NO₂) and nitric oxide (NO) are oxides of nitrogen (NO_x). The AQMAs are declared on the basis of measured concentrations of nitrogen dioxide, from domestic and industrial sources, or traffic emissions. NO₂ from traffic emissions is either primary (emitted as NO₂) or as a result of a chemical reaction in the air following emission.

KEYNSHAM

In Keynsham, background NO₂ accounts for 41% of the monitored concentration. This means that 59% of the concentrations can be influenced by measures that reduce emissions in the AQMA.

The proportion of traffic made up of each vehicle type is illustrated overleaf on figure 4.1. Keynsham High Street has a different composition of vehicle types compared to the AQMA on the A4 in Saltford and the AQMA in Bath. The majority of vehicles on Keynsham High Street (according to the most recent available automatic traffic count) are cars at 93.4%. The second largest proportion of vehicles is Light Goods Vehicles at 4.4%. Motorcycles represent 1.4%. Buses, coaches and lorries represent a combined total 1.6%.

A 30% reduction in traffic flows on the High Street in 2010 resulted in a reduction in road NO_x contribution of 35% and a reduction in measured NO₂ concentrations of 15% (using DEFRA's NO_x to NO₂ calculator).

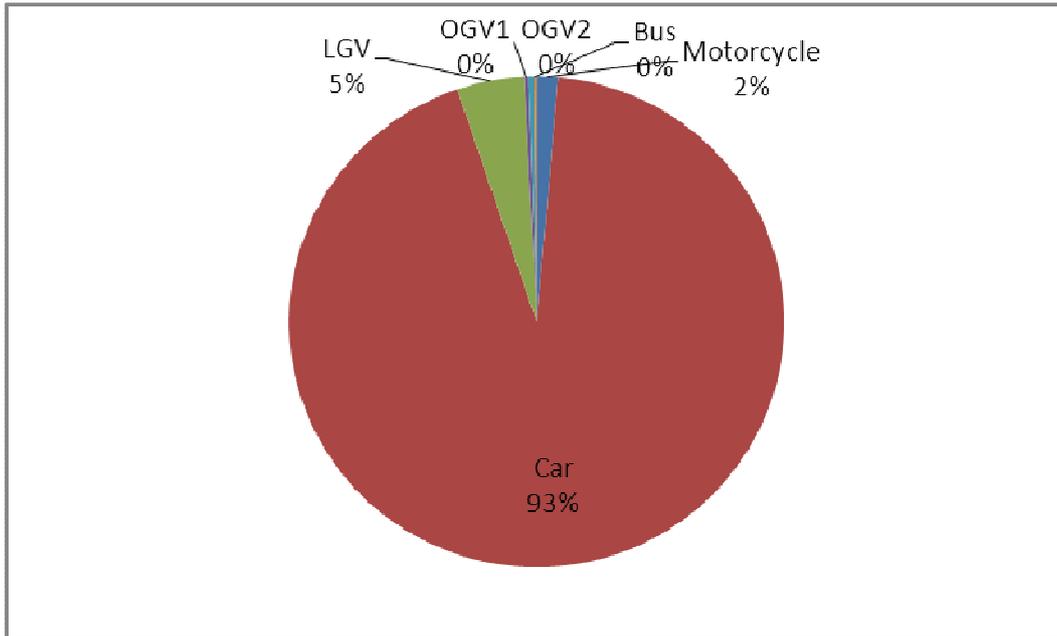


Figure 4.1: Vehicular split of traffic on Keynsham High Street.

Figure 4.2 below shows the modelled NOx emissions along Keynsham High Street using the most recent available traffic counts (2009) and the Emission Factor Toolkit v6.0.1.

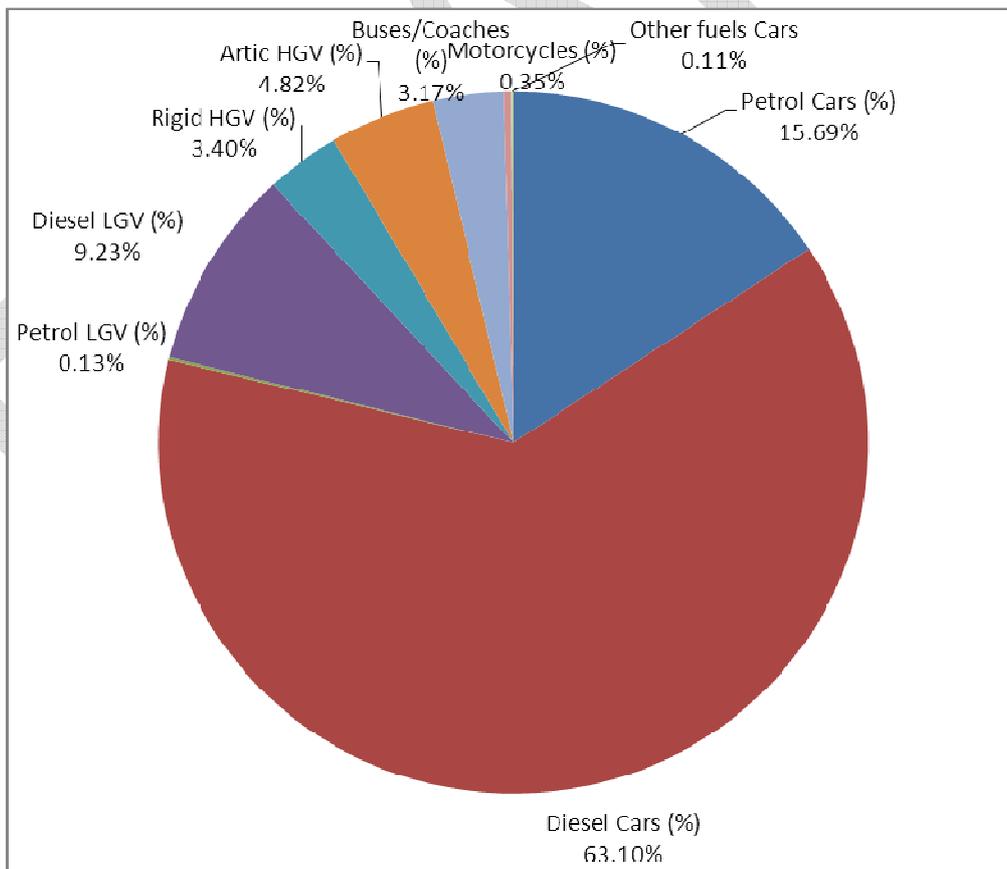


Figure 4.2: NOx emissions by vehicle type in Keynsham.

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Earlier source apportionment work was also carried out in 2011 for the Keynsham Further Assessment which is available on the council's website (<http://www.bathnes.gov.uk/services/environment/pollution/air-quality/reports>). The Further Assessment concluded that queuing traffic contributes 21-43% of the NO_x road contribution across the modelled area.

As illustrated in figure 4.2 above, recent work using the Emission Factor Toolkit (v6.0.1) show that diesel cars are contributing over 60% to road NO_x whilst constituting an estimated 40% of cars.

Petrol cars only contribute about 15% of NO_x emissions, despite constituting an estimated 60% of cars.

Overall, cars contribute nearly 80% to NO_x emissions. It can thus be concluded that diesel cars are overwhelmingly the main contributor to NO_x emissions and the resulting NO₂ concentrations; therefore reducing the number of diesel cars (and queuing) on the High Street should be the main focus of the action plan for Keynsham.

SALTFORD

In Saltford, background NO₂ accounts for 24% of the monitored concentration. This means that 76% of the concentrations can be influenced by measures that reduce emissions in the AQMA.

The traffic count, vehicle split and average speed were obtained from an automatic traffic count site and are illustrated in figure 4.3 below.

Figure 4.3 shows that the majority of vehicles on the A4 in Saltford (according to the most recent available automatic traffic count) are cars at 86.8%. The second largest proportion of vehicles are Light Goods Vehicles at 8%. Of the 5.1% constituted by heavy duty vehicles, 2.8% are rigid HGVs, 1.2% are articulated HGVs and buses and coaches made 1.1% of all traffic.

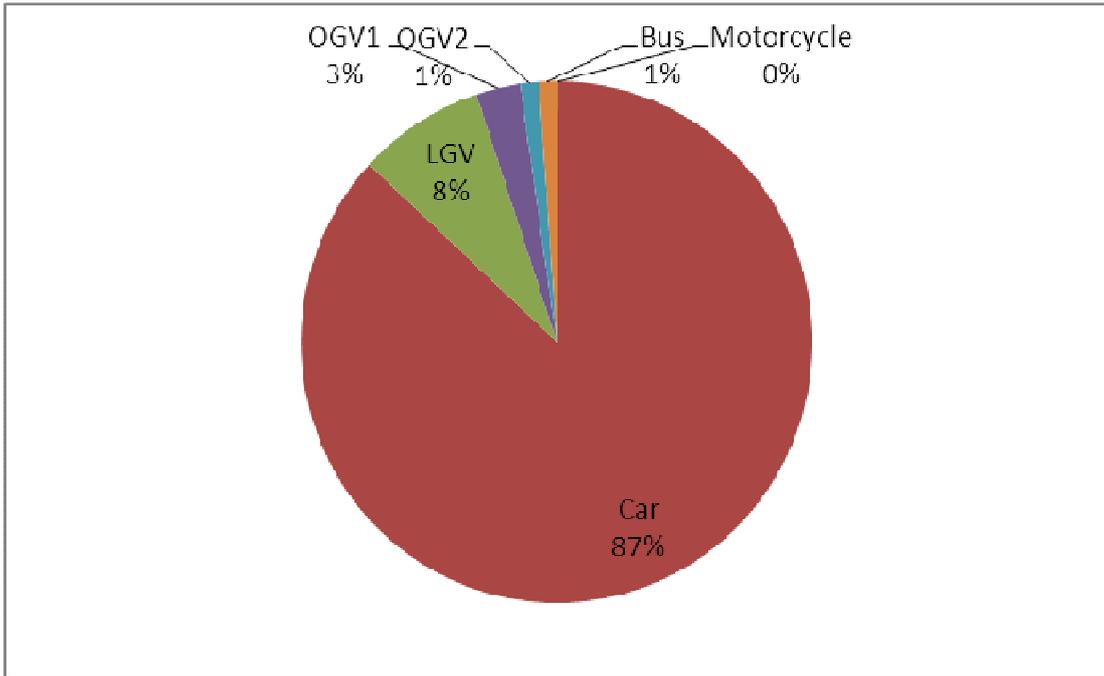


Figure 4.3: Vehicular split of traffic on the A4 in Saltford.

Figure 4.4 below shows the modelled NOx emissions along the A4 in Saltford using the most recent available traffic counts and the Emission Factor Toolkit (EFT) v6.0.1.

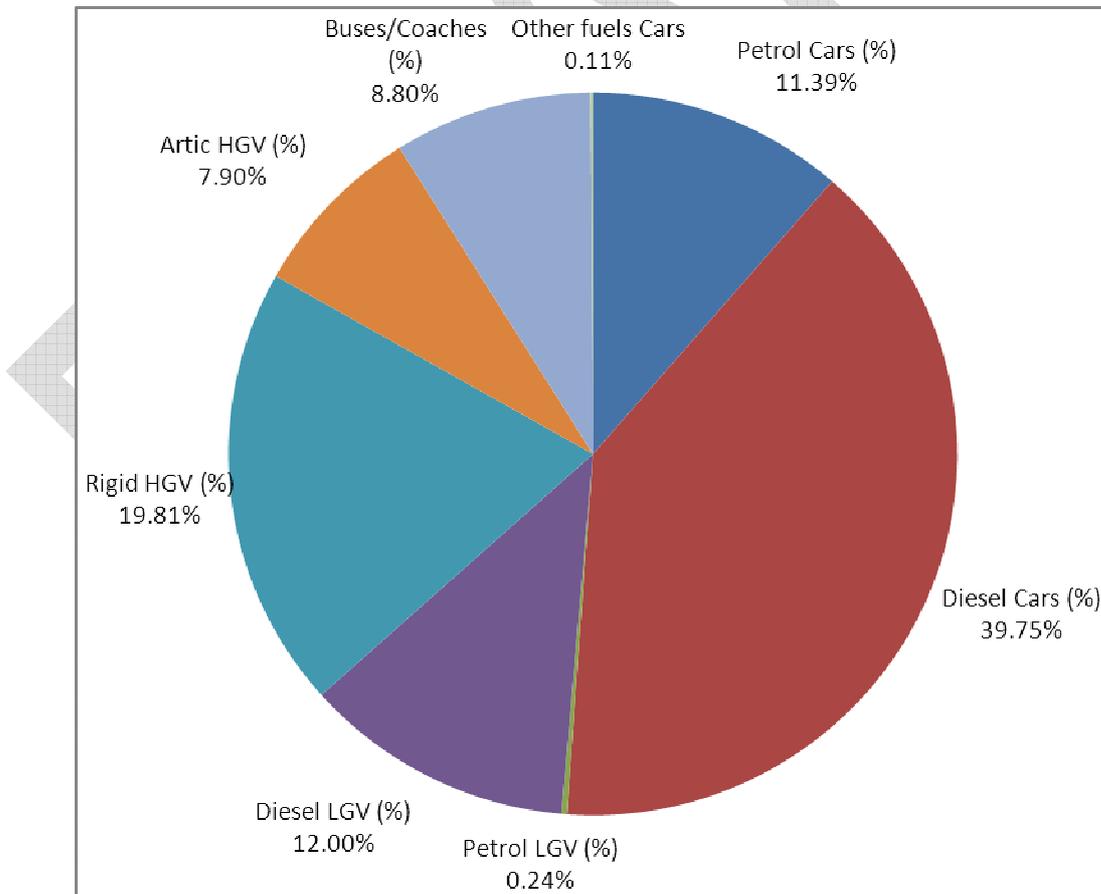


Figure 4.4: NOx emissions by vehicle type on the A4 in Saltford.

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Using the EFT v6.0.1, it is estimated that in Saltford, diesel cars constitute approximately 40% of NO_x emissions, whereas petrol cars only constitute approximately 11%. Cars provide more than 50% of NO_x emissions, but unlike Keynsham, HGVs and buses contribute a higher proportion emitting 27.7% and 8.8% respectively.

It can be concluded that the main source of NO_x emissions in Saltford are diesel cars, with HGVs contributing the 2nd greatest proportion.

DIESEL CARS AND INCREASED NO₂

The high contribution of diesel cars to NO_x emissions and the resulting concentrations of NO₂ is something that has been widely acknowledged and is an unwanted consequence of a greater uptake of diesel cars due, in part, to government incentives in order to reduce emissions of carbon dioxide.

Although NO_x emissions overall have been declining as a result of improved engine technology, primary NO₂ emissions have increased due to technology designed to lower the emissions of particles. This is explained in the scientific article 'Emission reduction versus NO₂ air quality concentrations, a trade-off?' by Peter J Sturm and Stefan Hausberger of Graz University of Technology, Austria

(https://online.tugraz.at/tug_online/voe_main2.getVollText?pDocumentNr=145519&pCurrPk=52228):

'The reasons for increasing NO₂ shares are mainly a catalytic exhaust gas after treatment such as DOC and coated DPF and the increasing EGR rates for modern vehicles. High NO₂ levels at the raw exhaust gas are desired for the passive regeneration of the DPF at lower exhaust gas temperatures. Thus the exhaust gas after treatment to reduce PM emissions is at least partly responsible for the actual NO₂ situation.'

New engine emission standards should thus include stipulations for reducing NO₂ emissions.

5. Required reduction in emissions

KEYNSHAM AND SALTFFORD

Although there is no proven safe level of nitrogen dioxide concentration, this section deals with the calculation of the level of reduction in emissions that is required for concentrations of NO₂ to fall to below the national objective annual average of 40 µg/m³.

Table 5.1 below details how much oxides of nitrogen emissions will need to be reduced to meet the national air objective for NO₂ at locations currently exceeding the objectives in the Air Quality Management Area. This has been done using the method in DEFRA guidance TG (09).

Location	Annual mean concentrations (µg/m ³) Adjusted for bias 2014	Reduction in NO ₂ concentration required (µg/m ³)	Reduction in Road NOx concentration required(µg/m ³)	Reduction in Road NOx concentration required (%)
Keynsham – 10 High Street	50	10	27.1	35
Keynsham – Somerfield	46	6	15.8	24
Keynsham – Continuous	45 (2011)	5	13.5	21
Saltford – The Crown	50	10	28	32
Saltford – 562 Bath Road	42	2	5.3	8

Table 5.1: Required reduction in oxides of nitrogen emissions.

It can be seen in table 5.1 above that in areas where the national air quality objectives are exceeded, there needs to be a reduction of between 17 and 21% in emissions of nitrogen oxides in order to meet the objectives across the Air Quality Management Areas.

The monitored concentrations at roadside locations have been projected forward using the method and factors given in TG (09). This estimates when the objectives will be met if no actions are taken. This assumes a reduction in emissions per vehicle due to an improvement in engine and fuel technology. This mainly occurs through a renewal of commercial vehicle fleets and the purchasing of new private cars.

Table 5.2 below shows the estimate of the year when the objective will be met. This is based on a formula provided in the DEFRA guidance LAQM.TG(09) (January 2010).

Location	Annual mean concentrations (µg/m ³) Adjusted for bias 2014	Year Objective will be met
Keynsham – 10 High Street	50	2019
Keynsham – Somerfield	46	2018
Keynsham – Continuous	45 (2011)	2017
Saltford – The Crown	50	2019
Saltford – 562 Bath Road	42	2016

Table 5.2: Estimated achievement date of targets according to DEFRA guidance.

In the context of the upwards trend in NO₂, it is evident that the DEFRA guidance method used for Table 5.2 above provides an optimistic prediction. The estimated year of the objective being met in both Keynsham and Saltford is between 2016-2019. This formula assumes no changes in traffic flow and does not take into account the effect of changes in road layouts, car parks or demand centres (local developments).

EFFECT OF REDUCING DIESEL CARS

On High Street Keynsham, the governments' Emission Factor Toolkit predicts that if you reduce the proportion of cars that are diesel are reduced from 40% to 30%, overall NO_x emissions will reduce by 14%.

Reducing diesel cars to 20% (i.e. increasing proportion of petrol), would reduce NO_x emissions by 27%.

An 18% reduction in emissions should reduce concentrations of nitrogen dioxide to the annual average objective limit of 40 µg/m³.

Reducing diesels to 25% of cars would reduce emissions by 20%, which could result in a reduction in concentration of nitrogen dioxide to below 40 µg/m³.

6. Keynsham Action Plan

A number of potential actions have been identified below in table 6.1. Comments are welcomed on these actions and you are encouraged to put forward your own suggested actions. An indication of the potential budget source and responsibilities is provided in Appendix E.

An indicative cost and benefit score has been given to each potential measure by the project team. The potential actions have been scored for cost; benefit and the resulting rank in order to assist identify the most deliverable actions. Estimated costs (1 for high cost to 5 for low cost) were multiplied by a sum of the likely benefit from reducing pollution and people's exposure to the pollution (10 for high and 1 for low) to provide a score. The highest score at the top of the list shows the greatest cost benefit according to the opinions of the project team.

It is acknowledged that some measures may highly despite not affecting air pollution, because they instead may help reduce people's exposure to the pollution.

Some of the measures listed in table 6.1 reflect the measures from the draft Keynsham Transport Strategy, which is yet to be adopted and thus are subject to the development of the strategy.

This is by no means a definitive list and we welcome suggested additional measures in the consultation process.

Further detail of each measure is provided following the table.

	Measure	Environmental impacts	Cost benefit (cost x [pollution reduction + exposure reduction] = score)				
			Cost 1 = >£1m 2 = £250k-1m 3 = £50k - 250k 4 = £10k - £50k 5 = <£10k	Air pollution reduction 10 = greatest air quality gain 1 = least air quality gain	Exposure reduction 10 = greatest exposure reduction 1 = least exposure reduction	Score = cost x benefit	Rank 1 = most cost effective
1	High Street highway layout modelling and implementation of 1 way system.	Higher emissions on diverted routes.	3	6	7	39	1
2	Targeted information campaigns for the most vulnerable groups including text & phone message alert service: notifies predicted poor air quality and provides health advice (i.e. asthmatics, COPD etc.).	n/a	4	2	6	32	2
3	Electric vehicle charge points for each new property	n/a	5	3	2	25	3
4	Promotion & expansion of Source West EV charging network (Keynsham charge points installation at Fox and Hounds Spring 2015).	n/a	5	3	2	25	3
5	Tree planting on High Street.	Green-house gas absorption.	4	2	4	24	4
6	Secure cycle storage at each new property.	NO ₂ and green-house gas reduction.	5	3	1	20	5
7	Electric Zone – signed entrance to AQMA encouraging switch into electric mode for hybrids and promoting Source West.	NO ₂ and PM ₁₀ reduction.	5	2	2	20	5
8	Ensure new developments have good accessibility by public transport, walking and cycling through the planning process.	NO ₂ and green-house gas reduction.	5	2	2	20	5
9	Community Air Quality Group (utilising Keynsham Connecting Communities Forum).	None.	5	2	1	15	6
10	Keynsham Greenway links to National Cycle Network 4, Wellsway School and riverside path into Bristol and S Glos with new bridge over R Avon.	NO ₂ and green-house gas reduction.	2	3	4	14	7
13	Bath Low Emission Zone – cleaner fleet across wider area.	Depending on detail of scheme could mean cleaner or dirtier vehicles outside Bath LEZ. Aim is for reduced NO ₂ and PM ₁₀ .	3	2	2	12	8
14	Electric dial-a-ride.	Pollution associated with manufacturing and mining of battery minerals. NO ₂ and green-house gas reduction.	3	2	2	12	8
15	Audit pedestrian facilities and improve pedestrian & cycling access in the town centre and to/from the centre and rail station.	n/a	3	2	2	12	8
16	Lobby government for incentivising uptake of non-diesel cars.	Green-house gas emissions – minimal change.	5	1	1	10	9
17	Identify priority cycling routes to/from and within Keynsham in	NO ₂ and green-house gas	5	1	1	10	9

	Measure	Environmental impacts	Cost benefit (cost x [pollution reduction + exposure reduction] = score)				
			Cost 1 = >£1m 2 = £250k-1m 3 = £50k - 250k 4 = £10k - £50k 5 = <£10k	Air pollution reduction 10 = greatest air quality gain 1 = least air quality gain	Exposure reduction 10 = greatest exposure reduction 1 = least exposure reduction	Score = cost x benefit	Rank 1 = most cost effective
	order to build a cycling culture for people of all abilities.	reduction.					
18	Continue to work with bus operators on improved services, ticketing and simplified fare structure.	NO ₂ and green-house gas reduction.	3	2	1	9	10
19	MetroWest – resulting in increase from hourly to half-hourly rail service.	Offsets less efficient modes.	1	4 (possibly worse for Saltford)	1	5	11

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1. HIGH STREET HIGHWAY LAYOUT MODELLING AND IMPLEMENTATION OF ONE WAY SYSTEM

This scores relatively highly in terms of the preliminary cost benefit analysis in table 6.1 above because it would improve air quality in the High Street by diverting the traffic elsewhere (eg Ashton Way). This would be beneficial in terms of air quality as the overall number of people exposed to air pollution is reduced. The proposal for implementing a one way system along the High Street was part of the town centre redevelopment proposals. There are obviously considerations relating to the potential knock-on effects such as congestion at other junctions.

The Council's Public Protection and Health Improvement team can undertake air pollution dispersion modelling to test the impact on air pollution concentrations of a scheme.

Monitoring and evaluation

The effect of an implemented scheme can be monitored by continued measurement of NO₂ and traffic counts on the High Street and alternative routes.

2. TARGETED INFORMATION CAMPAIGN FOR THE MOST VULNERABLE GROUPS

This measure could involve a text and phone messaging service that would alert more vulnerable people to high air quality and provide health advice. For example this would include people with conditions such as asthma, Chronic Obstructive Pulmonary Disease and emphysema.

It needs to be considered whether the air pollution levels which trigger alerts are in accordance with DEFRA and whether these levels are likely to be exceeded based on historic monitoring data - which will help determine the cost benefit of such as measure. This may require the acquisition of monitoring equipment in addition to the existing diffusion tubes located in Keynsham.

The bodies involved are Bath and North East Somerset Public Protection and Health Improvement Team, Public Health, Research and Intelligence Team, the Clinical Commissioning Group and Sirona Care and Health.

Monitoring and evaluation

This measure could be monitored by the frequency of alerts issued coupled with the number of people registered to receive an alert and feedback from users.

3. ELECTRIC VEHICLE CHARGE POINTS FOR EACH NEW PROPERTY

This measure entails ensuring a separate electric spur is provided for the provision of charging points at new properties where there is off-street or adjacent on-street parking. This facilitates the further uptake of electric vehicles, which helps reduce local air pollution where the user would have previously used petrol or diesel vehicle. A standard fast charger uses 32amps for each socket.

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The Council are able to specify this through the Placemaking Plan and design policies within it. This will be submitted to the Planning Inspectorate in September 2015. Viability work for each development site is being undertaken early in 2015.

The costs of this measure are relatively low and the responsibility is on the developer.

Monitoring and evaluation

This can be monitored by Building Control to ensure compliance with design policies in the Placemaking Plan. Uptake of plug-in vehicles can be monitored by a door to door survey.

4. PROMOTION & EXPANSION OF SOURCE WEST ELECTRIC VEHICLE CHARGING NETWORK

The Source West electric vehicle charging network includes the public charging infrastructure that has been installed across Bath and North East Somerset, Bristol, South Gloucestershire and Gloucestershire. Users can register for a unique smart card that enables charging. The first public charge point in Keynsham will be installed at the Fox and Hounds car park on Bath Hill early 2015. Further funding may be required for installation of more public charging points should the demand continue to increase.

The Source West network is run jointly by the member authorities. There is already some promotion of the network through www.sourcewest.info, but further promotion can be carried out in the form of signage and adverts in publications, on websites and on radio and television.

The network is currently funded by a government grant (Local Sustainable Transport Fund) and European funding (ICT4EU). At the time of writing, officers are in the process of bidding with Bristol City Council, North Somerset Council and South Gloucestershire Council for funds from the Office of Low Emission Vehicles. Successful bids will be announced in the autumn of 2015.

Monitoring and evaluation

Usage statistics for each unit are captured automatically and available online for administrators.

5. TREE PLANTING ON THE HIGH STREET

Tree planting might seem to be a simple way of improving air quality, but there are a number of considerations (according to the latest research) in relation to planting on the high street, to ensure planting doesn't worsen air quality, such as:

- canopy cover not exceeding 30% to prevent trapping pollutants;
- maintain air flow to allow dispersion of pollutants;
- chose a species that do not have a high ozone index of negative effects on air quality (eg pollen or volatile organic compounds)

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Monitoring and evaluation

Continued monitoring of NO₂ concentrations and a comparison with other monitoring locations where there has been no planting will enable evaluation of the effect of this measure on local air quality.

6. SECURE CYCLE STORAGE AT EACH NEW PROPERTY

This measure seeks to ensure that residents of new properties have somewhere safe and convenient to store their bicycles in order that cycling is a viable and attractive means of transport.

The Council are able to specify this through the Placemaking Plan and design policies within it. This will be submitted to the Planning Inspectorate in September 2015. Viability work for each development site is being undertaken early in 2015.

The costs of this measure are relatively low and the responsibility is on the developer.

Monitoring and evaluation

This can be monitored by Building Control to ensure compliance with design policies in the Placemaking Plan. The Council periodically undertake cycling surveys on main transport routes.

7. ELECTRIC ZONE

This measure scores relatively highly in terms of cost effectiveness, because it utilises existing assets, namely hybrid and electric cars and the electric vehicle charging points being installed both at the Fox and Hounds car park and for a Council electric pool car at the Civic Centre. By alerting road users to the AQMA and electric zone, it will encourage hybrid cars to switch to electric mode in the vicinity of the AQMA.

This measure can be implemented jointly by Public Protection and Health Improvement and the Highways team. Once funding has been identified, design and placing of sign erection could be implemented within 1 year.

No funding has been identified yet, but there may be some internal funding available through the Joint Strategic Needs Assessment.

Monitoring and evaluation

This is inherently difficult to monitor, as it is impossible to know how many hybrid cars switch to electric. A manual traffic count may identify the number of hybrid and electric cars overall. The presence of these will be affected by other factors.

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8. ENSURE NEW DEVELOPMENTS HAVE GOOD ACCESSIBILITY BY NON-CAR MODES THROUGH THE PLANNING PROCESS, INCLUDING BUS ROUTES

The Council are able to specify this through the Placemaking Plan and design policies within it. This will be submitted to the Planning Inspectorate in September 2015. Viability work for each development site is being undertaken early in 2015.

Monitoring and evaluation

This can be assessed at the drafting of the design policies and planning application stage.

9. COMMUNICATION STRATEGY FOR AIR QUALITY

This measure relates to the communication of the air quality issue and of initiatives that can help reduce air pollution. It includes encouragement of cleaner travel choices through travel planning and publicity for employees and residents. The Council's website and the travel website for the south west region (www.travelwest.info) already offer a good deal of information which can be further developed.

Monitoring and evaluation

This can be assessed by monitoring of Bath and North East Somerset Council's travel plan statistics (as the main employer in Keynsham) and internet usage statistics for the websites.

10. KEYNSHAM GREENWAY LINKS TO NATIONAL CYCLE NETWORK 4, WELLSWAY SCHOOL AND RIVERSIDE PATH INTO BRISTOL AND SOUTH GLOSCESTERSHIRE WITH NEW BRIDGE OVER RIVER AVON

These measures are included in the draft transport strategy for Keynsham. The three Councils, South Gloucestershire, Bath and North East Somerset and Bristol City have come together to deliver a high quality 6km long walking and cycling route along the riverside from Keynsham Town Centre to Bristol. This route will link via the river with the Bristol to Bath cycle path and an upgraded route along the River Avon via the Somerdale area of Keynsham.

Monitoring and evaluation

The effect of this action can be measured using walking and cycling surveys.

11. ELECTRIC DIAL-A-RIDE

The relatively short distance of journeys of the Keynsham Dial-a-ride service mean that the service could be operated by electric vehicles. Bath and North East Somerset Council are submitting a joint bid to the Office for Low Emission Vehicles with other West of England authorities for funding towards infrastructure and other measures that

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encourage the uptake of Ultra Low Emission Vehicles. If successful, there may be funds available to purchase an electric vehicle and help cover the associated charging infrastructure.

Monitoring and evaluation

The mileage completed and difference in fuel consumption and costs can be compared to evaluate this measure.

12. AUDIT PEDESTRIAN FACILITIES AND IMPROVE PEDESTRIAN & CYCLING ACCESS IN THE TOWN CENTRE AND TO/FROM THE CENTRE AND RAIL STATION

This measure covers two measures included in the draft document: 'Developing a Strategy for Keynsham'. It is stated in the draft strategy that they should take account of access for those with mobility impairments. This includes the potential walking and cycling spine route from Station Road to the town centre through the park.

Monitoring and evaluation

The effect of this action can be measured using walking and cycling surveys and railway passenger surveys.

13. LOBBY GOVERNMENT FOR INCENTIVISING UPTAKE OF NON-DIESEL VEHICLES

There is an acceptance among policy makers and air quality professionals that diesel cars emit more NO_x than petrol cars and thus make reduction in NO₂ more difficult to achieve. A change in central government policy is required to incentivise the uptake of non-diesel vehicles. As such, lobbying in co-ordination with other authorities is required to bring about this change.

Monitoring and evaluation

Monitoring would require collection of vehicle registrations and obtaining vehicle details from the DVLA to determine whether they are diesel or other. It would not be possible to ascertain the reason why the split in diesel and other vehicles may have changed.

14. IDENTIFY PRIORITY CYCLING ROUTES TO/FROM AND WITHIN KEYNSHAM IN ORDER TO BUILD A CYCLING CULTURE FOR PEOPLE OF ALL ABILITIES.

This measure is included as a key action in the draft transport strategy for Keynsham. It is an overarching action that will ensure a comprehensive cycling network.

Monitoring and evaluation

Monitoring can only be undertaken once specific measures have been identified.

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15. CONTINUE TO WORK WITH BUS OPERATORS ON IMPROVED SERVICES, TICKETING AND SIMPLIFIED FARE STRUCTURE

This measure is one of those from the draft transport strategy for Keynsham. The strategy also lists the following specific measures:

- Better multi-media service information, including the TravelWest.info website giving service information for the whole sub-region (joint initiative between operators, the Council and users);
- Improved linkages between bus and rail services;
- Smart ticketing, as being introduced currently, and mobile phone ticketing;
- Revised fare structure, especially for inter-urban services; and
- Measures to reduce delays to buses e.g. as part of capacity improvements at key junctions.

Monitoring and evaluation

Bus usage statistics can be obtained from operators to help assess the effectiveness of these measures.

16. METROWEST – RESULTING IN INCREASE FROM HOURLY TO HALF-HOURLY RAIL SERVICE

This is another action listed in the draft transport strategy as a key action: *'The growth in rail capacity and the range of services available as part of the MetroWest and other schemes will support significantly more rail journeys to/from Keynsham. Access provision to the station has to be improved if the take up of these enhanced services is to be maximised.'*

The strategy also lists local improvements proposed for access to Keynsham station, including:

- Links into a wider cycle route network;
- Incorporating a new bus stop in the vicinity of the station;
- Improved and more secure cycle parking facilities;
- Improved disabled access to give step-free access to platforms (currently being constructed);
- New pedestrian crossing on Keynsham Road for improved access from Somerdale site;
- Pedestrian routes assessed (and improved) as part of a non-motorised users audit;
- Improved waiting facilities for passengers;
- Provision of real time service information on platforms and in the town centre, such as in the Town Hall;
- Provision of CCTV cameras for improved security;
- An increase in capacity in the over-flow car park;
- Marketing to 'relaunch' Keynsham station once the main improvements are in place.

Monitoring and evaluation

The effect of this action can be measured using railway passenger surveys, cycling and walking surveys and the utilisation of the cycle parking infrastructure at the station.

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7. Saltford Action Plan

A number of potential actions have been identified below in table 7.1. Comments are welcomed on these actions and you are encouraged to put forward your own suggested actions. An indication of the potential budget source and responsibilities is provided in Appendix E.

An indicative cost and benefit score has been given to each potential measure by the project team. The potential actions have been scored for cost; benefit and the resulting rank in order to assist identify the most deliverable actions. Estimated costs (1 for high cost to 5 for low cost) were multiplied by a sum of the likely benefit from reducing pollution and people's exposure to the pollution (10 for high and 1 for low) to provide a score. The highest score at the top of the list shows the greatest cost benefit according to the opinions of the project team.

It is acknowledged that some measures may highly despite not affecting air pollution, because they instead may help reduce people's exposure to the pollution.

It is acknowledged that some measures may not score highly using the above methodology as they may not lower air pollution. For example, measure 10 (targeted information campaign - a messaging service for more vulnerable people) will not score highly, although it could be effective in reducing exposure of the most vulnerable to air pollution and could therefore be an important measure.

This is by no means a definitive list and we welcome suggested additional measures in the consultation process.

Further detail of each measure is provided following the table.

	Measure	Environmental impacts	Cost benefit (cost x [pollution reduction + exposure reduction] = score)				
			Cost 1 = >£1m 2 = £250k-1m 3 = £50k - 250k 4 = £10k - £50k 5 = <£10k	Air pollution reduction 10 = greatest air quality gain 1 = least air quality gain	Exposure reduction 10 = greatest exposure reduction 1 = least exposure reduction	Score = cost x benefit	Rank 1 = most cost effective
1	Targeted information campaigns for the most vulnerable groups including text & phone message alert service: notifies predicted poor air quality and provides health advice (i.e. asthmatics, COPD etc.).	n/a	4	2	6	32	1
2	Tree planting on A4 – deflects and collects pollutants.	Deflects air pollution from property facades, absorbs carbon dioxide	4	3	4	28	2
3	Advice to land owners on planting that protects from air pollution.	Deflects air pollution from property facades, absorbs carbon dioxide	5	2	3	25	3
4	Electric vehicle charge points for each new property across the district.	n/a	5	2	2	20	4
5	Promotion of Source West EV charging network (Keynsham charge points installation at Fox and Hounds Spring 2015)	n/a	5	2	2	20	4
6	Electric Zone – signed entrance to AQMA encouraging switch into electric mode for hybrids and promoting Source West.	NO ₂ and PM ₁₀ reduction.	5	2	2	20	4
7	Community Air Quality Group (utilising Keynsham Connecting Communities Forum).	n/a	5	2	1	15	5
8	Secure cycle storage at each new property	NO ₂ and GHG reduction	5	2	1	15	5
9	Electric dial-a-ride	Pollution associated with manufacturing and mining of battery minerals. NO ₂ and GHG reduction	3	2	2	12	6
10	Lobby government for incentivising uptake of non-diesel cars.	GHG emissions – minimal change.	5	1	1	10	7
11	Continue feasibility work for reopening of a station at Saltford. B&NES Cabinet resolved on 03.12.14 to continue developing a business case including options of opening a station to the west of the village.	GHG emissions from trains accelerating from station – unless electric overheads used for stopping service.	1	1	1	2	8

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1. TARGETED INFORMATION CAMPAIGN FOR THE MOST VULNERABLE GROUPS

This measure could involve a text and phone messaging service that would alert more vulnerable people to high air quality and provide health advice. For example this would include people with conditions such as asthma, Chronic Obstructive Pulmonary Disease and emphysema.

It needs to be considered whether the air pollution levels which trigger alerts are in accordance with DEFRA and whether these levels are likely to be exceeded based on historic monitoring data - which will help determine the cost benefit of such as measure. This may require the acquisition of monitoring equipment in addition to the existing diffusion tubes located in Saltford.

The bodies involved are Bath and North East Somerset Public Protection and Health Improvement, Public Health, Research and Intelligence Team, the Clinical Commissioning Group and Sirona Care and Health.

Monitoring and evaluation

This measure could be monitored by the frequency of alerts issued coupled with the number of people registered to receive an alert.

2. TREE PLANTING ON THE A4

Tree planting might seem to be a simple way of improving air quality, but there are a number of considerations (according to the latest research) in relation to planting on the high street, to ensure planting doesn't worsen air quality, such as:

- canopy cover not exceeding 30% to prevent trapping pollutants;
- maintain air flow to allow dispersion of pollutants;
- chose a species that do not have a high ozone index of negative effects on air quality (eg pollen or volatile organic compounds)

There is also limited space for planting where nitrogen dioxide concentrations are highest.

Monitoring and evaluation

Continued monitoring of NO₂ concentrations and a comparison with other monitoring locations where there has been no planting will enable evaluation of the effect of this measure on local air quality.

3. ADVICE TO LAND OWNERS ON PLANTING THAT PROTECTS FROM AIR POLLUTION

There is some scope for planting in gardens that front the main road in Saltford. An online leaflet with suggestions for the most effective way for tree or bush planting to help reduce air pollution in the vicinity of properties adjacent to the main road will be developed.

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Monitoring and evaluation

The uptake of planting advice and monitored concentrations of nitrogen dioxide on the roadside of the property and within the planted area.

4. ELECTRIC VEHICLE CHARGE POINTS FOR EACH NEW PROPERTY

This measure entails ensuring a separate electric spur is provided for the provision of charging points at new properties where there is off-street or adjacent on-street parking. This facilitates the further uptake of electric vehicles, which helps reduce local air pollution where the user would have previously used petrol or diesel vehicle. A standard fast charger uses 32amps for each socket.

The Council are able to specify this through the Placemaking Plan and design policies within it. This will be submitted to the Planning Inspectorate in September 2015. Viability work for each development site is being undertaken early in 2015.

The costs of this measure are relatively low and the responsibility is on the developer.

Monitoring and evaluation

This can be monitored by Building Control to ensure compliance with design policies in the Placemaking Plan. Uptake of plug-in vehicles can be monitored by a door to door survey.

5. PROMOTION & EXPANSION OF SOURCE WEST ELECTRIC VEHICLE CHARGING NETWORK

The Source West electric vehicle charging network includes the public charging infrastructure that has been installed across Bath and North East Somerset, Bristol, South Gloucestershire and Gloucestershire. Users can register for a unique smart card that enables charging. The first public charge point in Keynsham will be installed at the Fox and Hounds car park on Bath Hill early 2015. Further funding may be required for installation of more public charging points should the demand continue to increase.

The Source West network is run jointly by the member authorities. There is already some promotion of the network through www.sourcewest.info, but further promotion in the form of signage.

The network is currently funded by a government grant (Local Sustainable Transport Fund) and European funding (ICT4EU). At the time of writing, officers are in the process of a bidding with Bristol City Council, North Somerset Council and South Gloucestershire Council for funds from the Office of Low Emission Vehicles. Successful bids will be announced in the autumn of 2015.

Monitoring and evaluation

Usage statistics for each unit are captured automatically and available online for administrators.

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6. ELECTRIC ZONE

This measure scores relatively highly in terms of cost effectiveness, because it utilises existing assets, namely hybrid and electric cars and the electric vehicle charging points being installed both at the Fox and Hounds car park in Keynsham and for a Council electric pool car at the Civic Centre in Keynsham in addition to those already installed in Bath at the park and ride sites and Charlotte Street car park. By alerting road users to the AQMA and electric zone, it will encourage hybrid cars to switch to electric mode in the vicinity of the AQMA.

This measure can be implemented jointly by Public Protection and Health Improvement and the Highways team. Once funding has been identified, design and placing of sign erection could be implemented within 1 year.

No funding has been identified yet, but there may be some internal funding available through the Joint Strategic Needs Assessment.

Monitoring and evaluation

This is inherently difficult to monitor, as it is impossible to know how many hybrid cars switch to electric. A manual traffic count may identify the number of hybrid and electric cars overall. The presence of these will obviously be affected by other factors.

7. COMMUNITY AIR QUALITY GROUP (UTILISING KEYNSHAM CONNECTING COMMUNITIES FORUM)

This measure is to set up an air quality group using existing forums that communities are involved with, which enables greater community engagement and action.

The set-up of this group could be led by the Policy and Partnerships Team and developed in a timescale dependent on their availability and workload.

The cost of this measure is relatively low and deliverability depends on the level of community interest and involvement.

Monitoring and evaluation

This can be monitored by a review of any meeting minutes if groups are set up. Occasional officer attendance may also be required.

8. SECURE CYCLE STORAGE AT EACH NEW PROPERTY

This measure seeks to ensure that residents of new properties have somewhere to safely and conveniently store their bicycles in order that cycling is a viable and attractive means of transport.

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The Council are able to specify this through the Placemaking Plan and design policies within it. This will be submitted to the Planning Inspectorate in September 2015. Viability work for each development site is being undertaken early in 2015.

The costs of this measure are relatively low and the responsibility is on the developer.

Monitoring and evaluation

This can be monitored by Building Control to ensure compliance with design policies in the Placemaking Plan. The Council periodically undertake cycling surveys on main transport routes.

9. ELECTRIC DIAL-A-RIDE

The relatively short distance of journeys of the Keynsham and District Dial-a-ride service mean that the service could be operated by electric vehicles. Bath and North East Somerset Council are submitting a joint bid to the Office for Low Emission Vehicles with other West of England authorities for funding towards infrastructure and other measures that encourage the uptake of Ultra Low Emission Vehicles. If successful there may be funds available to purchase an electric vehicle and help cover the associated charging infrastructure.

Monitoring and evaluation

The mileage completed and difference in fuel consumption and costs can be compared to evaluate this measure.

10. LOBBY GOVERNMENT FOR INCENTIVISING UPTAKE OF NON-DIESEL VEHICLES

There is an acceptance among policy makers and air quality professionals that diesel cars emit more NO_x than petrol cars and thus make reduction in NO₂ more difficult to achieve. A change in central government policy is required to incentivise the uptake of non-diesel vehicles. As such, lobbying in co-ordination with other authorities is required to bring about this change.

Monitoring and evaluation

Monitoring would require collection of vehicle registrations and obtaining vehicle details from the DVLA to determine whether they are diesel or other. It would not be possible to ascertain the reason why the split in diesel and other vehicles may have changed.

11. CONTINUE FEASIBILITY WORK FOR REOPENING OF A STATION AT SALT FORD

This measure is consistent with what was resolved at a Bath and North East Somerset Council cabinet meeting on 3rd December 2014:

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'that work should continue to develop the Business Case for a station at Saltford and that this should include the option of opening a station to the west of the village where future development may support the new facility'

This follows a report assessing options of a station by CH2MHill on behalf of the Council. This report concluded that stopping trains would most likely be those currently serving Oldfield Park and Keynsham currently an hourly service. The Metro West project Phase 1 will increase the frequency of local trains serving Keynsham and Oldfield Park providing a ½ hourly service, and it is these trains that could serve Saltford. The Metro West project is not due to be completed until 2019 at the earliest.

Potential patronage is estimated to be some 200,000 users/annum (i.e. about 370 persons per day) assuming there were 2 trains an hour. This patronage could provide £770,000 p.a. in new fares to the Train Operating Company but would still require revenue support. The station would require a 200 space car park including a new car park near to the station and access to the A4.

A station would cost £4 - £6m to build (excluding land acquisition, Train Operating Companies (TOC) compensation and traffic management).

Further feasibility work will need to consider the air quality impacts of a reopened station in relation to generated road traffic and potential congestion as a result of a new junction and alterations to other existing junctions.

Monitoring and evaluation

Traffic and air pollution dispersion modelling will enable assessment of the likely air quality impact of opening a station. Should a station be opened, then traffic surveys and air pollution monitoring will assess the changes.

8. Consultation and communication strategy

KEYNSHAM AND SALTFFORD

Circulation of the consultation draft document

This consultation draft document will be circulated for comment at the beginning of the 12 week consultation period that commences in 14th September. It is proposed that it will be presented at the following meetings:

- Keynsham Area Forum (part of the Connecting Communities Forum)
- Saltford Parish Council meeting
- Health and Wellbeing board
- Keynsham Town Council

The document will also be circulated to the following groups:

- Transition Keynsham
- Community Transport Networking Group
- Keynsham In Bloom
- Saltford In Bloom
- Old Vicarage Green Residents Association
- Lions Club of Keynsham
- Chamber of Commerce for Keynsham
- KADDAR
- Manor Park Woodland group
- Abbots Wood group
- B&NES Health and Wellbeing Board
- Saltford Business Association
- Residents Association
- Bus operators
- Sirona Care and Health
- South Gloucestershire Council

Online questionnaire

A questionnaire will be available to complete on the council's website. The questionnaire will detail a number of measures that are anticipated to be the most deliverable and invite comment and suggestions for the final draft of the document.

'Drop-in' consultation evenings

The drop-in consultation evening for Keynsham Air Quality Action Plan will be held on 15th September at the Key Centre, Keynsham High Street from 2pm. A further consultation event will be publicised in due course for November.

The event for the Saltford Air Quality Action Plan will be held on 14th October between 4pm and 8pm at Saltford Village Hall (Avon Room).

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Officers will be on hand, questionnaires will be available to fill in and background information will be on display in relation to air quality data and the developing transport strategy for Keynsham.

Final Air Quality Action Plans

The Air Quality Action Plans will be published in early 2016.

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9. Glossary

AQAP	Air Quality Action Plan
AQMA	Air Quality Management Area
DEFRA	Department of Environment, Food and Rural Affairs
GHG	Green House Gases
HGVs	Heavy Goods Vehicles
JLTP	Joint Local Transport Plan (former Avon Authorities)
LEZ	Low Emission Zone
LTP	Local Transport Plan
NAEI	National Atmospheric Emissions Inventory
NO	Nitric Oxide
NO ₂	Nitrogen Dioxide
NO _x	Oxides of Nitrogen
O ₃	Ozone
PM2.5	Particulate matter up to 2.5 micrometres (100 times thinner than human hair). Can travel long distances so 40-50% of PM2.5 sources will be from sources outside the area.
PM10	Particulate matter up to 10 micrometres
QA/QC	Quality Assurance / Quality Control
TIF	Transport Innovation Fund (£1.4billion central government fund)
TRC	Traffic Regulation Condition
TRO	Traffic Regulation Order
µg/m ³	micrograms per cubic metre

Appendices

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APPENDIX A: Air Quality Objectives and Exposure

Air Quality Objectives included in Regulations for the purpose of Local Air Quality Management in England.

Pollutant	Air Quality Objective		Date to be achieved by
	Concentration	Measured as	
Benzene	16.25 µg/m ³	Running annual mean	31.12.2003
	5.00 µg/m ³	Running annual mean	31.12.2010
1,3-Butadiene	2.25 µg/m ³	Running annual mean	31.12.2003
Carbon monoxide	10.0 mg/m ³	Running 8-hour mean	31.12.2003
Lead	0.5 µg/m ³	Annual mean	31.12.2004
	0.25 µg/m ³	Annual mean	31.12.2008
Nitrogen dioxide	200 µg/m ³ not to be exceeded more than 18 times a year	1-hour mean	31.12.2005
	40 µg/m ³	Annual mean	31.12.2005
Particles (PM ₁₀) (gravimetric)	50 µg/m ³ , not to be exceeded more than 35 times a year	24-hour mean	31.12.2004
	40 µg/m ³	Annual mean	31.12.2004
Sulphur dioxide	350 µg/m ³ , not to be exceeded more than 24 times a year	1-hour mean	31.12.2004
	125 µg/m ³ , not to be exceeded more than 3 times a year	24-hour mean	31.12.2004
	266 µg/m ³ , not to be exceeded more than 35 times a year	15-minute mean	31.12.2005

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Objective	Concentration	Relevant Exposure
Annual Mean NO ₂	40 µg/m ³	All locations where members of the public might be regularly exposed. Building facades of residential properties, schools, hospitals, care homes etc. Not offices, gardens of residential properties or Kerbside sites
1-hour NO ₂	200 µg/m ³ with 18 exceedences per year. Guidance indicates that an annual mean NO ₂ concentration greater than 60 µg/m ³ may indicate an exceedence of the 1-hour objective.	As above plus hotels, gardens, any outside location where members of the public might reasonably be expected to spend 1 hour or longer.

Table A2: Relevant Exposure for the NO₂ objectives

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APPENDIX B: Air Quality Management Reports

Stage	Work undertaken	Outcome	Date
Round 1			
Stage 1(23)	Initial review and assessment	Further assessment required for PM10 and NO2.	April 1999
Stage 2(22)	Assessment using DMRB for NO2 and PM10.	Detailed assessment required.	February 2000
Stage 3(21)	Detailed review and assessment for PM10 and NO2 using SEIPH model.	Declaration of AQMA for NO2 along London Road	March 2001 (AQMA declared February 2002)
Stage 4(20)	Detailed assessment of NO2 in the London Road area.	Proposed extension of AQMA	February 2003 (AQMA varied July 2005)
Action Plan(24)	Work to develop an improvement plan for air quality in the London Road area	Describes measures to improve Air Quality in the London Road Area	January 2006
Round 2			
Updating and Screening Assessment(19)	Assess air quality and determine any changes in monitored concentrations or emission sources	Further assessments for NO2 and PM10 required at a number of locations.	June 2003
Detailed Assessment(18)	Assess the areas highlighted in the updating and screening assessment in detail	Recommendation to extend AQMA to include main roads in city centre	March 2005 (AQMA varied July 2008)
Progress Report(17)	Report the latest monitoring data etc.	Further work needed for Keynsham and Batheaston.	June 2005
Further Assessment(12)	Detailed assessment of new AQMA area for NO2.	Minor adjustments needed to AQMA.	July 2009 (AQMA varied July 2013)
Action Plan(25)	Work to develop an improvement plan for air quality in the region of the new AQMA	Describes measures to improve Air Quality in Bath.	Feb 2011
Round 3			

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Stage	Work undertaken	Outcome	Date
Updating and Screening Assessment(16)	Assess air quality and determine any changes in monitored concentrations or emission sources	Further work needed for NO ₂ in Keynsham and Batheaston and PM ₁₀ in the London Road area.	May 2006
Detailed Assessment (14&11)	Keynsham & Batheaston Assess the areas highlighted in the updating and screening assessment in detail / Report the latest monitoring data etc.	Keynsham – Recommendation to declare AQMA for NO ₂ along High Street. Batheaston – No AQMA required	August 2008 (AQMA declared July 2010) November 2009
Detailed Assessment(10)	PM ₁₀ London Road	No AQMA required	December 2009
Progress Report(15)	Report the latest monitoring data etc.	No further work needed.	April 2008
Further Assessment(7)	Detailed assessment of new AQMA area in Keynsham for NO ₂ .	No further work needed.	July 2011
Round 4			
Updating and Screening Assessment(13)	Assess air quality and determine any changes in monitored concentrations or emission sources	No further work needed.	May 2009
Progress Report(8)	Report the latest monitoring data etc.	Vary AQMA to include 1 hour objective.	May 2010 (AQMA varied July 2013)
Progress Report(6)	Report the latest monitoring data etc.	No further work needed.	April 2011
Detailed Assessment(9)	Assess areas highlighted in monitoring survey in Saltford.	Recommendation to declare a small AQMA on A4 Saltford	January 2011 (AQMA declared July 2013)
Further Assessment(40)	Detailed assessment of new AQMA area in Saltford for NO ₂ .	No further work needed.	July 2013
Round 5			
Updating and Screening Assessment(5)	Assess air quality and determine any changes in monitored concentrations or emission sources	No further work needed.	May 2012
Progress Report (39)	Report the latest monitoring data etc.	No further work needed.	August 2013

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Stage	Work undertaken	Outcome	Date
Progress Report (39)	Report the latest monitoring data etc.	No further work needed.	August 2014
Round 6			
Updating and Screening Assessment(ref)	Assess air quality and determine any changes in monitored concentrations or emission sources	No further work needed.	May 2015

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APPENDIX C: QA/QC Data

Diffusion Tube Bias Adjustment Factors

The diffusion tubes are analysed by Somerset Scientific Services in 2012-14 and prior to that by Bristol Scientific Services. The method of analysis is 20% triethanolamine (TEA) in water. They confirm that they are following the harmonised practice guidance document and have a satisfactory AIR-PT results(12).

Monthly Bias	2009	0.79 (Bristol, 4 studies) ⁽⁷⁾
	2010	0.85 (Bristol, 7 studies) ⁽⁷⁾
	2011	0.83 (Bristol, 8 studies) ⁽⁷⁾
	2012	0.95 (Somerset, 2 studies) ^(7 v06/13)
	2013	0.90 (Somerset, 3 studies) ^(7 v03/14)

Factor from Local Co-location Studies

A local bias factor has been calculated following the FAQ guidance on R&A website(7). This has been calculated using monitoring data from the Walcot Terrace sites (now located at Walcot Buildings) (triplicate tubes) which are co-located with the London Road continuous monitor. Prior to 2011 diffusion tube sampling frequency at this site was 2-weekly, this changed to monthly in 2011. In 2012 the bias factor showed poor precision. The overall CV was >20%, mainly due to a couple of results with poor precision early in the year.

2-weekly Bias	2009	0.96 (Bristol)
	2010	0.90 (Bristol)
Monthly Bias	2011	0.89 (Bristol) (own)
	2012	0.95 (Somerset)
	2013	1.01 (Somerset)

Discussion of Choice of Factor to Use

In 2014 our own bias factor was used as it was higher than the national factor leading to a worse case result. In 2012-13 the local bias adjustment factors are used to correct the diffusion tube data. This bias factor was the same or higher than the national factor.

Prior to 2011 the diffusion tubes were split into two networks, Round 1 was changed fortnightly and the local basis factor calculated at the London Road continuous monitor was used. The Round 2 was changed on a monthly basis. The national bias factor was applied to this network as it is more appropriate. All sites are classed as Round 1 except DT33 – Keynsham which was Round 2.

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Table A1: Site details

Site ID	Site Name	Site Type	X OS Grid Reference	Y OS Grid Reference	Site Height (m)	In AQMA?	Relevant Exposure? (distance (m) from monitoring site to relevant exposure)	Distance to Kerb of Nearest Road (m) (N/A if not applicable)	Does this Location Represent Worst-Case Exposure?	Dates site active
CM7a	Keynsham High Street	Roadside	365447	168531	3	Y	Y (0m)	3m		Aug 10-May 11
CM7	Salford News	Roadside	368431	166962	2.7	Y	Y (0m)	3m	Y	Oct 11-Mar 13
DT33	Keynsham	Urban Background	364803	168237	2.6	N	Y (8m)	1m		01-Apr-93
DT66	Keynsham – 10 High Street	Roadside	365360	168814	2.5	Y	Y (1m)	1m		16-Sept-08
DT64	Keynsham – 1a Charlton Road	Roadside	365317	168663	2.8	Y	Y (4m)	1m		16-Sept-08
DT70	Keynsham – Bath Hill	Roadside	365496	168522	2.3	Y	Y (1m)	4m		20-Aug-07
DT65	Keynsham - Charlton Rd	Roadside	365404	168703	2.7	Y	Y (3m)	1m		06-Jan-06
DT69	Keynsham – Rock Road	Roadside	365428	168435	3.0	N	Y (0m)	2m		20-Aug-07
DT70a	Keynsham – Somerdale	Urban Background	365553	168990	2.2	N	Y (6m)	1.9m		29-Mar-12

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Site ID	Site Name	Site Type	X OS Grid Reference	Y OS Grid Reference	Site Height (m)	In AQMA?	Relevant Exposure? (distance (m) from monitoring site to relevant exposure)	Distance to Kerb of Nearest Road (m) (N/A if not applicable)	Does this Location Represent Worst-Case Exposure?	Dates site active
DT67	Keynsham – Somerfield	Kerbside	365451	168523	2.8	Y	Y (2m)	1m	Y	19-Jun-02
DT63	Keynsham – Station Road	Roadside	365409	168850	2.7	Y	Y (3m)	1m		16-Sept-08
DT68	Keynsham - Temple St	Roadside	365489	168363	2.8	N	Y (0m)	3m		06-Jan-06
DT71	Salford Library	Roadside	368187	167117	2.6	N	Y (11.5 m)	2.5 m		16-Feb-99
DT72	Salford – Beech Road	Roadside	368263	167113	2.7	N	Y (7 m)	2 m		15-Sept-09-04-Jan-13
DT72a	Salford – Norman Road	Roadside	367840	167298	2	N	Y (1 m)	12 m		15 Sept 09-07-Jan-11
DT77	Salford – 562 Bath Road	Roadside	368778	166687	2.2	Y	Y (0 m)	2 m		15-Sept-09
DT76	Salford – The Glen	Roadside	368834	166541	2.7	Y	Y (8 m)	2 m		15-Sept-09-04-Jan-13
DT75	Salford – The Crown	Roadside	368375	166988	2.5	Y	Y (0 m)	3 m	Y	15-Sept-09

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Site ID	Site Name	Site Type	X OS Grid Reference	Y OS Grid Reference	Site Height (m)	In AQMA?	Relevant Exposure? (distance (m) from monitoring site to relevant exposure)	Distance to Kerb of Nearest Road (m) (N/A if not applicable)	Does this Location Represent Worst-Case Exposure?	Dates site active
DT74	Salford – Post Office	Roadside	368308	167081	2	N	Y (12 m)	7 m		15 Sept 09-18-Jan-12
DT75a	Salford – Primary School	Urban Back	368030	166984	2.5	N	Y (9 m)	N/A		15 Sept 09-07-Jan-11
DT73	Salford – Tiddlers Nursery	Urban Centre	368229	167095	2.1	N	Y (0 m)	16 m		15-Sept-09-04-Jan-13
DT76a	Salford – Wickhouse Close	Urban Back	367816	167393	2	N	Y (5 m)	N/A		15 Sept 09-07-Jan-11
DT79	Salford – Jade Gardens	Roadside	368357	167055	2.6	N	Y (0m)	19m		07-Jan-12-04-Jan-13
DT78	Salford – High Street	Urban Back	368963	167458	2	N	Y (1m)	N/A		07-Jan-11-18-Jan-12

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QA/QC of automatic monitoring

The Council's continuous analysers follow a QA/QC programme; the London Road Monitor is the Bath AURN affiliate site and is managed as part of that network. The Saltford site follows the QA/QC programme below:

- There are daily checks on the data to ensure analysers and communications are working and faults are reported as soon as possible.
- The sites are inspected and calibrated checks are made once a month by a member of the Environmental Quality Team at Bristol City Council, using certified traceable gases. The sites are also visited once a month by a trained AURN Local Site Operator (LSO) to change the filters and check the analysers. These are planned so the site is visited once a fortnight.
- The analysers are also serviced and re-calibrated at six monthly intervals by the equipment suppliers.
- The results of all service, maintenance and calibration checks are held and used for ratification and scaling of the data.

The data is scaled on a time-linear basis from the zero and span readings obtained from the calibration checks. The instrument span is calculate using the method in TG(09)(3) and the span and offset values are applied to the data using Opsi Enviman software. The data is viewed and spurious data is identified and removed where appropriate. A copy of the original data is kept for reference.

QA/QC of diffusion tube monitoring

The diffusion tubes are analysed by Somerset Scientific Services since 2012 and prior to that by Bristol City Council Scientific Services. They are not UKAS accredited for the analysis of the diffusion tubes but they do participate in the AIR-PT scheme formally the Workplace Analysis Scheme for Proficiency (WASP). The latest AIR-PT report (12) for nitrogen dioxide for the laboratory indicates a performance classification as satisfactory for all periods.

APPENDIX D: Diffusion Tube Monitoring Results

Site ID	Site Name	Site Type	Within AQMA ?	Annual Mean Concentration ($\mu\text{g}/\text{m}^3$) - Adjusted for Bias					
				2009 (Bias Adjustment Factor = 0.96)	2010 (Bias Adjustment Factor = 0.90)	2011 (Bias Adjustment Factor = 0.89)	2012 (Bias Adjustment Factor = 0.95)	2013 (Bias Adjustment Factor = 1.01)	2014 (Bias Adjustment Factor = 1.07)
DT33	Keynsham	Urban Background	N	15	18	14	19	18	17
DT66	Keynsham – 10 High Street	Roadside	Y	49	48	44	46	44	50
DT64	Keynsham – 1a Charlton Rd	Roadside	Y	40	40	39	38	39	39
DT70	Keynsham – Bath Hill	Roadside	Y	36	34	32	32	31	36
DT65	Keynsham – Charlton Road	Roadside	Y	39	42	35	35	37	39
DT69	Keynsham – Rock Road	Roadside	N	29	29	24	27	29	28
DT70A	Keynsham – Somerdale	Urban Background	N	-	-	-	23	23	27
DT67	Keynsham – Somerfield	Kerbside	Y	52	49	45	44	44	46

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Site ID	Site Name	Site Type	Within AQMA ?	Annual Mean Concentration ($\mu\text{g}/\text{m}^3$) - Adjusted for Bias					
				2009 (Bias Adjustment Factor = 0.96)	2010 (Bias Adjustment Factor = 0.90)	2011 (Bias Adjustment Factor = 0.89)	2012 (Bias Adjustment Factor = 0.95)	2013 (Bias Adjustment Factor = 1.01)	2014 (Bias Adjustment Factor = 1.07)
DT63	Keynsham – Station Road	Roadside	Y	36	37	32	32	33	36
DT68	Keynsham – Temple Street	Roadside	N	28	28	24	26	28	28
DT71	Saltford Library	Roadside	N	42	41	34	36	27	37
DT72	Saltford – Beech Road	Roadside	N	-	39	31	32	-	-
DT72a	Saltford – Norman Road	Roadside	N	-	31	-	-	-	-
DT77	Saltford – 562 Bath Road	Roadside	Y	-	40	37	39	37	42
DT76	Saltford – The Glen	Roadside	Y	-	47	44	45	-	-
DT75	Saltford – The Crown	Roadside	Y	-	44	43	47	44	50
DT74	Saltford – Post Office	Roadside	N	-	36	30	-	-	-
DT75a	Saltford – Primary School	Urban Back	N	-	19	-	-	-	-
DT73	Saltford – Tiddlers Nursery	Urban Centre	N	-	26	21	27	-	-

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Site ID	Site Name	Site Type	Within AQMA ?	Annual Mean Concentration ($\mu\text{g}/\text{m}^3$) - Adjusted for Bias					
				2009 (Bias Adjustment Factor = 0.96)	2010 (Bias Adjustment Factor = 0.90)	2011 (Bias Adjustment Factor = 0.89)	2012 (Bias Adjustment Factor = 0.95)	2013 (Bias Adjustment Factor = 1.01)	2014 (Bias Adjustment Factor = 1.07)
DT76a	Salford – Wickhouse Close	Urban Back	N	-	21	-	-	-	-
DT79	Salford – Jade Gardens	Roadside	N	-	-	26	28	-	-
DT78	Salford – High Street	Urban Back	N	-	-	18	-	-	-

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APPENDIX E: Table of measures with responsibilities, timescale, environmental impacts and funding.

KEYNSHAM

	Measure	Responsibility	Timescale	Environmental impacts	Funding
1	High Street highway layout modelling and implementation of 1 way system.	PPHI & Highways.	2 year	Higher emissions on diverted routes.	
2	Targeted information campaign for the most vulnerable groups including text & phone message alert service: notifies predicted poor air quality. (i.e. asthmatics, COPD etc.).	PPHI, PH, Research and Intelligence Team, Clinical Commissioning Group, Sirona Care and Health.		n/a	Not identified.
3	Electric vehicle charge points for each new property	Developer and B&NES Planning DC.	Developer dependent	n/a	Not identified.
4	Promotion & expansion of Source West EV charging network (Keynsham charge points installation at Fox and Hounds Spring 2014).	Environmental Services	3 months -	n/a	Potential identified – 2015/16 LSTF or OLEV grant.
5	Tree planting on High Street.	KCCF, Keynsham in Bloom (town council), PPHI, PH, Highways & Parks.	6 months -	GHG absorption.	Potential identified – Keynsham Connecting Communities Forum.
6	Secure cycle storage at each new property.	Developer and B&NES Planning DC.	Developer dependent	NO ₂ and GHG reduction.	Not identified.
7	Electric Zone – signed entrance to AQMA encouraging switch into electric mode for hybrids and promoting Source West.	PPHI & Highways.	1 year	NO ₂ and PM ₁₀ reduction.	Potential identified – Keynsham Connecting Communities Forum.
8	Ensure new developments have good accessibility by public transport, walking and cycling through the planning process.	B&NES Placemaking Plan / Planning DC.	Core Strategy plan period up to 2029.	NO ₂ and GHG reduction.	
9	Community Air Quality Group (utilising Keynsham Connecting Communities Forum).	Connecting Communities Forum?	6 months	None.	Not identified.
10	Keynsham Greenway links to National Cycle Network 4, Wellsway School and riverside path into Bristol and S Glos with new bridge over R Avon.	Transportation, BCC, South Gloucs, Sustrans, developers.	2018-2023.	NO ₂ and GHG reduction.	Developer funded.
11	Electric dial-a-ride.	KADDAR.	2 years	Pollution associated with manufacturing and mining of battery minerals. NO ₂ and GHG reduction.	Not identified.
12	Audit pedestrian facilities and improve pedestrian & cycling access in the town centre and to/from the centre and rail station.	B&NES & First Group.	Part of Strategy for Keynsham document – yet to be adopted.	n/a	
13	Lobby government for incentivising uptake of non-diesel cars.	PPHI & PH.	3 months – ongoing	GHG emissions – minimal change.	Not identified.
14	Identify priority cycling routes to/from and within Keynsham in order to build a cycling culture for people of all abilities.	B&NES Environmental Services, Sustrans & South Gloucestershire Council.	Part of Strategy for Keynsham document – yet to be adopted.	NO ₂ and GHG reduction.	
15	Continue to work with bus operators on improved services, ticketing and simplified fare structure.		Part of Strategy for Keynsham document – yet to be adopted.	NO ₂ and GHG reduction.	Potential identified - B&NES PT subsidy.
16	MetroWest – resulting in increase from hourly to half-hourly rail service.	B&NES Environmental Services & other former Avon authorities.	Spring 2019 earliest.	Offsets less efficient modes.	Potential identified.

SALTFORD

	Measure	Responsibility	Timescale	Environmental impacts	Funding
1	Targeted information campaign for the most vulnerable groups including text & phone message alert service: notifies predicted poor air quality. (i.e. asthmatics, COPD etc.).	PPHI, PH, Research and Intelligence Team, Clinical Commissioning Group, Sirona Care and Health.		n/a	Not identified.
2	Tree planting on A4 – deflects and collects pollutants.	Community Air Quality Group (utilising Keynsham Connecting Communities Forum).	Connecting Communities Forum?	6 months	None.
3	Advice to land owners on planting that protects from air pollution.	PPHI, Highways & Planning	1 year	Deflects air pollution from property facades, absorbs carbon dioxide	Not identified
4	Electric vehicle charge points for each new property across the district.	Developer and B&NES Planning DC	Developer dependent	n/a	Not identified
5	Promotion of Source West EV charging network (Keynsham charge points installation at Fox and Hounds Spring 2015)	Environmental Services	6 months –	n/a	Potential identified – 2015/16 LSTF or OLEV grant
6	Electric Zone – signed entrance to AQMA encouraging switch into electric mode for hybrids and promoting Source West.	PPHI & Highways.	2 year	NO ₂ and PM ₁₀ reduction.	Potential identified – Keynsham Connecting Communities Forum.
7	Community Air Quality Group (utilising Keynsham Connecting Communities Forum).	Connecting Communities Forum and PPHI	1 year	None.	Not identified.
8	Secure cycle storage at each new property	Developer and B&NES Planning DC	Developer dependent	NO ₂ and GHG reduction	Not identified
9	Electric dial-a-ride	KADDAR	2 years	Pollution associated with manufacturing and mining of battery minerals. NO ₂ and GHG reduction	Not identified
10	Lobby government for incentivising uptake of non-diesel cars.	PPHI & PH.	1 year –	GHG emissions – minimal change.	Not identified.
11	Continue feasibility work for reopening of a station at Saltford. B&NES Cabinet resolved on 03.12.14 to continue developing a business case including options of opening a station to the west of the village.	B&NES, First Group, Network Rail & MetroWest partners	5 years -	GHG emissions from trains accelerating from station – unless electric overheads used for stopping service.	Not identified