

### 3.8 Horsefair/Coventry Street, Kidderminster AQMA – Wyre Forest District Council (WFDC)

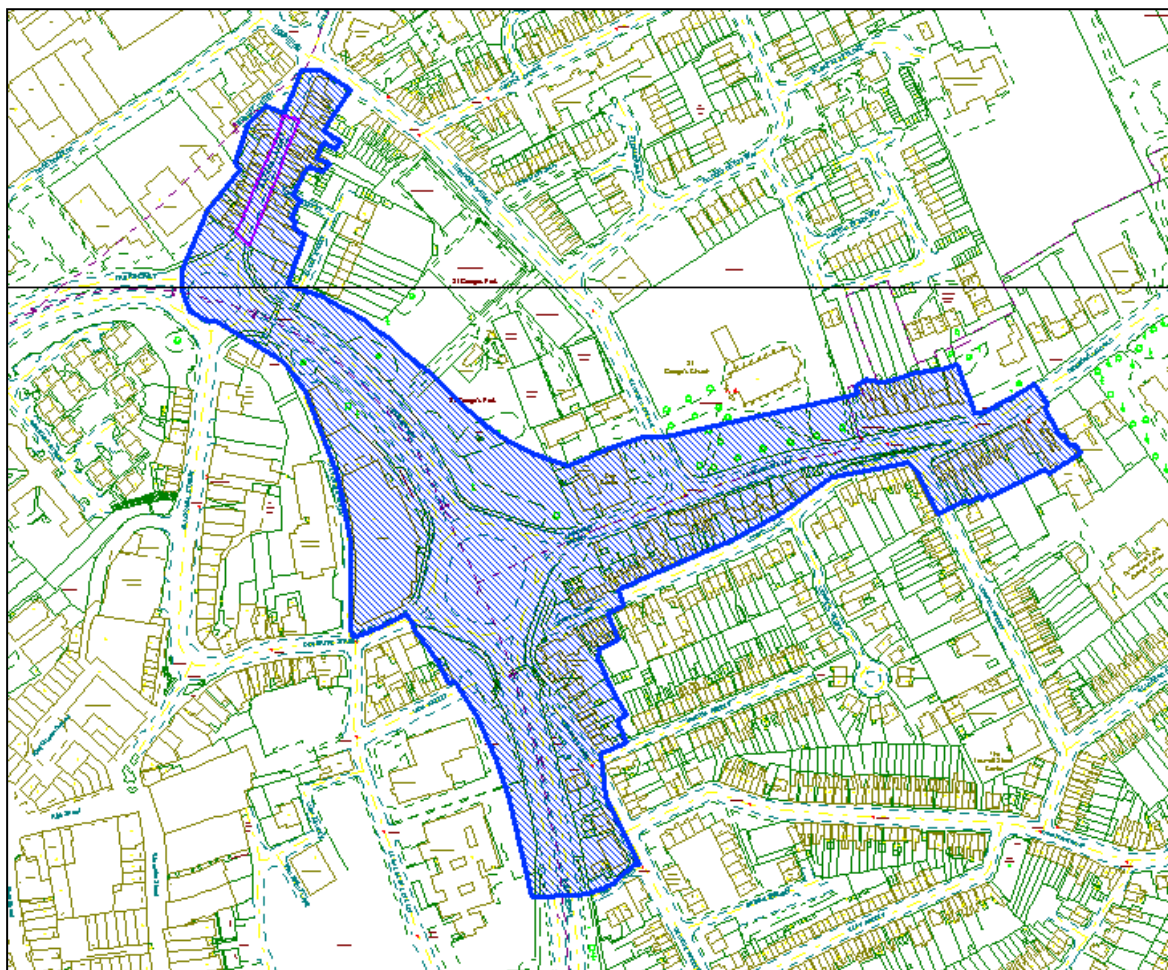
Date of Detailed Assessment: Stage 3 air quality review and assessment recommended AQMA Jan 2003

Date of Declaration: Horsefair first declared 6 January 2003

Date of Further Assessment: Stage 4 air quality review and assessment declared AQMA valid March 2004

Horsefair /Coventry Street declaration: 29 July 2009

**Figure 3-25 Plan of Horsefair/Coventry Street AQMA**



The Horsefair/Coventry Street AQMA extends from the Horsefair at its junction with Radford Avenue to the ring road, along the ring road in a southerly direction and extends up Coventry Street.

The 2003 declared Horsefair AQMA ran in an approximate north south direction from a point adjacent to The Peacock public house on Blackwell Street to the junction of Blackwell Street with the Ring Road. The majority of the properties in the AQMA were ground floor retail units with residential first floor. In 2007 a detailed assessment recommended an extension of the area required to be covered by the AQMA and in 2009 it was extended to the footprint shown in the above plan.

The AQMA now extends from the north at the Junction of Blackwell Street to the Horsefair and Radford Avenue on the eastern side of Blackwell Street and from The Peacock public house on the western side of Blackwell Street to the ring road island. The AQMA follows the ring road in a southerly direction to a second island where it continues in a north easterly direction along Coventry Street to a point level with number 50 Coventry Street to the western side of the road and a point level with St Ambrose Roman Catholic Church to the eastern side of the road. The AQMA also extends in a further more southerly direction along the ring road to a point level with South Street.

The current boundary of the AQMA follows the contours of predicted pollution levels produced in the Detailed Assessment (November 2007). However these straight contour lines have been extrapolated to cover additional properties and the rear gardens of the properties and may not necessarily be correct. No further assessment or further diffusion tube monitoring at new locations to determine the extent of the AQMA boundary or up to date traffic data collated to allow more accurate modelling as recommended in the 2007 Detailed Assessment has taken place to date.

### **3.8.1 Prevailing Conditions**

AM and PM peak traffic time site observations of the Horsefair/Coventry Street AQMA were undertaken in 2012/2013 to characterise existing conditions and identify issues in order to inform the focus of potential measures within the action plan. Photos from the site walkover are included at the end of this section.

To the north of the AQMA there are traffic lights with pedestrianised crossing points at the junction of A451 Blackwell Street (south) Broad Street (west), Radford Avenue (east) and A451 Horsefair (north). Yellow hatching crosses this junction to ensure the junction is not blocked and traffic can flow at all times. A small local of street parking area lies to the north west of the junction. Double yellow lines extend partly down Broad Street and Radford Avenue but are ignored especially along Radford Avenue where both sides of the road are subject to parking exacerbated by a local park, school and religious building. There are bus stops located by the small parking area on either side of the Horsefair for the number 7, 9, 9A and 580 busses that when they park block the flow of traffic.

The AQMA extends south down A451 Blackwell Street and is a narrow street with tall buildings either side creating a canyon effect. The majority of the properties in this part of the AQMA are ground floor retail units with residential first floor.

Double yellow lines extend down Blackwell Street to the ring road, there are no loading markings on the yellow lines and the plates indicate that restrictions apply to loading and unloading at the following times: Mon – Fri 8-9:30, 12-13:30, 16:30-18:30 and Sat 8-9:30, 12-13:30. The loading and unloading restrictions are ignored quite regularly by people popping in to the local shops and just pulling up if they cannot park anywhere else.

Traffic exits A451 on to the Ring Way and tailbacks can be quite considerable along the length of the A451 to Stourbridge Road; exit from the A451 is dependent on traffic flow on the Ring Way. Traffic entering A451 from the Ring Way is queued back on to the Ring Way at peak times due to sheer volume of traffic being held up at the traffic lights at the Horsefair junction.

Traffic flow along the Ring Way is dependent on general flow and volume of traffic in the area generally, queues can be found at the island points in most directions at peak times. Between the north island on the Ring Way and the southern island on the Ring Way in the AQMA there are few receptors the area to the eastern side of the Ring Way is mainly park

and open space whilst the area to the western side of the Ring Way is mainly office/ retail units with no identified receptors. There are some residential properties in the area of St Georges Court that face out across the Ring Way at the southern island and some residential properties to a point level with 90 St Georges Street and 2 South Street.

The AQMA extends to the north east along A456 Coventry Street to a point level with the property 50 Coventry Street to the western side of the road and a point level with St Ambrose church on the eastern side of the road. There are mainly residential properties along this section of the AQMA. Double yellow lines extend the length of the AQMA but there are no loading or unloading restrictions. There are bus stops either side of Coventry Street located adjacent to the side of St Georges Church, it is not known what buses stop there but any that do block the road. A pedestrianised crossing crosses Coventry Street at a point halfway between the Ring Way and Radford Avenue.

Entry and exit from this section of the A456 is dependent on the queues that build up further north along the A456 at the Land Oak junction and the traffic flow on to the Ring Way. This section of the AQMA includes residential properties to the northern side of Leswell Street.

Site observations during the a.m. and p.m. peak traffic hours noted the majority of traffic consisted of cars/commuters with some LDVs and buses. Lengthy queues developed along Horsefair /Blackwell Street in the direction of the Ring way and also along A456 Coventry Street in the direction of the Ring Way. Queues developed along the Ring Way with traffic accessing Blackwell Street and Coventry Street.

Pedestrian traffic in the Coventry Street section of the AQMA was quite high due to the 3 schools St Ambrose School, St Georges School and Holy trinity located at Leswell Street, Plane Tree Close and Birmingham Road A456 respectively.

The length of the AQMA can be traversed comfortably in about 20 to 30 minutes' walk by an average person. Therefore the area does not meet the description of a location requiring assessment against any short term (i.e. 1 hour for NO<sub>2</sub>) air quality standards, as outlined in LAQM.TG(09).

Photo 1 – View of queuing traffic along Blackwell Street section of AQMA looking south from the Horsefair to the Ring Way.





Photo 2 – View of queuing traffic along Horsefair north of the AQMA looking from Blackwell Street towards the Horsefair.



Photo 3 – View of queuing traffic along Horsefair north of the AQMA looking from the corner of Broad Street, note the small off road parking area.



Photo 4 – View of Ring Way part of the AQMA looking south east from Blackwell Street island to Coventry Street island, note open space to the left of the photo.



Photo 5 – View of queuing traffic along Coventry Street section of the AQMA looking south west from the junction of Radford Avenue towards the island, note the pedestrian controlled lights.



Photo 6 – View of queuing traffic along Coventry Street section of AQMA looking from Radford Avenue junction north east along A456.



Photo 7 – View of part of the AQMA looking north west from Coventry Street island to Blackwell Street island, note open space to the right of the photo



Photo 8 – View of part of the AQMA at Coventry Street island, note closeness of receptors to Ring Way.



Photo 9 – View of part of the AQMA at Coventry Street island at the junction with Coventry Street, note closeness of receptors to Ring Way.





Photo 10 – View of part of the AQMA at George Street, looking south note all residential.



Photo 11 – View of part of the AQMA at George Street, looking north to Coventry Street island, note residential area and proximity of Ring Way to left of photo.





Photo 12 – View of part of the AQMA at George Street, looking north note residential proximity to Ring Way to the right of the photo.



### 3.8.2 Summary of any Further Assessment report

There has been no specific report entitled further assessment of the Horsefair AQMA as the declaration of the AQMA was some 10 years ago and guidelines for LAQM have changed over time. However the AQMA area was extended in 2007 and a detailed assessment for the extension area was undertaken.

The Horsefair AQMA was declared and validated following the stage 1, 2, 3 and 4 air quality review and assessments and the USA between stage 3 and 4. Each authority was required to undertake a first stage review and assessment for each of the pollutants for which there is a prescribed objective. This consisted of an initial screening of industrial, transport and other sources of pollutants that have a significant impact within an authority's borders. Information on any existing or proposed significant sources of these pollutants within its area was collated. Consideration was then given to whether a person might reasonably be expected to be exposed over the averaging period for the specified objective in a relevant location. Significant pollutant sources outside the authority's area, which could lead to an exceedence of a prescribed objective within its area, were also included.

The second stage of the review and assessment process required a more detailed quantitative assessment to be undertaken, based on modeling or monitoring, depending on the pollutant being assessed. The third stage of the review and assessment process required a more detailed assessment, based on more sophisticated modeling and monitoring. The third stage identified that Horsefair utilizing continuous and passive monitoring data was likely to exceed the appropriate objective and an AQMA was recommended, the likely geographical extent of the area considered at risk of exceedence of the relevant AQ objectives, where members of the public are likely to be exposed over the relevant averaging period was defined.

The USA report confirmed the findings of the Stage 3 report, concluding that a detailed assessment of NO<sub>2</sub> was required for the AQMA. This conclusion was reached upon consideration of NO<sub>2</sub> diffusion tube monitoring data, in conjunction with a DMRB

assessment. The following stage 4 review and assessment by Faber Maunsell was to provide a detailed study of modeling of nitrogen dioxide for the AQMA. The results of the modeling were compared against nitrogen dioxide diffusion tube data. The results validated the declaration of the AQMA, it was suggested that the AQMA may need extending to encompass Coventry Street from its junction with Radford Avenue and the Ring Way.

In 2007 a Detailed Assessment of air quality was carried out for properties located in close proximity to the junction of Coventry Street with the Ring Way roundabout in Kidderminster. The Detailed assessment undertaken utilized the relevant receptor locations shown in Table 3-26 below.

These areas were identified as being at risk of exceeding the annual mean air quality objective for nitrogen dioxide in the Updating and Screening Assessment (Wyre Forest District Council, 2006). The Detailed Assessment was carried out using a combination of monitoring data and modelled concentrations. Concentrations of pollutants were modelled using the dispersion model ADMS Roads for 2005 at specific monitoring locations (for the purposes of model verification) and for the wider study area for 2006.

Monitoring confirmed that the annual mean objective is being exceeded. Modelling showed the objective is being exceeded at properties alongside Coventry Street and the Ring Way, closest to the roundabout in 2006.

Recommendations were made to declare an AQMA including all residential properties which lie within the  $40\mu\text{g}/\text{m}^3$  contour as a minimum, and consideration should be given to declaring those properties which lie within the  $36\mu\text{g}/\text{m}^3$  contour, to allow for any uncertainty within the model. It was also recommended that further diffusion tube monitoring is carried out at the closest residential properties to the Roundabout and at additional residential locations alongside Coventry Street and the Ring Way to determine the extent of the AQMA boundary. It was stated that additional up-to-date count data, including annual average speed data, would allow more accurate modelling to be carried out as part of the Further Assessment required once the AQMA has been declared.

**Table 3-26 Annual Mean NO<sub>2</sub> Concentrations measured using Diffusion Tubes.**

Site Reference	Site	2005 <sup>a</sup>	2006 <sup>b</sup>
(F) 69 Cov	Façade of 69 Coventry Street, Kidderminster	47.0	51.2
(F) SGC	Façade of 6/7 St George's Court, Kidderminster	41.0	35.7

### 3.8.3 Source Apportionment Data

The additional modelling undertaken within the Stage 4 assessment utilised basic source apportionment data based on 2003 traffic data. The percentage contribution from HGV against total traffic volume identified in the report is shown below in Table 3-27.

**Table 3-27 Percentage contribution of HGVs in 2003 in Horsefair AQMA**

Street	HGV %	AM Peak Hour Traffic Flow	
		2003	2005
Blackwell St (N)	2.8	1133	1158
Blackwell St (S)	4	234	239
Broad St	3.9	335	342
Coventry St (E)	4.18	1489	1522
Coventry St (W)	4.62	446	456
Radford Avenue	4.33	321	328
Ring Way NB 2-3	5	1191	1218
Ring Way NB 3-4	5	1228	1256
Ring Way SB 2-3	6.37	1631	1668
Ring Way SB 3-4	6.37	1376	1408
St Marys Ring Way EB	5.68	1651	1689
St Marys Ring Way WB	5.68	1170	1197
Stourbridge Road	4.34	860	879

The detailed Assessment in 2007 utilised the following source apportionment data as shown in Table 3-26

**Table 3-28 Summary of Traffic Flows**

Road Link	2005		2006	
	AADT	HDV AADT	AADT	HDV AADT
The Ringway	30,753	2,266	30,999	2,284
St Mary's Ringway	29,138	1,426	29,371	1,437
Birmingham Road	15,793	1,188	15,919	1,198

### 3.8.4 Air Quality Improvement Required.

The requirements for improvement identified in the Stage 4 assessment are detailed in Table 3-27 below.

**Table 3-29 Air Quality Improvements Required in 2004 in Horsefair AQMA**

Kidderminster	Receptor	Easting	Northing	Modelled NO <sub>2</sub> , 2005	% Contribution		Required NO <sub>2</sub> decrease from Traffic sources (%)
					Traffic	Background	
	6	383322	277130	35.8	46	54	-
	7	383312	277064	44.0	56	44	19
	8	383291	277038	44.2	57	43	20
	9	383552	276870	38.5	50	50	-

Table 3-27 lists the modelled 4 sensitive receptor locations, the modelled NO<sub>2</sub> concentrations for 2005, and the percentage contribution to these concentrations from traffic. Also shown is the required percentage decrease of traffic related NO<sub>2</sub>, based on the modelling results, to reduce the NO<sub>2</sub> concentration to below the 2005 annual mean air quality standard of 40 µg/m<sup>3</sup>. It should be noted that to reduce the concentrations below 36 µg/m<sup>3</sup>, to take into account model error, a further decrease in NO<sub>2</sub> (in addition to that detailed in Table 3-27) is required.



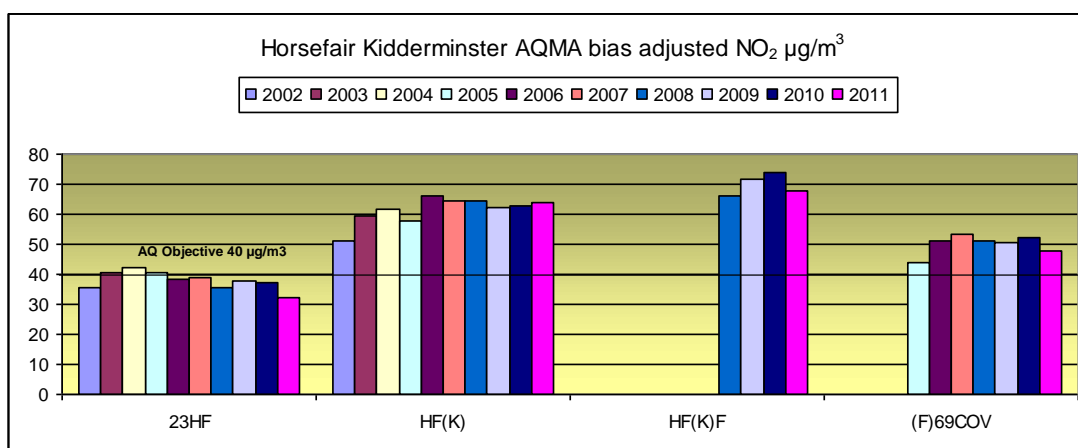
The 2007 Detailed Assessment did not list any % improvements to Air Quality.

### 3.8.5 Long term local trends in NO<sub>2</sub>

As part of the AQAP process data has been collated from previous WFDC yearly progress reports and screening assessments to produce a meaningful picture of long term trends in monitoring results of nitrogen dioxide in Horsefair/Coventry Street, Kidderminster.

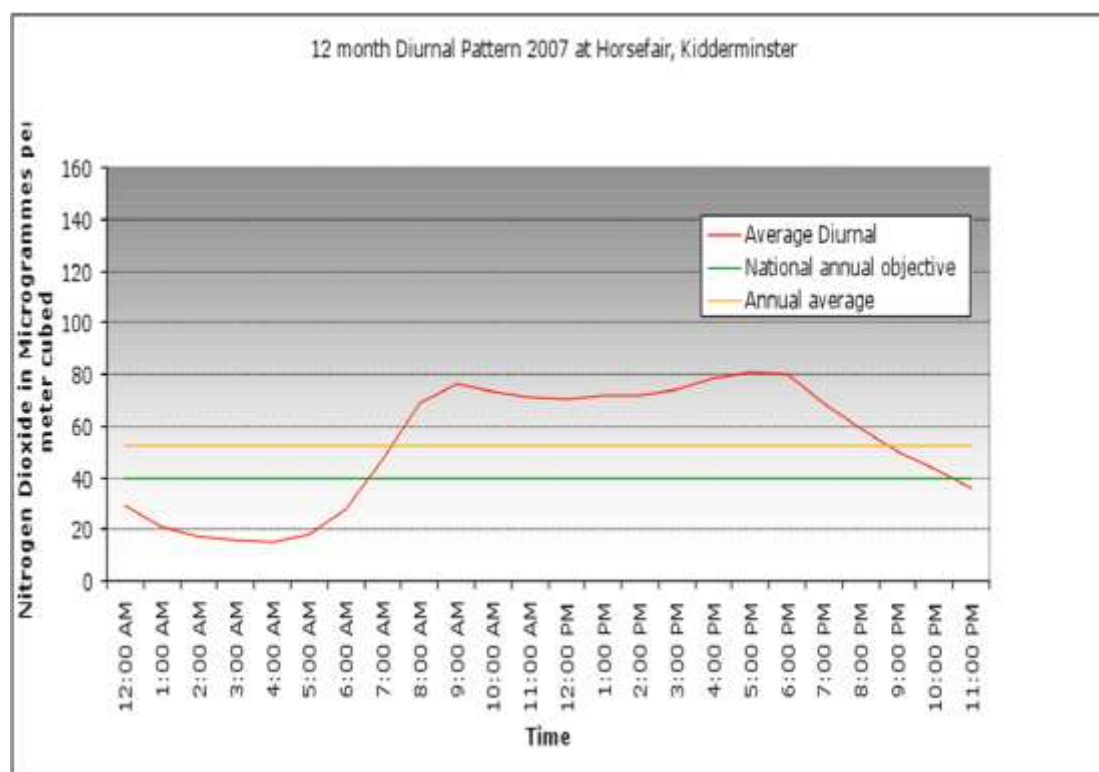
The graph below depicts these long term trends from bias adjusted annual average results of NO<sub>2</sub> at relevant exposure receptor locations.

**Figure 3-26 Bias adjusted Annual Average NO<sub>2</sub> monitoring results 2002 - 2011 Horsefair AQMA**



Since the stage 4 review and assessment the Horsefair/Coventry Street diffusion tube monitoring has continued to show exceedences of the AQ objectives and the existence of the AQMA is valid.

In addition to diffusion tube locations real time analyses was undertaken for at least 12 months and produced a full year of results for 2007 using Airpointer equipment.

**Figure 3-27 Diurnal patterns of NO<sub>2</sub> from Air pointer in Horsefair 2007**

The Airpointer was installed in a council owned vacant property in the AQMA in Blackwell Street, and the sampling tube was installed through the property onto the external façade on Blackwell Street. Nitrogen Dioxide diffusion tubes were also tri-located on the property façade to establish a local correction factor for nitrogen dioxide diffusion tubes. The Graph above sums twelve months results of the diurnal patterns to an average daily value. The trace confirms that air quality deteriorates quickly from approximately 6:00am and continuously builds to about 9:00 am where it reaches a peak reading corresponding with the morning rush hour period then drops slightly till about 3:00 pm approximately where it starts to rise again, cumulating to a peak around rush hour 5:00 -7:00pm. NO<sub>2</sub> levels then tail off and only dip below the objective levels around 10:00pm. The graph confirms that the degradation in air quality is attributable to road vehicles traversing the AQMA.

### 3.8.6 Summary of progress of actions identified or implemented to date

An Air Quality Action Plan was produced by WFDC in October 2004. A number of options were identified within the plan to improve air quality within the Horsefair original AQMA. An update on these options was regularly produced for annual Progress Reports for Defra. An action plan has not yet been produced for the extended Horsefair/Coventry Street AQMA declared in 2009. A brief description of the actions and progress to date is summarised below in Table 3-30

**Table 3-30 Summary of targeted actions from previous AQAP for Horsefair AQMA**

Action ID	Description	Outcome to Date
Option WF1	Review of make-up & condition of WFDC transport fleet with a view to improving fleet quality, maintenance & emission levels	Improvements achieved - Part of WFDC climate change strategy
Option WF2	Increase in WFDC fleet use of alternative fuels (e.g. LPG & combined fuel vehicles)	Part of WFDC climate change strategy

Action ID	Description	Outcome to Date
Option WF3	Review of the WFDC employee / contract car user & leasing policy to give incentives for greener vehicle ownership / use	Part of WFDC climate change strategy
Option WF4	Workplace charging schemes where employees are charged to use car park provision	Part of WFDC climate change strategy
Option WF5	Promote WFDC use of public transport during working day	Part of WFDC climate change strategy
Option WF6	Car sharing and work travel planning for staff to encourage take-up of public transport / reduced car journeys	Part of WFDC climate change strategy - Green Travel Plan to be implemented.
Option WF7	Restriction and better timing of WFDC delivery and service schedules	Not known.
Option WF8	Alterations to parking provision & pricing throughout district to ease traffic around AQMA and to deter local car use	Part of WFDC climate change strategy – on going through planning policy implementation
Option H1	Review of signage for traffic coming into Kidderminster to encourage use of alternative routes in to town centre. Electronic signage maybe appropriate indicating potential traffic congestion / air quality problems. Possible use of 'Town Centre only signs'	Part of Wyre Forest Transport Package in LTP3.
Option H2	One way system on Blackwell Street so that southbound traffic heading for Kidderminster / Ringway is forced to turn left and go down Radford Avenue and only northbound traffic permitted along the AQMA	No Progress, not viable since extension of AQMA.
Option H3	One-way system incorporating improvements in public transport. Vehicles allowed northbound along Blackwell St / Coventry St but prohibited travelling southbound (except buses, taxis & cycles) [referred to as 'Do Something 1 traffic proposal' in Stage 4 Air Quality Review and Assessment]	One way traffic flow systems are part of the Churchfields Local Plan and ReWyre strategy for the area. No progress.
Option H4	A scheme to address congestion in the north-eastern section of Kidderminster - to re-design junctions of Blackwell St / Coventry St & Ringway & to signalise roundabouts allowing traffic to be controlled more easily [referred to as 'Do Something 2 traffic proposal' in Stage 4 Air Quality Review and Assessment]	One way traffic flow systems are part of the Churchfields Local Plan and ReWyre strategy for the area. No progress.
Option H5	Introduction of a feeder/merger lane at the Kidderminster end of the AQMA to facilitate the better flow of traffic away from AQMA & on to the Ringway. Traffic will be forced to turn left. Option may require the introduction of traffic lights on the roundabout	One way traffic flow systems are part of the Churchfields Local Plan and ReWyre strategy for the area. No progress.
Option H6	Traffic calming measures (speed zones/bumps etc.) for local road network around AQMA to help the continual flow of traffic	No progress
Option H7	Park and ride scheme for Kidderminster	No progress
Option H8	Pedestrianisation of Blackwell Street	No progress
Option H9	HGVs restriction on Blackwell Street (particularly top end)	No progress
Option H10	Loading / unloading restrictions during congested periods	Implemented
Option H11	Co-ordinated system of traffic lights at north end of Blackwell St. Needs to include easy exit from Churchfields Part time lights on island maybe needed.	Partly implemented.



### 3.8.7 Actions identified from Local Transport Programme 3 (LTP3)

A number of actions have been identified within the County Councils transport strategy as having a potential impact on Horsefair / Coventry Street AQMA. The LTP3 scheme code, brief description and current status as provided by WCC in February 2013 are shown in Table 3-31.

**Table 3-31 LTP3 actions impacting Horsefair/Coventry Street AQMA**

LTP3 Scheme	Description of Improvements	Current Status
K2 - Kidderminster – Ring Road Junction and Public Realm Improvement Scheme	Enhancement/redevelopment of the ring road to improve efficiency, functionality and appearance, in particular to mitigate the AQMA	Would form part of Wyre Forest Transport Package. Programmed for later in Local Transport Plan.
K3 -Kidderminster – Station Enhancement	Upgrading railway station to more attractive and appropriate transport gateway to town and integrated with Severn Valley Railways.	On hold pending identification of funding.
K5 - Kidderminster – Traffic & Parking Study	Study would identify where to focus investment to improve the operation of the local transport network.	Would form part of Wyre Forest Transport Package. Programmed for later in Local Transport Plan.
K6 - Kidderminster – Minor Transport Improvements Scheme	Minor complimentary transport improvements to enhance safety, accessibility, information & travel choice integrated with other schemes	Would form part of Wyre Forest Transport Package. Programmed for later in Local Transport Plan.
K 7 -Kidderminster – Secure Cycle Parking Scheme	Provision of indoor cycle parking facilities in Town Centre to make cycling more attractive	Would form part of Wyre Forest Transport Package. Programmed for later in Local Transport Plan.
WF 1 - A456 Kidderminster – M5 (J3 and J4) Inter urban corridor maintenance and improvement	Adjacent. Improvements to connecting route - A comprehensive corridor length programme of improvements including junction enhancements, street furniture decluttering, replacement and enhancement	No proposals at this time.
WF 2 - A448 Kidderminster – Bromsgrove Inter urban corridor maintenance and improvement	Adjacent. Improvements to connecting route - A comprehensive corridor length programme of improvements including junction enhancements, street furniture decluttering, replacement and enhancement	Would form part of Wyre Forest Transport Package. Programmed for later in Local Transport Plan.
WF 3 - A449 Kidderminster – Worcester Inter urban corridor maintenance and improvement	Adjacent. Improvements to connecting route - A comprehensive corridor length programme of improvements including junction enhancements, street furniture decluttering, replacement and enhancement	No proposals at this time.

### **3.8.8 Summary of key issues identified from review for consideration within actions**

**Issue HF1** – The detailed Assessment of 2007 recommended further diffusion tube monitoring is carried out at the closest residential properties to the island and at additional residential locations alongside Coventry Street and the Ring Way to determine the extent of the AQMA boundary. Up-to-date count data, including annual average speed data, would allow more accurate modelling to be carried out as part of the Further Assessment.

**Issue HF2** – The current boundary of the AQMA follows the contours of predicted pollution levels produced in the Detailed Assessment (November 2007). The current boundary of the AQMA could be amended to comply with Defra (LAQM.TG(09) and LAQM.PG(09)) and EPUK guidance e.g. along physical or administrative boundaries and exclude rear residential garden areas.

**Issue HF3** – The main issue identified is the sheer volume of traffic in the area both entering the Kidderminster Ring Way and exiting it.

**Issue HF4** - The narrowness of Horsefair and the tall buildings creates a canyon effect on air quality in the Blackwell Street part of the AQMA.

**Issue HF5** – Two way traffic on all roads in the vicinity of the AQMA and the AQMA itself creates queues due the narrowness of the roads.

**Issue HF6** – 2 Local primary schools and a high school provide an additional burden to traffic numbers and pedestrian footfall in the area.