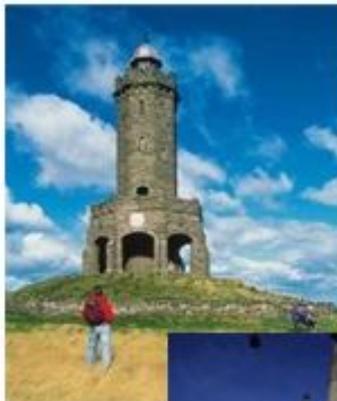


**Blackburn with Darwen Borough  
Council**

**Air Quality Action  
Plans  
PROGRESS REPORT  
April 2010**

- 1. Intack**
- 2. Bastwell**
- 3. A666 between Robert Street and  
Wraith Street, Darwen**
- 4. Witton**
- 5. Earcroft**



## **Executive Summary**

In October 2005 Blackburn with Darwen Borough Council declared five Air Quality Management Areas (AQMAs) with respect to exceedences of the annual mean nitrogen dioxide (NO<sub>2</sub>) objective at five busy urban road junctions:

1. Intack
2. Bastwell
3. Darwen Town Centre
4. Witton
5. Earcroft

Actions plans for the five AQMAs were produced which had a number of direct and indirect measures for implementation during 2007-2009. The majority of these measures have been implemented. The action plans are being integrated into the Council's Local Transport Plans. Managing Air Quality is an objective identified in LTP2, and Target LTP8 has been adopted which can only be met if levels of NO<sub>2</sub> fall at the five AQMAs.

With the possible exception of Darwen Town centre, the Action Plan measures don't appear to have had a dramatic impact on NO<sub>2</sub> levels. The relatively small changes observed may be as a result of the Action Plan measures, but they may also be a result of other factors such as meteorological conditions. Some of the changes brought about by the implementation of action plan measures are recent, so their full effect may not be evident yet.

In 2009 there were exceedences in the Intack and Witton AQMAs. The three other AQMAs remain close to the annual mean NO<sub>2</sub> objective. Concentrations at the worst affected receptors at each AQMA range from 39.0 to 43.9 µg/m<sup>3</sup>. From 2007 only the Intack AQMA has remained consistently above the annual average NO<sub>2</sub> objective. Since 2007 there has been a general pattern: the worst affected receptors remain close to the objective concentration and exceedences only occur on one arm of the junction. All five junctions will remain AQMAs until there is evidence to show that pollution levels remain consistently below the national objective levels.

A revised programme of Action Plan measures and timescale for implementation has been identified in this report. Direct action themes are included for all five AQMAs. They include the improvement of traffic flows and traffic management, and the reduction of emissions and encouragement of sustainable and public transport uptake. Indirect action themes include reducing reliance on travel by car and reduction of background pollutant concentrations.

Blackburn with Darwen Borough Council will continue to implement measures in pursuit of acceptable air quality.

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# **1. Introduction**

## **1.1 Background**

Blackburn with Darwen Borough Council has a duty under the Environmental Protection Act 1995 to implement measures in pursuit of acceptable air quality at five Air Quality Management Areas (AQMAs) that were declared in October 2005. These AQMAs were declared because levels of NO<sub>2</sub> exceeded the annual mean objective value.

In November 2007 the Council produced Action Plans for the five AQMAs. This summarised the outcome of consultation exercises undertaken and presented an evaluation of the range of air quality improvement measures that were been considered.

This report is a review of the Action Plans for the five AQMAs. It identifies current levels of NO<sub>2</sub> at the five AQMAs, evaluates progress in the implementation of the Action Plans and includes details of new measures to be incorporated in an updated version of the Action Plans.

The original Action Plans 2007 and other air quality review and assessment reports can be downloaded from:

<http://www.blackburn.gov.uk/server.php?show=ConWebDoc.43279>

## **1.2 Outcomes of previous LAQM reviews and assessments**

In Round 1 of Local Air Quality Management (1997-2003) Blackburn with Darwen Borough Council satisfied the Government that there were no air quality objectives predicted to exceed their target dates across the Borough.

In Round 2, Blackburn with Darwen submitted the following reports:

- 2003: Updating and Screening Assessment
- 2004: Detailed Assessment
- 2005: Progress Report

The Updating and Screening Assessment identified 6 areas in the borough where there was evidence to suggest that the 40 µg/m<sup>3</sup> annual mean objective for NO<sub>2</sub> was being exceeded. In the subsequent Detailed Assessment, it was considered that exceedences of the objective were likely at 5 of these locations and consequently, on 18th October 2005 Blackburn and Darwen Borough Council declared the following AQMAs (See Figure 1.):

- AQMA No.1 Intack - Accrington Road / Whitebirk Road junction
- AQMA No.2 Bastwell– Whalley Range / Whalley New Road junction
- AQMA No.3 Darwen Town Centre - A666 between Robert St and Wraith St
- AQMA No.4 Witton - Preston Old Road / Buncer Lane junction
- AQMA No.5 Earcroft - A666 / M65 Link Road junction

Figure 1: Air Quality Management Areas



AQMA No.1 Intack

AQMA No.2 Bastwell

AQMA No.3 A666 Between Robert St & Wraith St (Darwen town centre)

AQMA No.4 Witton

AQMA No.5 Earcroft

Detailed AQMA maps can be downloaded at:

<http://www.blackburn.gov.uk/server.php?show=ConWebDoc.11839>

A June 2006 Updating And Screening Assessment supported the conclusion that levels of NO<sub>2</sub> were unacceptably high in the AQMAs.

A Further Assessment report produced in September 2006 concluded that there were exceedences of the NO<sub>2</sub> objective at all of the AQMAs. These elevated NO<sub>2</sub> levels are mainly caused by road traffic emissions. The five AQMAs are busy urban junctions where emissions from slow moving vehicles are trapped by nearby buildings and the surrounding topography. This is a particular issue for Blackburn with Darwen given the Pennine geography and tightly formed Victorian streetscape.

In 2007 Blackburn with Darwen Borough Council produced Action Plans for the five AQMAs. This summarised the outcome of consultation exercises undertaken and presented an evaluation of the range of air quality improvement measures that were being considered. A range of measures were identified for inclusion in the action plans. They ranged from physical changes at junctions to improve traffic flow, such as traffic light sequencing and parking restrictions, to measures seeking to promote less polluting forms of travel, such as school travel plans and awareness raising. Ten additional measures were identified for evaluation and possible inclusion in future

revisions of the action plan. Sources of funding were identified, principally Local Transport Plan funding. Progress on the implementation of the measures identified in the action Plans is identified in section 2.0 of this report.

Since September 2006 a number of Local Air Quality Management Reports have identified the levels of NO<sub>2</sub> in the five AQMAs. The findings of these reports are summarised in Table 2 and considered in more detail in section 3.0 of this report.

Table 1 – AQMA exceedences identified in round 3 & round 4 USA					
LAQM Assessment	Nitrogen dioxide exceedence identified?				
	AQMA 1	AQMA 2	AQMA 3	AQMA 4	AQMA 5
Round 3					
2006 Updating & Screening Report	Yes	Yes	Yes	Yes	Yes
2007 Detailed Assessment	Yes	Yes	No	No	No
2008 Progress Report	Yes	No	Yes	No	No
Round 4					
2009 Updating & Screening Report	Yes	Yes	Yes	Yes	Yes

The action plans are being integrated into the Council's Local Transport Plans which are in line national transport policy objectives. Managing Air Quality is an objective identified in LTP2, and Target LTP8 has been adopted which can only be met if levels of nitrogen dioxide fall at the five AQMAs. Target LTP8 and actual performance figures are included in Appendix C.

### 1.3 Sources of nitrogen dioxide in our Borough (Source apportionment)

There are many of sources of NO<sub>2</sub>. Some NO<sub>2</sub> is produced in the home, some is produced by industrial processes. However, a large proportion of air pollution today comes from road vehicles.

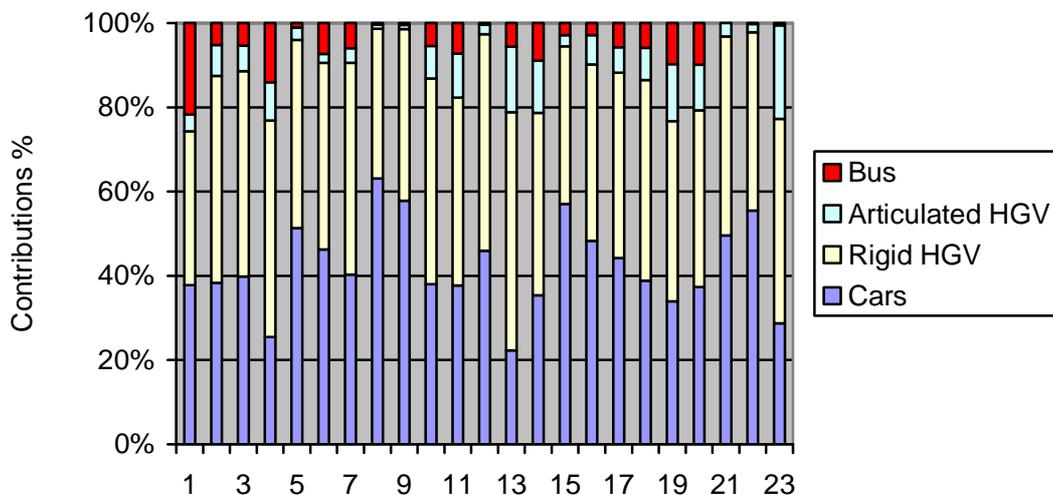
Source apportionment of the local traffic emissions was undertaken for the 2007 Further Assessment. This exercise has not been repeated. This shows greater proportions of emissions from HGVs, and in some locations buses, than might be expected from the vehicle numbers and proportions. This highlights the importance of keeping all sources under consideration when contemplating measures to improve air quality at the AQMAs.

Table 2 and Figure 1 set out the source contributions of traffic related sources which have been apportioned to the following categories:

- Cars
- Light Goods Vehicles
- Rigid Heavy Goods Vehicles
- Articulated Heavy Goods Vehicles, Buses and Coaches

Site	Cars	LGV	Rigid HGV	Articulated HGV	Bus
AQMA 1 Intack Site 15	34.0	9.9	32.9	3.6	19.5
AQMA 1 Intack Site 56	34.6	9.8	44.4	6.6	4.7
AQMA 1 Intack Site 57	35.5	10.7	43.5	5.4	4.8
AQMA 1 Intack Site 58	23.7	6.9	47.8	8.4	13.1
AQMA 2 Bastwell Site 48	43.4	15.4	37.8	2.5	0.9
AQMA 2 Bastwell Site 49	40.6	12.2	38.8	1.9	6.4
AQMA 2 Bastwell Site 50	35.7	11.4	44.5	3.1	5.3
AQMA 2 Bastwell Site 51	52.4	16.9	29.5	0.8	0.3
AQMA 3 A666 Site 63	49.3	14.8	34.8	0.8	0.4
AQMA 3 A666 Site 65	34.1	10.3	43.8	6.9	4.9
AQMA 3 A666 Site 66	33.7	10.7	39.8	9.3	6.5
AQMA 3 A666 Site 67	40.0	12.9	44.8	2.0	0.3
AQMA 3 A666 Site 68	20.8	6.8	52.7	14.5	5.2
AQMA 3 A666 Site 64	32.0	9.6	39.2	11.2	8.1
AQMA 4 Witton Site 52	49.5	13.3	32.4	2.3	2.5
AQMA 4 Witton Site 53	42.2	12.5	36.6	6.1	2.5
AQMA 4 Witton Site 54	39.4	10.8	39.2	5.4	5.1
AQMA 5 Earcroft Site 11	35.0	10.0	42.9	6.9	5.3
AQMA 5 Earcroft Site 25	30.9	8.9	38.9	12.3	8.9
AQMA 5 Earcroft Site 59	33.7	9.8	37.8	9.8	8.9
AQMA 5 Earcroft Site 60	43.3	12.7	41.2	2.8	0.0
AQMA 5 Earcroft Site 62	47.7	14.0	36.4	1.7	0.2
AQMA 5 Earcroft Site 70	26.1	9.0	44.1	20.2	0.5

**Figure 2: Source apportionment of traffic related nitrogen dioxide emissions at 23 monitoring sites within the 5 AQMAs**



## 2.0 Implementation of measures identified in the Action Plans 2007

Table 3 – Implementation of Action Plan Measures 2007 - 2009

Action Plan Measure	Implementation Target Date					Has measure been implemented?	When was the measure implemented?	Has potential impact been measured?	Additional information
	2007 - 2009	2007 - 2009	2007 - 2008	2007 - 2009	2007 - 2008				
	AQMA 1 Intack	AQMA 2 Bastwell	AQMA 3 Darwen	AQMA 4 Witton	AQMA 5 Earcroft				
Maximise signal efficiency	•	•	•	•	•	AQMA 1 - Yes AQMA 2 - Yes AQMA 3 - Yes AQMA 4 - Yes AQMA 5 - No	AQMA 1 - March 2009 AQMA 2 - Aug 2009 AQMA 3 – Feb 2008 AQMA 4 - Aug 2009	Yes* – see note below	Impacts are being measured using data collected from the traffic signals system (MOVA and SCOOT) in addition to ongoing monitoring of Air Quality. ATC site monitoring and annual traffic cordon counts. AQMA 5 - To be implemented as part of the Pennine Reach transport major scheme (April 2011 onwards)
Expand right turn lane	n/a	n/a	n/a	•	n/a	Yes	August 2009 as part of junction remodelling and resurfacing scheme	Yes*	Efficiency of right turn filter lane being evaluated from residents' feedback and MOVA system data outputs
Improved junction signage	n/a	n/a	n/a	n/a	•	No			To be implemented as part of the Pennine Reach transport major scheme

Parking restrictions	•	•	•	•	•	AQMA 1 - No AQMA 2 - Formalised parking AQMA 3 - Yes AQMA 4 - No (retention of parking as per consultation)	As per dates above	Yes*	Impacts are being measured using data collected from the traffic signals system (MOVA and SCOOT) in addition to ongoing monitoring of Air Quality. ATC site monitoring and annual traffic cordon counts. Parking restrictions at Intack to be investigated with the Council's Parking Services Department (Investigation 2010/11). Changes to Earcroft to be developed and implemented as part of the Pennine Reach transport major scheme (April 2011 onwards)
Improved parking provision		•	n/a	n/a	n/a	Yes - formalisation of parking arrangements	As per dates above	Yes*	As per "maximise signal efficiency"
School travel plans	•	•	•	•	•	Yes	School travel plan rollout ongoing across the borough	Yes*	Data on modal share of journeys to school (LTP4 / NI198) reported within the LTP and via LAA. DFES PLASC system.
Mosque marshalling	n/a	•	n/a	n/a	n/a	Yes	Ongoing	No	
East Lancs Rapid Transport project (Pennine Reach)	•	n/a	•	n/a	•	No	Ongoing – anticipated delivery from Jan 2011 to Mar 2014	No	Funding has been secured from North West RFA and planning applications have been submitted
Bus only lane (Belgrave Mill)	n/a	n/a	•	n/a	n/a	Yes	Jan-07	Yes*	Impacts are being measured using data collected from the traffic signals system (MOVA and SCOOT) in addition to ongoing monitoring of Air Quality

Bus quality partnerships	•	•	•	•	•	No	To be developed as part of Pennine Reach major transport scheme		Punctuality Improvement Partnership already developed for AQMA1 (Intack). Statutory QBP to be developed as part of Pennine Reach from April 2011 onwards
Relocation of bus depot	•	n/a	n/a	n/a	n/a	No			This measure has been removed from action plan – not feasible
Public transport information	•	•	•	•	•	Yes	Roll out of improved public transport information ongoing	Yes*	Via BV102 public transport patronage returns
Improvements to bus station	n/a	n/a	•	n/a	n/a	Yes	Mar-07	Yes*	Via BV102 public transport patronage returns
Improvements to train station	n/a	n/a	•	n/a	n/a	No	New station ticket office developing - to be delivered in 2010 onwards		BwDBC capital programme allocation for wholesale improvements to the railway station – new ticket office, customer information systems and platform shelters
Improvements to train line and service	n/a	n/a	•	n/a	n/a	No	Agreement reached with Network Rail to "fast track" the project through GRIP project stages		Project being developed by Network Rail to GRIP 3 status (preferred option outline design). Target date 2013/14 onwards.
Car sharing	•	•	•	•	•	Yes	Carshare database developed with LTP2 funding in 2007/08	Yes*	Registered users and estimated mileage and CO2 savings. The SharedWheels website is promoted across the Lancashire sub region and since Jan 2009 it has saved an estimated 3.1 million vehicle miles.
Advanced stop lanes for cyclists	•	•	•	•	•	Yes	Ongoing projects linked in with resurfacing programme		

Development control	•	•	•	•	•	Yes	2007	No*	Where proposed developments have been submitted for planning approval and it appears that the proposed developments may result in the breach of an air quality objective the developers have been required provide additional information. In most cases basic screening criteria are applied and the impact was deemed insignificant. Applications 10/08/0819, 10/08/0187, 10/07/1161, 10/09/0186 were the subject of air quality assessments. For these applications air quality was a deemed to be a low priority consideration in accordance with the NSCA's significance assessment procedure.
Control of industrial emissions	•	•	•	•	•	Yes	2007	No*	The Council regulates a range of potentially polluting industrial processes under the Environmental permitting legislation. It also enforces clear air Act legislation which controls the emission of smoke from industrial chimneys.
Control of bonfire & chimney emissions	•	•	•	•	•	Yes	2007	No*	The Council regulates a range of potentially polluting industrial processes under the Environmental permitting legislation. It also enforces clear air Act legislation which controls the emission of smoke from industrial chimneys and some bonfires.

Notes

\* - The individual impact of each measure has not been determined, but NO<sub>2</sub> levels in all the AQMAs is being monitored

### **3.0 AQMA NO<sub>2</sub> concentrations and the impact of implemented Action Plan measures.**

Each of the five AQMAs is declared in respect of one or more NO<sub>2</sub> exceedences at a congested urban junction where dispersion is hindered by nearby buildings. There are diffusion tube results for residential receptor locations on all arms of the five junctions. Background concentrations have also been identified at locations in the vicinity of the five junctions (Tube No. 76, 67, 84, 4 and 82).

With the possible exception of Darwen Town centre, the Action Plan measures don't appear to have had a dramatic impact on NO<sub>2</sub> levels. The relatively small changes may be as a result of the Action Plan measures but they may also be a result of other factors, such as meteorological conditions.

The current situation in the AQMAs is summarised in Table 4.

Table 4 – 2009 AQMA NO <sub>2</sub> exceedences				
Nitrogen dioxide annual objective exceedence identified?				
AQMA 1	AQMA 2	AQMA 3	AQMA 4	AQMA 5
Yes	No	No	Yes	No

However, Defra guidance (Defra, 2003) states that it is not normal practice to consider trends as relevant where there is less than 5 years worth of data. In light of this guidance, it may be some time before it is possible to determine a definite trend and resulting improvement or deterioration.

Graphs have been produced showing the results of monitoring at receptors at each of the five AQMAs. In each graph the NO<sub>2</sub> national objective is shown in red. The monitoring figures can be found in Appendix A of this report.

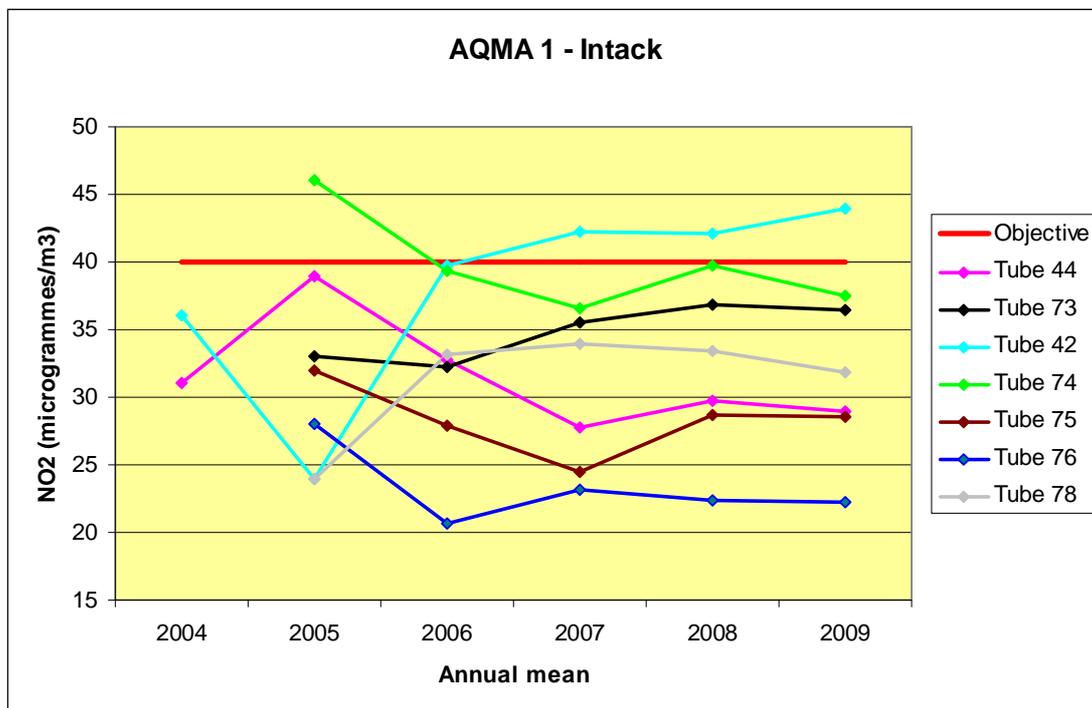
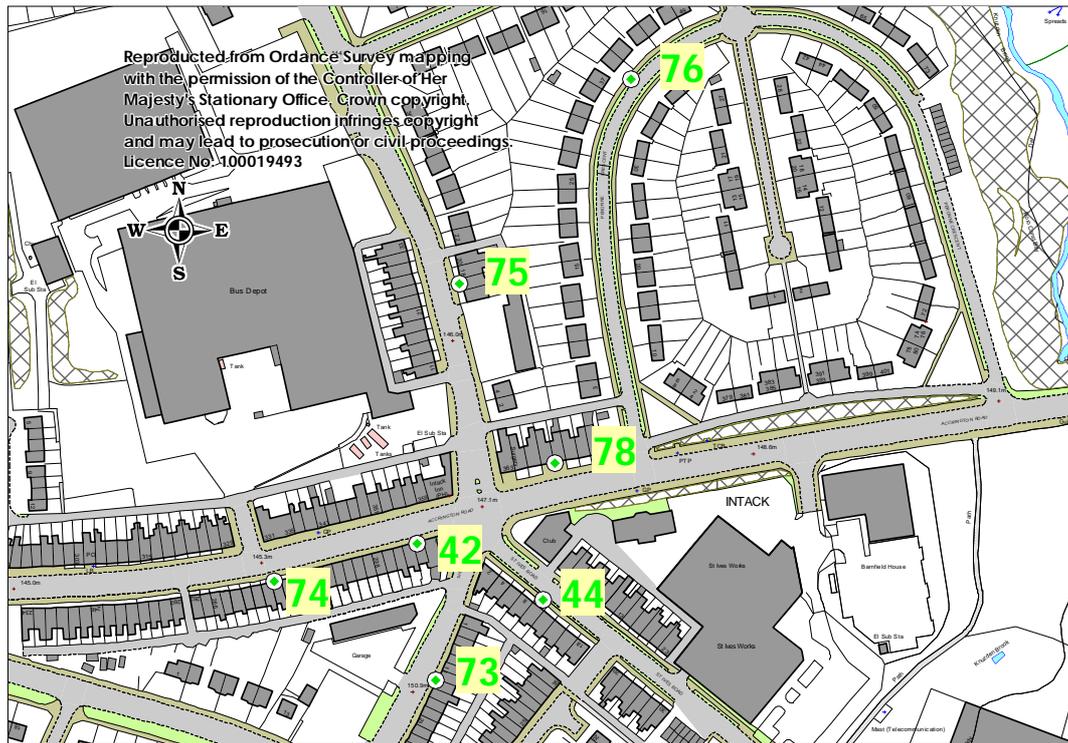
### **3.1 Common NO<sub>2</sub> Trends**

Before attempting to identify trends at each of the individual AQMAs it is appropriate to look for common trends.

The results in all five AQMAs prior to 2007 were more variable than in subsequent years. In January 2007 Blackburn with Darwen Borough Council changed from diffusion tubes supplied and analysed by Lancashire County Council to tubes supplied and analysed by Gradko. The change in tube supplier and a resulting improvement in tube precision may account for the reduction in variability.

Since 2007 there has been a general pattern: the worst affected receptors remain close to the objective concentration and exceedences only occur on one arm of the problem junctions. All five junctions will remain AQMAs until there is evidence to show that pollution levels remain consistently below the national objective levels.

### 3.2 NO<sub>2</sub> at AQMA 1 – Intack

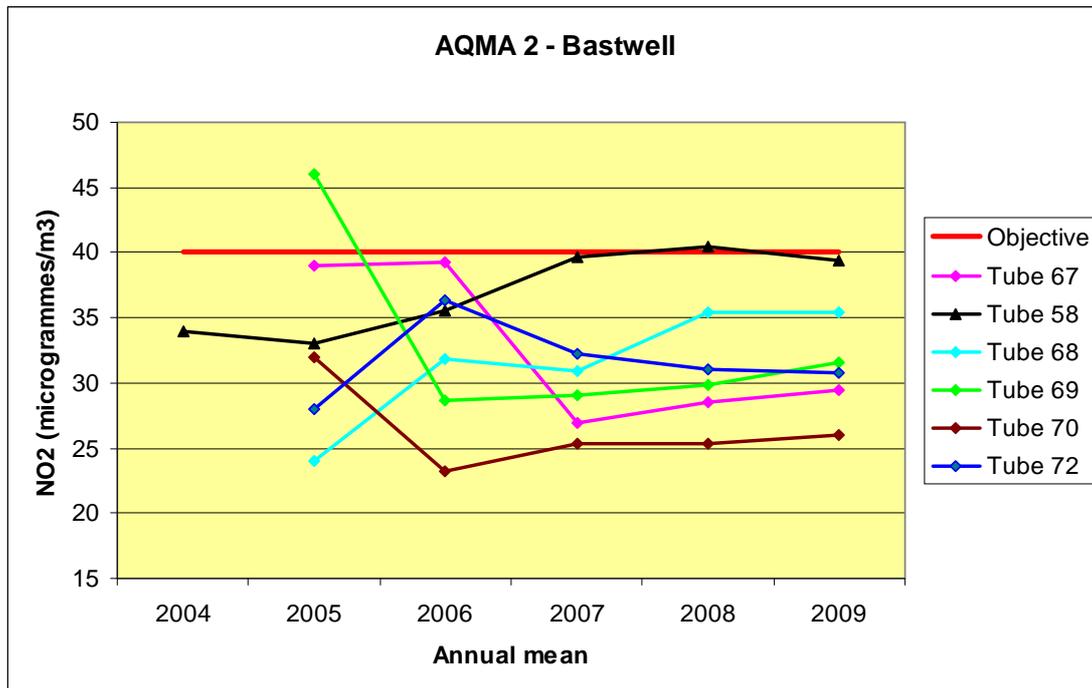
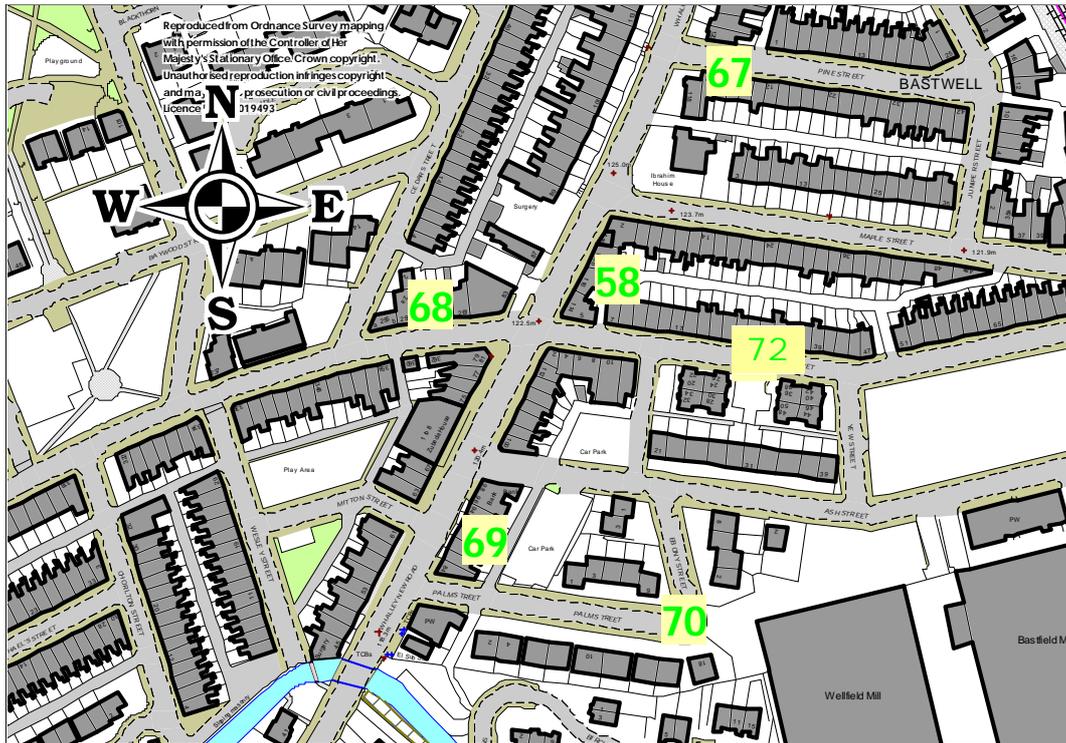


The results of diffusion tube NO<sub>2</sub> monitoring on all arms of the junction appear to have been less variable from 2007 onward (see comments on common trends). Exceedences are only recorded on one arm of the junction, which is on Accrington Road on the Blackburn side of the junction (tube 42 on the façade of a residential receptor at 306 Accrington Road). However, work to improve the efficiency of junction signals was completed in March 2009 so the full impact of this change will not be reflected in the 2009 annual mean. Unfortunately the NO<sub>2</sub> concentration increased in 2009, but from 2007 to 2009 the annual mean has only varied by

1.8  $\mu\text{g}/\text{m}^3$ , so this is a relatively minor variation. It is worth noting that performance of diffusion tubes can be influenced by a variety of factors, including meteorological conditions, which could well account for modest fluctuations.

Because of the 2009 exceedence at tube 42 this junction will remain an AQMA.

### 3.3 NO<sub>2</sub> at AQMA 2 – Bastwell

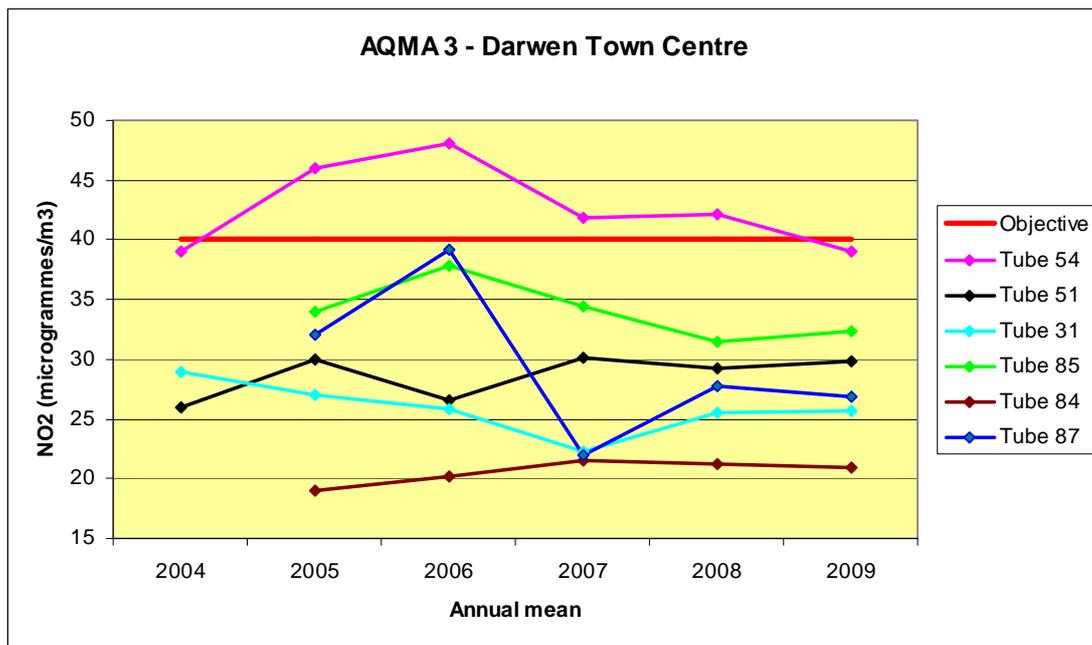
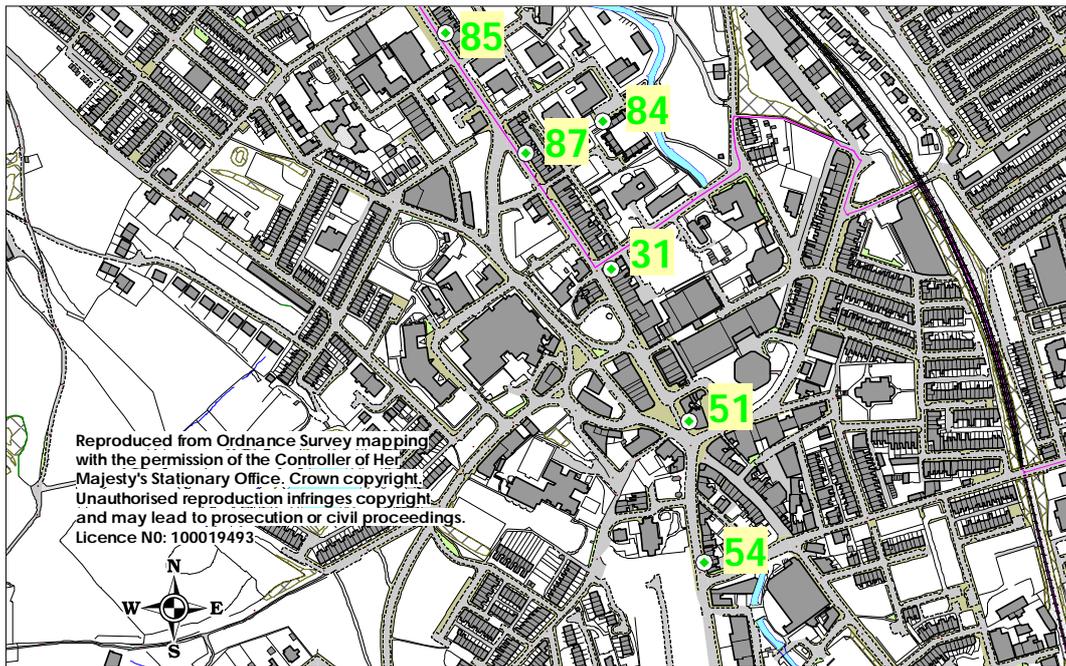


The results of diffusion tube NO<sub>2</sub> monitoring on all arms of the junction appear to have been less variable from 2007 onward (see comment on common trends). From 2007 onwards an exceedence has only been observed at one arm of the junction, on Whalley New Road to the north of the junction (tube 58 on the façade of a residential

receptor at 114 Whalley New Road). The exceedence only occurred in 2008 but concentrations at this location from 2007-2009 have remained close to the national objective for NO<sub>2</sub>. Work to improve the efficiency of junction signals was completed in August 2009 so the full impact of this change will not be reflected in the 2009 annual mean.

Concentrations of NO<sub>2</sub> remain close to the objective values, so the AQMA status of the junction will not be revoked.

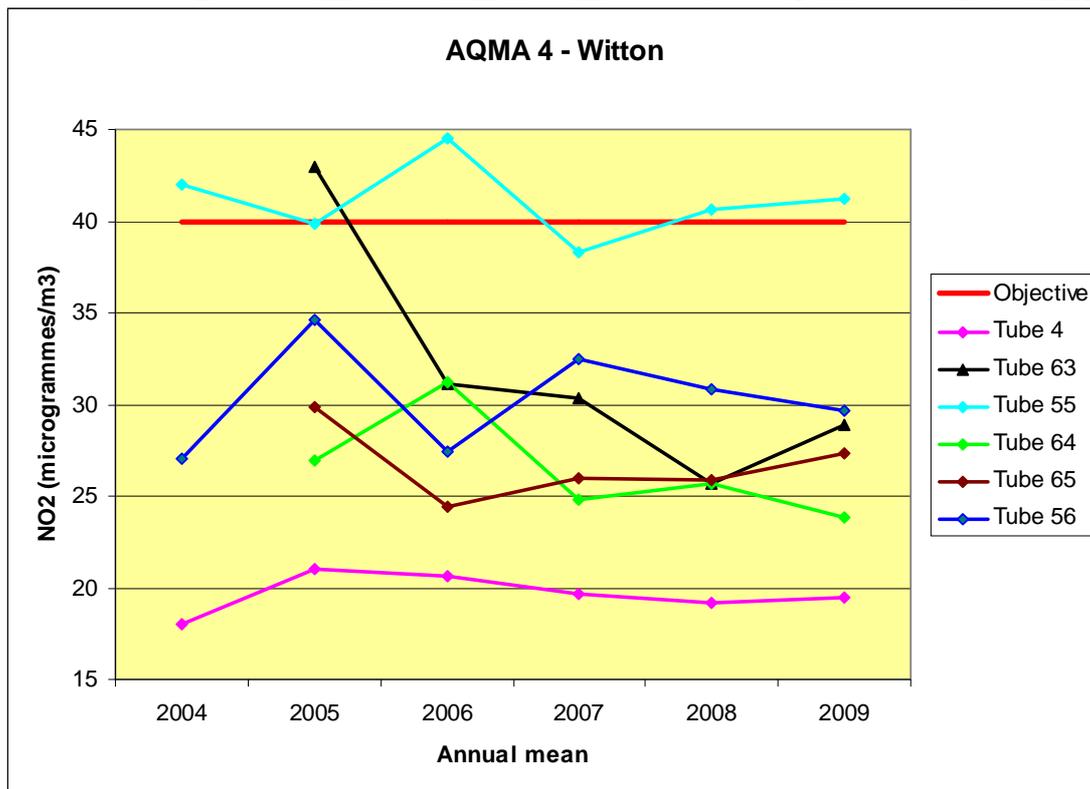
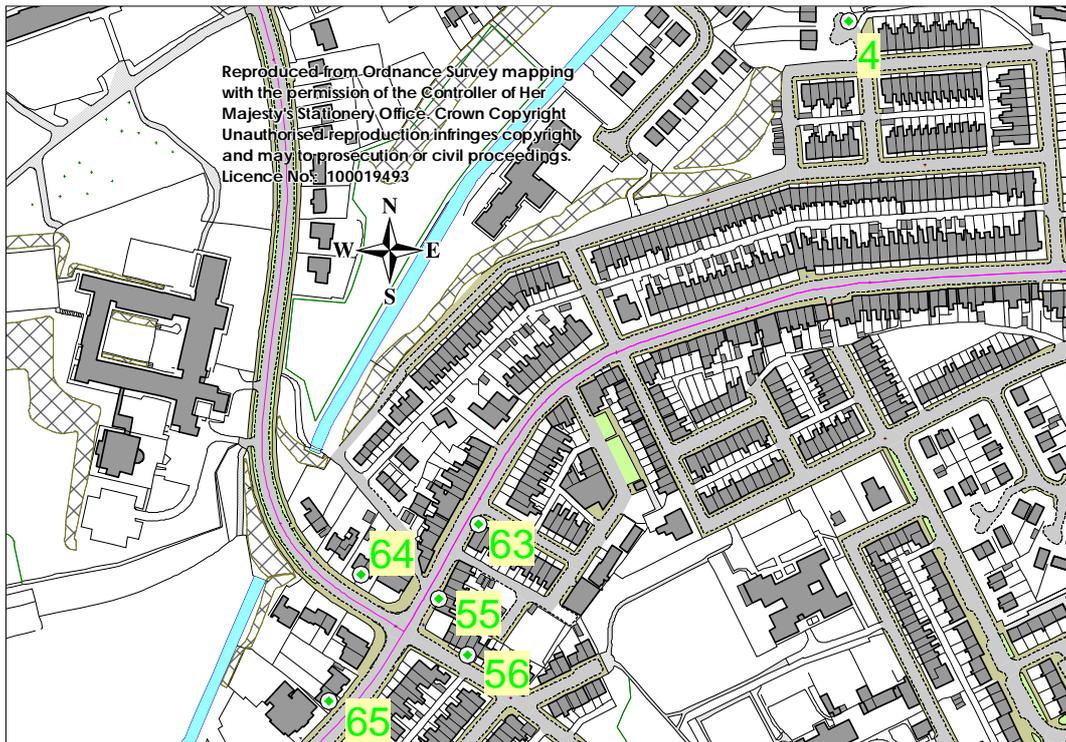
### 3.4 NO<sub>2</sub> at AQMA 3 – Darwen Town Centre



The results of diffusion tube NO<sub>2</sub> monitoring on all arms of the junction appear to have been less variable from 2007 onward (see comments on common trends). Exceedences are only recorded on one arm of the junction, which is on the section of Bolton Road to the south of The Circus (tube 54 on the façade of a residential receptor), and in 2009 the annual mean on this arm fell 3.2 µg/m<sup>3</sup> to below the national objective value. Major work on the Darwen Town Centre road layout was completed in February 2008 so the full impact of this change would not be reflected in the annual mean until 2009.

Concentrations of NO<sub>2</sub> remain close to the objective values, so the junction will remain an AQMA.

### 3.5 NO<sub>2</sub> at AQMA 4 - Witton

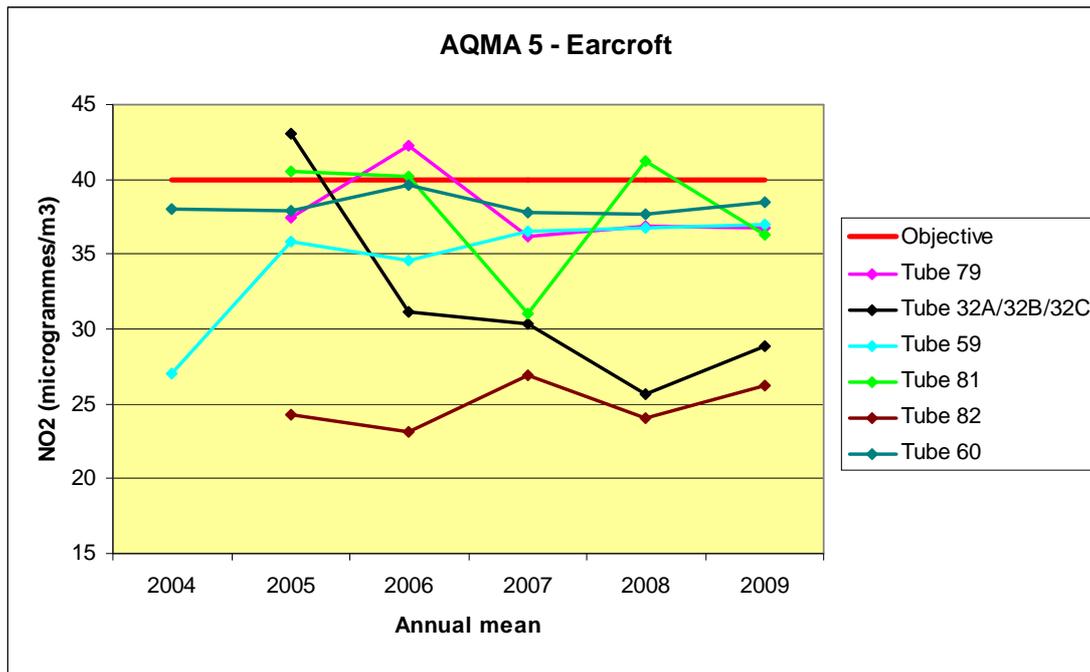
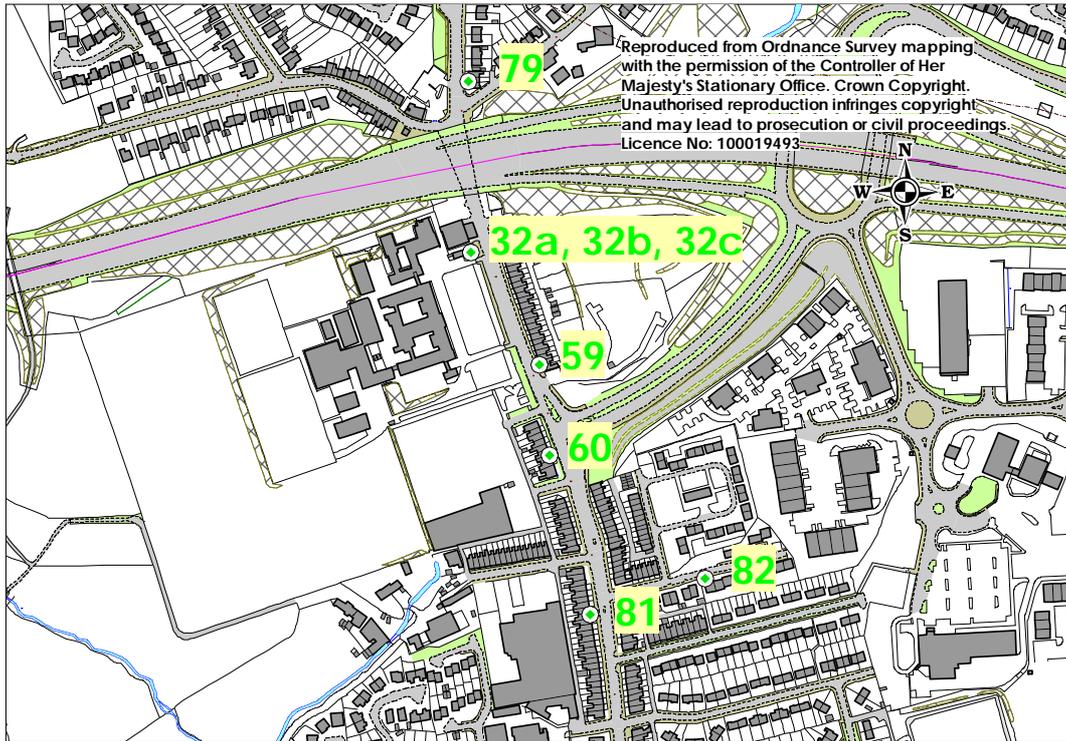


The results of diffusion tube NO<sub>2</sub> monitoring on all arms of the junction appear to have been less variable from 2007 onward (see comments on common trends). Exceedences are only recorded on one arm of the junction, which is on the section of Redlam Road to the east of The Circus (tube 55 on the façade of a residential receptor). In 2008 and 2009 and the concentrations were slightly above the national objective and relatively stable. However, work to improve the efficiency of junction

signals was completed in August 2009 so the full impact of this change will not be reflected in the 2009 annual mean.

Concentrations of NO<sub>2</sub> at tube 55 remain above the national objective so the junction will remain an AQMA.

### 3.6 NO<sub>2</sub> at AQMA 5 – Earcroft



The results of diffusion tube NO<sub>2</sub> monitoring on all arms of the junction appear to have been less variable from 2007 onward (see comment on common trends). From 2007 onwards an exceedence has only been observed at one arm of the junction, on Blackburn Road to the south of the junction (tube 60 on the façade of a residential receptor). From 2007 onwards there has only been an exceedence in 2008. In 2009 the annual mean on this arm fell 4.9 µg/m<sup>3</sup> to below the national objective value.

Concentrations of NO<sub>2</sub> remain fairly close to the objective values, so the AQMA status of the junction will not be revoked.

## **4.0 Revision of the Action Plans**

NO<sub>2</sub> concentrations at all of the AQMAs remain above or close to the national objective. The impact of some of the recently implemented measures has yet to become apparent. However, the existing plan may not facilitate the required improvement in local air quality the Council is taking a precautionary approach and amending the action plans to include a number of additional measures.

### **4.1 Evaluation of potential measures identified in the existing Action Plan**

In the existing Action Plans identified a number of potential measures that were to be considered for subsequent versions of the Action Plans. The suitability of these measures has been evaluated and the outcome is summarised in table 5 below. Measures highlighted in green are to be incorporated into the revised action plan.

<b>Table 5 Evaluation of potential measures proposed in the existing action plan</b>		
		Comments on feasibility
1. All AQMAs	Roadside emissions testing	Feasible and suitable. A roadside emissions testing project will be implemented before April 2011. See 4.1.1 for more information
2. All AQMAs	Reducing emissions from taxis	Suitable and feasible. To be combined with 1 above. See 4.1.1 for more information
3. AQMA 1 Intack	Closure of the St Ives arm of the Intack junction and re- routing St Ives traffic to Shadsworth Road or Bank Lane	Evaluated, but alternative access route not considered feasible as this would be via primarily residential streets
4. AQMA 1 Intack	Relocation of the pedestrian refuge on Accrington Road	This will be looked at within the parking review for Accrington Road in 2010/11 – with any proposed improvements funded from the LTP
5. AQMA 2 Bastwell	Evaluate option of introducing right-turn lanes	The Bastwell AQMA signal controlled junction has been completely upgraded in 2009/10 with the road resurfaced
6. AQMA 2 Bastwell	Evaluate option of restricting access to smaller roads in order to prevent conflicting turns and improve flows on the main arms of the Bastwell junction	As part of post scheme monitoring, the effectiveness of the new signals will be evaluated – with the restriction of access to the Plane Street / Range Street junction
7. AQMA 2 & 4 Bastwell and Witton	Relocation of bus stops away from the junction	Bastwell unchanged as not considered significant. Witton outbound bus stop relocated from in front of the Doctor's surgery to Markham Road
8. AQMA 3 Darwen	Evaluate option of prohibiting entry to the street between the Post Office and HSBC Bank from Darwen Circus junction	This is ongoing and is being evaluated as part of improvements to enable the Darwen Academy development
9. AQMA 4 Witton	Evaluate feasibility of banning right turns out of Spring Lane	Not taken forward as part of the LTP scheme delivered in 2009/10, but will be considered as part of post scheme implementation monitoring
10. AQMA 4 Witton	Evaluation of whether the traffic islands on the west arm of the junction can be moved or removed	Completed.

#### **4.1.1 Roadside Testing of Vehicle Emissions**

During 2010-2011 the Local Authority will undertake a series of roadside vehicle emissions testing events. The campaign has a number of objectives:

- To reduce the number of heavily polluting vehicles in the Borough
- To increase public awareness of the harmful effects of badly polluting vehicles on the environment and air quality from the high levels of pollutants emitted by vehicles that are not properly tuned.
- To take action against gross polluters.

Publicity in advance of the events will explain the reason for testing, potential penalties for failing and the means by which the motorist can ensure compliance (i.e. the proper and regular servicing of their vehicle).

An initial informal roadside testing exercise will be conducted to further raise awareness. Failure at this event will not result in informal action, but advice on how to maintain the vehicle and 'smarter driving' will also be disseminated.

A formal testing roadside testing event will follow a few weeks later. Fixed penalty notices will be served where appropriate. The penalty may be reduced or waived depending upon circumstances. The Authority will take account of prompt action taken to remedy the defect which caused the failure, MOT certificate issued not less than 6 months ago, or evidence that the vehicle has been well maintained. At least one additional formal roadside testing event will be undertaken if the combined failure rate for petrol and diesel vehicles is 2% or more (Testing in Greater Manchester from 2002-05 encountered an average failure rate of 2.4%).

The actual events will involve the loan of the Greater Manchester Cleaner Vehicles Campaign Vehicle Emissions Van and two people to operate it at a cost of £665 per day and two Council officers. The Police will be invited to participate they will be needed to stop the vehicles.

Opportunities for joint working with the Police, Trading Standards, Licensing and neighbouring authorities will be explored.

It is envisaged that testing will focus on taxis because they are heavily used, and on older vehicles as they likely to emit more harmful emissions.

#### **4.2 Other new measures**

A number of additional measures have also been evaluated and will be included in a revised action plan. These measures are:

##### **4.2.1 Dirty Diesel Hotline**

###### *Description*

The Vehicle and Operator Services Agency (VOSA) works with the public to collate information on lorry and bus operators, to ensure we target those who are non-compliant rather than burdening those who work within road safety and environmental guidelines. VOSA will act on reports of lorries and buses producing excessive emissions. They will contact the vehicle operator and investigate the report. The Local Authority Licensing Team will make a similar response.

The Dirty Diesel Hotline will facilitate this process by raising the profile of the positive work undertaken by VOSA and the Authority's Licensing Team, and it will help the public to raise their concerns.

#### *Timescale*

The Hotline service will be implemented no later than June 2010 and will remain in operation until the next revision of the action plan.

#### *Quantitative Indicators*

- Referrals - The number of referrals will be recorded so that the demand for the service can be evaluated.
- Promotion - The Dirty Diesel Hotline will be promoted in the local press on at least two occasions, at local libraries and visitor centre, and on the Council's website.

#### *Estimated impact*

No reliable estimate is available at the present time.

### **4.2.2 Workplace Travel Plans**

#### *Description*

A travel plan is a package of measures produced by employers to encourage staff to use alternatives to single-occupancy car-use. Such a plan for example, could include: car sharing schemes; a commitment to improve cycling facilities; a dedicated bus service or restricted car parking allocations. It might also promote flexible-working practices such as remote access and video conferencing.

Travel plans can offer real benefits not only to the organisation and its employees, but also the community that surrounds it. It may help to relieve local parking or congestion problems or improve public transport connections across the area. It may also relieve stress on employees through reducing delays or providing the opportunity to cut their travel commitments by working from home on occasion.

#### *Timescale*

Initially rolled out through the planning process as a requirement of major employment use planning applications to be regularly monitored and reviewed. Engagement with major employers in or close to AQMA areas could also commence with future roll out to all major employers in the borough.

As part of planning process – Immediately (to continue indefinitely)

Major employers in AQMAs – 1 year

Other Major Employers in the Borough – 1 to 3 years

#### *Quantitative Indicators*

With continual monitoring and review of the travel plans the modal split of journeys to work can be determined and any shift identified. Other quantitative indicators include:

- sign up rates to discounted public transport ticket loans;
- sign up rates to bicycle purchase schemes;
- monitoring of cycle mileage allowance;
- number of staff days spent working from home; and
- sign up to car share schemes.

### *Estimated Impact*

Research, both in the UK and internationally, has evaluated the impact of workplace travel planning on commuter travel patterns and considered the likely success factors for reducing car use. This research was reviewed in the Department for Transport research report, Making travel plans work: lessons from UK case studies, (Transport 2000 Trust, 2002). Besides identifying key issues from the literature, the study examined the achievements of travel plans from 20 UK organisations. Results indicated that on average, these organisations experienced an 18% reduction in the proportion of commuters driving to their sites in the wake of travel plan implementation. The median average reduction was 15%. Reported benefits of travel plans included helping to cut congestion, relieving parking pressures, making sites more accessible, improving staff travel choice and aiding staff retention.

## **4.2.3 Traffic Management Measures at Intack and Darwen Town Centre**

### *Description*

Traffic management measures and car parking control can be effective tools for improving air quality both locally and borough wide. There are a wide range of measures available deliverable through transportation demand management strategies and traffic operational improvements. Examples of each of these include:

#### Transport Demand Management Measures:

- Congestion charging (Road Pricing)
- Workplace Parking Charges
- Implementing greater control on school/workplace start/finish times
- Public Transport Initiatives including road prioritisation (bus priority) and Park & Ride
- Variable Message Signs alerting road users of congestion to promote change of route or mode (Park & Ride)
- Improved facilities for walking and cycling

#### Traffic Operational Improvements

- Co-ordination of traffic signals
- Signage strategies
- Increasing turning radii
- Introducing right turn filter lanes
- Queue relocation
- Yellow box junctions (may require effective enforcement)

### *Timescale*

Initial studies to determine the feasibility and identify a suitable package of measures for each AQMA would take 4 to 8 months. The timescale for implementation would depend on the measures proposed and the availability of funding for the proposed measures. (6 – 18 months).

### *Quantitative Indicators*

The impact of any measures can be determined through the monitoring of traffic flows, modal splits, average journey times and queue lengths on the approach to the junction. The wider benefits of traffic demand management measures may be difficult to quantify.

### *Estimated Impact*

Measures such as congestion charging have the potential to reduce traffic by up to 50%. However it is considered unlikely that such a scheme would be appropriate in Blackburn with Darwen. It is estimated that site specific traffic operational

improvements could reduce emissions by 5-10%. The successful implementation of a package of wider transport demand management measures could further reduce emissions by up to 20%.

### 4.3 2010 Updated Action Plans measures

Measures identified in 4.1 and 4.2 form part of an updated Action Plan and are listed in Table 6. Measures highlighted in blue appeared in the original list of action plan measures, but have only been partially implemented. New measures are highlighted in yellow. The others are ongoing tasks.

Table 6 – 2010 Revised Action Plan measures						
Measure	AQMA 1 Intack	AQMA 2 Bastwell	AQMA 3 Darwen Centre	AQMA 4 Witton	AQMA 5 Earcroft	Implementation Date
1. Maximise signal efficiency					•	2011/12
2. Improved junction signage					•	2011/14
3. Parking restrictions	•			•	•	2010/14
4. East Lancs Rapid Transport project (Pennine Reach)	•		•		•	2011/14
5. Bus quality partnerships	•	•	•	•	•	2011 onwards
6. Improvements to train station			•		•	2010/11
7. Improvements to train line and service			•		•	2013/14
8. Workplace Plans	•	•	•	•	•	2010/14
9. Junction Specific traffic management measures – evaluation & implementation	•		•			2010/14
10. Evaluate restricting access to smaller roads to prevent conflicting turns and improve flows		•	•			2011/12
11. Evaluate feasibility of banning right turns out of Spring Lane				•		2010/11
12. Roadside Testing of Vehicle Emissions	•	•	•	•	•	2010/11
13. Dirty Diesel Hotline	•	•	•	•	•	2010/12
14. Car sharing	•	•	•	•	•	Ongoing
15. Development control	•	•	•	•	•	Ongoing
16. Control of industrial emissions	•	•	•	•	•	Ongoing
17. Control of bonfire & chimney emissions	•	•	•	•	•	Ongoing

## 5.0 Conclusion

In October 2005 Blackburn with Darwen Borough Council declared five Air Quality Management Areas (AQMAs) with respect to exceedences of the annual mean NO<sub>2</sub> objective at five locations:

- AQMA No.1 Intack - Accrington Road / Whitebirk Road junction
- AQMA No.2 Bastwell– Whalley Range / Whalley New Road junction
- AQMA No.3 Darwen Town Centre - A666 between Robert St and Wraith St
- AQMA No.4 Witton - Preston Old Road / Buncer Lane junction
- AQMA No.5 Earcroft - A666 / M65 Link Road junction

These elevated levels of this pollutant are mainly due to road traffic emissions. The five AQMAs are busy urban junctions where emissions from slow moving vehicles are trapped by nearby buildings and the surrounding topography. This is a particular issue for Blackburn with Darwen given the Pennine geography and tightly formed Victorian streetscape.

Actions plans were devised which identified a series of measures to be implemented during 2007-2009. Almost all of these measures have been implemented. The action plans are being integrated into the Council's Local Transport Plans. Managing Air Quality is identified as an LTP2 objective, and Target LTP8 has been adopted which can only be met if levels of NO<sub>2</sub> fall at the five AQMAs. The Council only met it's LTP8 targets in one AQMA in both 2008/09 and 2009/10.

With the possible exception of Darwen Town centre, the Action Plan measures don't appear to have had a dramatic impact on NO<sub>2</sub> levels. The relatively small changes observed may be as a result of the Action Plan measures, but they may also be a result of other factors such as meteorological conditions. Some of the changes brought about by measures occurred as recently as 2009 in the case of Witton, Bastwell and Intack so their full effect may not be evident yet.

The results in all five AQMAs prior to 2007 were more variable than in subsequent years. In January 2007 Blackburn with Darwen Borough Council changed from diffusion tubes supplied and analysed by Lancashire County Council to tubes supplied and analysed by Gradko. The change in tube supplier and a resulting improvement in tube precision may account for the reduction in variability.

In 2009 there were exceedences in the Intack and Witton AQMAs. The three other AQMAs remain close to the annual NO<sub>2</sub> objective. Concentrations at the worst affected receptors at each AQMA range from 39.0 to 43.9 µg/m<sup>3</sup> (annual mean objective is 40 µg/m<sup>3</sup>). From 2007 only the Intack AQMA has remained consistently above the annual average NO<sub>2</sub> objective. Since 2007 there has been a general pattern: the worst affected receptors remain close to the objective concentration and exceedences only occur on one arm of the junction. All five junctions will remain AQMAs until there is evidence to show that pollution levels remain consistently below the national objective levels.

A revised programme of Action Plan measures and timescales for implementation has been identified in this report. These are in line with in line with the LTP2 and national transport policy objectives. They consist of measures from the original plans which have yet to be fully implemented, ongoing tasks and new measures. Direct action themes are included for all of the five AQMAs. They include the improvement of traffic flows and traffic management at Darwen and Intack, and the reduction of emissions and encouragement of sustainable and public transport uptake. Indirect

action themes include reducing reliance on travel by car and reduction of background pollutant concentrations.

## 7. References

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<http://www.defra.gov.uk/environment/quality/air/airquality/publications/primaryno2-trends/documents/primary-no-trends.pdf> [Accessed 23 April 2010]

## **Appendices**

Appendix A: Diffusion Tube Results

Appendix B: Diffusion Tube Bias Adjustment & Data QA/QC

Appendix C: Local Transport Plan (LTP2) Target LTP8

## Appendix A: Diffusion Tube Results

	Tube No	Address	Grid Ref	Annual Mean (Bias adjusted) $\mu\text{g}/\text{m}^3$					
				2004	2005	2006	2007	2008	2009
Non AQMA	94	301 Haslingden Road	370529 425864	-	-	-	30.8	29.7	29.3
	95	Moogate Pub, Livesey Branch Rd	367135 425923	-	-	-	32.7	30.9	29.8
	88	149 Livesey Branch Road	367153 425915	-	-	38.7	39.9	40.9	39.9
	89	190 Audley	369514 427730	-	-	36.4	37.2	37.5	37.8
	91	283 Haslingden Road	370529 425865	-	-	37.6	32.9	38.1	37.2
	92	484 Bolton Road	367903 425526	-	-	28.2	30.0	31.4	32.9
	96	38 Accrington Rd	369975 428172	-	-	-	39.8	39.8	40.9
	98	250 Bolton Road	367673 426008	-	-	-	-	41.1	36.3
	99	742 Whalley New Road	368471 431029	-	-	-	-	35.5	33.7
	100	111 Stopes Brow	369591 425360	-	-	-	-	45.5	42.9
	101	331 Shear Brow	367924 429561	-	-	-	-	43.2	39.6
	102	170 Accrington Road	370386 427973	-	-	-	-	39.6	39.4
	103	1 Dukes Brow	367520 428494	-	-	-	-	36.3	36.5
AQMA 4 - Wifton	4	Hawkshead Close	366879 427604	18	21	20.6	19.7	19.2	19.5
	63	171 Redlam	366674 427323	-	43	31.1	30.3	25.7	28.9
	55	183 Redlam	366652 427281	42	39.9	44.5	38.3	40.6	41.2
	64	171 Buncer Lane	366609 427295	-	26.9	31.2	24.8	25.7	23.8
	65	12 Preston Old Road	366591 427224	-	29.9	24.4	26.0	25.9	27.3
	56	5 Campbell Place	366668 427250	27	34.6	27.4	32.5	30.8	29.7
AQMA 2 - Bastwell	67	118 Whalley New Road	369063 429251	-	39	39.3	26.9	28.5	29.4
	58	114 Whalley new Road	369026 429180	34	33	35.6	39.6	40.4	39.4
	68	255 Whalley Range	368964 429168	-	24*	31.8	30.9	35.4	35.4
	69	86 Whalley New Road	368981 429090	-	46	28.7	29.1	29.8	31.6
	70	9 Palm Street	369049 429064	-	32	23.2	25.4	25.3	26.0
	72	24 Plane Street	369074 429152	-	28	36.3	32.2	31.1	30.8
AQMA 1 - Intack	44	10 St Ives Road	370871 427996	31	39	32.8	27.7	29.7	28.9
	73	15 Shadsworth Road	370826 427962	-	33	32.3	35.5	36.8	36.5
	42	306 Accrington Road	370818 428020	36	24*	39.8	42.3	42.1	43.9
	74	280 Accrington Road	370758 428004	-	46	39.3	36.6	39.8	37.5
	75	16 Whitebirk Road	370836 428130	-	32	27.9	24.5	28.7	28.5
	76	39 Peronne Crescent	370908 428217	-	28	20.6	23.1	22.4	22.2
	78	371 Accrington Road	370876 428054	-	24*	33.1	33.9	33.4	31.9
AQMA 5 - Earcroft	79	639 Blackburn Road	368170 424617	-	37.5	42.2	36.2	36.9	36.7
	32A	Groundhog	368174 424471	23	36	27.0	28.9	29.5	27.0
	32B	Groundhog	368174 424471	25	26.1	23.8	27.4	27.6	25.4
	32C	Groundhog	368174 424471	22	28.1	26.6	29.9	26.8	26.7
	59	555 Blackburn Road	368231 424376	27	35.8	34.6	36.5	36.8	37.0
	60	486 Blackburn Road	368240 424299	38	37.9	39.6	37.8	37.7	38.5
	81	442 Blackburn Road	368274 424164	-	40.5	40.2	31.0	41.2	36.3
	82	9 View Road	368371 424195	-	24.3	23.1	26.9	24.0	26.2
AQMA 3 - Darwen	54	33 Bolton Road	369259 422050	39	46	48.0	41.8	42.2	39.0
	51	20 Market Street (Circus)	369244 422192	26	30	26.5	30.2	29.2	29.9
	31	1 Market Street	369166 422345	29	27	25.9	22.2	25.5	25.7
	84	15 Tudor Close	369157 422494	-	19	20.2	21.5	21.3	20.9
	85	159 Duckworth Street	369000 422583	-	34	37.9	34.4	31.5	32.4
	87	193 Duckworth Street	369080 422462	-	32	39.2	22.0	27.8	26.9

Notes: Figures highlighted in red are in excess of the 40  $\mu\text{g}/\text{m}^3$  nitrogen dioxide air quality objective.  
 \* denotes seasonally adjusted (i.e. not enough data to determine a robust annual mean).  
 2005 - Sites 54, 74, 60, and 80 have had some outlying data removed.  
 2006 - Sites 4, 55, 72, 42, & 54 have had some outlying data removed (only one outlier in each case).

## Appendix B: Diffusion Tube Bias Adjustment & Data QA/QC

Blackburn with Darwen Borough Council uses 20% TEA / water diffusion tubes provided and analysed by Gradko International Limited.

### Combined bias adjustment factor

A combined (overall) bias adjustment factor of 0.86 was reported in the Spreadsheet of Bias Adjustment Factors v.2/10 published on the UWE R&A Support website. This was subsequently revised to 0.9 in v.3/10.

### Factor from Local Co-location Studies

Information relating to the local bias adjustment factor is contained in the table below.

Diffusion Tubes Measurements										Automatic Method		Data Quality Check	
Period	Start Date dd/mm/yyyy	End Date dd/mm/yyyy	Tube 1 $\mu\text{gm}^{-3}$	Tube 2 $\mu\text{gm}^{-3}$	Tube 3 $\mu\text{gm}^{-3}$	Triplicate Mean	Standard Deviation	Coefficient of Variation (CV)	95% CI of mean	Period Mean	Data Capture (% DC)	Tubes Precision Check	Automatic Monitor Data
1	04/12/2008	08/01/2009	40.1	42.1	39.0	40	1.5	4	3.8	34	85	Good	Good
2	08/01/2009	04/02/2009	41	37	36	38	2.6	7	6.6	31	100	Good	Good
3	04/02/2009	04/03/2009	37	30	35	34	3.6	11	9.0	32	100	Good	Good
4	04/03/2009	01/04/2009	33	36	38	36	2.5	7	6.3	29	99	Good	Good
5	01/04/2009	29/04/2009	33	30	34	32	2.1	6	5.2	32	100	Good	Good
6	29/04/2009	04/06/2009	27	23	24	25	2.1	8	5.2	22	50	Good	for Data Capture
7	04/06/2009	02/07/2009	33	32	33	33	0.6	2	1.4	24	97	Good	Good
8	02/07/2009	29/07/2009	23	20	23	22	1.7	8	4.3	18	96	Good	Good
9	29/07/2009	02/09/2009	24	24	25	24	0.6	2	1.4	15	97	Good	Good
10	02/09/2009	30/09/2009	30	29	30	30	0.6	2	1.4	24	97	Good	Good
11	30/09/2009	04/11/2009	32	29	32	31	1.7	6	4.3	28	91	Good	Good
12	04/11/2009	3/12/09	32	29	32	31	1.7	6	4.3	28	97	Good	Good
13	3/12/09	29/12/2009								41	96	Good	Good

It is necessary to have results for at least two tubes in order to calculate the precision of the measurements

**Overall survey -->** Good precision / Good Overall DC (Check average CV & DC from Accuracy calculations)

**Precision:** 12 out of 12 periods have a CV smaller than 20%

<b>Site Name/ ID:</b> Darwen Vale High School, Darwen <b>Accuracy (with 95% confidence interval)</b> without periods with CV larger than 20% Bias calculated using 11 periods of data Bias factor A: 0.84 (0.77 - 0.92) Bias B: 19% (9% - 30%) Diffusion Tubes Mean: 32 $\mu\text{gm}^{-3}$ Mean CV (Precision): 5 Automatic Mean: 27 $\mu\text{gm}^{-3}$ Data Capture for periods used: 96% Adjusted Tubes Mean: 27 (25 - 29) $\mu\text{gm}^{-3}$	<b>Accuracy (with 95% confidence interval)</b> WITH ALL DATA Bias calculated using 11 periods of data Bias factor A: 0.84 (0.77 - 0.92) Bias B: 19% (9% - 30%) Diffusion Tubes Mean: 32 $\mu\text{gm}^{-3}$ Mean CV (Precision): 5 Automatic Mean: 27 $\mu\text{gm}^{-3}$ Data Capture for periods used: 96% Adjusted Tubes Mean: 27 (25 - 29) $\mu\text{gm}^{-3}$
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Version 03 - November 2006

### Discussion - Choice of Factor

When determining the diffusion tube bias the Authority referred to advice published on the UWE website relating to the use of locally obtained and combined bias adjustment factors (<http://www.uwe.ac.uk/aqm/review/manswers.html#ROAD3>). One case where the use a combined bias adjustment factor is recommended is where the automatic analyser has not been operated using national, QA/QC procedures. Only approximately half of the automatic monitor data was ratified using national procedures (see below). It therefore was considered reasonable to use a bias adjustment factor of 0.86 which was being reported at the time (v.2/10). It is reassuring to note this is fairly close to the local bias adjustment factor of 0.84.

A subsequent version of the combined factor revised the combined value to 0.9, but this was further from the local bias value and has not been used.

## Automatic Monitoring QA/QC

Fortnightly routine calibrations are undertaken by the LA and the monitoring station is serviced every 6 months by Casella. Validation and ratification procedures employed up to the 15/6/09 were crude. This involved scaling, eliminating negative monitoring results and removing a period of low results prior to a breakdown in May 2009. However, from 15/6/09 onwards Blackburn with Darwen Borough Council's automatic monitor has been Defra affiliated. The data has been ratified using national QA/QC procedures. This will bring about an improvement in validation and verification procedures.

## QA/QC of diffusion tube monitoring

Blackburn with Darwen Borough Council uses 20% TEA / water diffusion tubes provided and analysed by Gradko International Limited. Analysis of the Gradko NO<sub>2</sub> diffusion tubes is carried out using ion chromatography techniques in accordance with Gradko International Ltd U.K.A.S. accredited (ISO/IEC 17025) internal laboratory procedure GLM 7, which is a recommended UV spectrophotometric method.

The Gradko NO<sub>2</sub> WASP results for 01.08 to 07.09 were as follows:

Jan08 Round 100 : Ref Value : 1.36ugNO<sub>2</sub>; Measured Value : 1.34 ugNO<sub>2</sub> Z score -0.1 Satisfactory.  
Ref Value 1.47ugNO<sub>2</sub>; Measured Value : 1.50 ugNO<sub>2</sub> Z score 0.2 Satisfactory.

March 08 Round 101 Ref Value : 0.92ug NO<sub>2</sub>; Measured Value : 0.95ugNO<sub>2</sub> Z Score 0.2 Satisfactory.  
Ref Value : 1.86ugNO<sub>2</sub>; Measured Value : 1.85ugNO<sub>2</sub> Z Score 0 Satisfactory.

July 08 Round 102 Ref Value : 1.37ugNO<sub>2</sub> Measured Value : 1.42ugNO<sub>2</sub> Z Score 0.3 Satisfactory.  
Ref value : 2.28ugNO<sub>2</sub>; Measured Value : 2.21ugNO<sub>2</sub> Z score -0.2 Satisfactory.

Jan 09 Round 104 Ref Value : 2.02ugNO<sub>2</sub>; Measured Value : 1.85ugNO<sub>2</sub> Z Score -0.7 Satisfactory.  
Ref Value : 1.22ug NO<sub>2</sub>; Measured Value : 1.21ugNO<sub>2</sub> Z Score - 0.1 Satisfactory.

Apr 09 Round 105 Ref Value : 1.68ugNO<sub>2</sub>; Measured Value : 1.63ugNO<sub>2</sub> Z Score -0.4 Satisfactory.  
Ref Value : 0.96ug NO<sub>2</sub>; Measured Value : 0.92ugNO<sub>2</sub> Z Score - 0.5 Satisfactory.

July 09 Round 106 Ref Value : 1.84ugNO<sub>2</sub>; Measured Value : 1.88ugNO<sub>2</sub> Z Score 0.3 Satisfactory.  
Ref Value : 1.42ug NO<sub>2</sub>; Measured Value : 1.34ugNO<sub>2</sub> Z Score - 0.8 Satisfactory.

October 09 Round 107 Ref Value : 2.03ugNO<sub>2</sub>; Measured Value : 1.87ugNO<sub>2</sub> Z Score -1.1 Satisfactory.  
Ref Value : 2.20ug NO<sub>2</sub>; Measured Value : 1.96ugNO<sub>2</sub> Z Score -1.4 Satisfactory.

January 2010 Round 108 Ref Value : 1.92ugNO<sub>2</sub>; Measured Value : 1.87ugNO<sub>2</sub> Z Score - 0.3 Satisfactory.  
Ref Value : 1.47ug NO<sub>2</sub>; Measured Value : 1.45ugNO<sub>2</sub> Z Score -0.2 Satisfactory.

## **PM Monitoring Adjustment**

The TEOM PM<sub>10</sub> results reported in this report have been adjusted to a gravimetric equivalent using the procedure described in LAQM.TG(09) Box 3.4.

## **Short-term to Long-term Data adjustment**

Not required for this assessment

## Appendix C: Local Transport Plan (LTP2) Target LTP8

Core Indicator	Definitions		Year	Value	Year Type	Actual and Trajectory Data											
LTP8	Intack	Base Data	2004/5	100	F	Year											
		Target Data	2010/11	84		Actual figures	86	91	91	95							
		Units		%		Trajectories*	97	94	91	87	93	80	78	76	74	73	72
LTP8	Bastwell	Base Data	2004/5	100	F	Year											
		Target Data	2010/11	84		Actual figures	91	92	94	91							
		Units		%		Trajectories*	97	94	91	86	83	80	78	76	74	73	72
LTP8	Darwen Town Centre	Base Data	2004/5	100	F	Year											
		Target Data	2010/11	84		Actual figures	105	92	93	86							
		Units		%		Trajectories*	97	94	91	86	83	80	78	76	74	73	72
LTP8	Witton	Base Data	2004/5	100	F	Year											
		Target Data	2010/11	84		Actual figures	104	90	95	96							
		Units		%		Trajectories*	97	94	91	86	83	80	78	76	74	73	72
LTP8	Earcroft	Base Data	2004/5	100	F	Year											
		Target Data	2010/11	84		Actual figures	104	90	102	95							
		Units		%		Trajectories*	97	94	91	86	83	80	78	76	74	73	72

\* These target criteria are based on national predicted reductions in NO<sub>2</sub>. The LTP8 targets require air quality to improve at a slightly quicker rate than the predicted national trend. Work undertaken by the Air Quality Expert Group (2007) has since concluded that despite significant falls in recent years of urban annual mean NO<sub>x</sub> concentrations, the roadside concentrations of NO<sub>2</sub>, a component of NO<sub>x</sub>, have not declined as expected. In light of this the LTP8 targets are more demanding than anticipated.

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