



Craigavon Borough Council

Detailed Assessment of NO₂ Pollution at Bridge Street, Portadown and King Street, Lurgan.

August 2011

Executive Summary

Craigavon Borough Council submitted a Progress Report to the Department of Environment Northern Ireland in June 2010. The report contained monitoring results for 2009 and concluded that the Council was required to carry out a detailed assessment of its monitoring sites at Bridge Street in Portadown and King Street (Flush Place), Lurgan to determine if there was a consistent breach of Nitrogen Dioxide (NO₂) levels at those sites.

In order to get a more accurate representation of the extent of NO₂ pollution at both these locations, 2 additional diffusion tubes were placed at the sites in September 2010. This was to complement the single tubes already existing at Bridge Street and King Street (Flush Place). These were situated on a street lamp pole at the façade of No 125 Bridge Street, Portadown; and on a street lamp pole at the façade of 5 King Street (Flush Place) in Lurgan. The additional tubes were to be situated at the new locations for an initial period of seven months for the purposes of this detailed assessment.

For this detailed assessment, the monitoring period September 2010 to March 2011 spans 2 monitoring years. Monitoring results have been bias adjusted using bias factors available for 2010 only.

An outcome of the seven month evaluation was that the Council resolved that it would be more prudent to continue the program of triplicate monitoring at Bridge Street and King Street indefinitely. Considering that previous diffusion tube results had demonstrated that the NO₂ levels for Bridge Street and King Street were critically close to breaching the objective limits for NO₂, a more cautious approach was required for greater acuity in concluding whether an AQMA should be declared or not.

The NO₂ diffusion tubes were prepared and analysed by Lambeth Scientific Services Limited. The tubes are prepared by coating the grids in a 50% v/v solution of the absorbent, triethanolamine (TEA) in Acetone. Analysis is carried out using a colorimetric technique.

Following the adjustment of the diffusion tube results by the bias factor gained, it was found that the site at Bridge Street had breached the objective limits for NO₂ (>40ug/m²) with a result of 41 ug/m³. The site recorded a result of 43 ug/m³ for the annual average as part of the 2010 monitoring programme.

The assessment also found that the site at King Street, Lurgan had breached the objective limits for NO₂ (>40ug/m²) with a result of 43 ug/m³. The site recorded a result of 41 ug/m³ for the annual average as part of the 2010 monitoring programme.

It is therefore considered by Craigavon Borough Council that an Air Quality Management Area (AQMA) **will be** declared for Bridge Street, Portadown and an Air Quality Management Area (AQMA) **will be** declared for King Street (Flush Place) in Lurgan.

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1.0 Introduction

Craigavon Borough Council submitted a Progress Report to the Department of Environment Northern Ireland in June 2010. The report concluded that the Council was required to carry out a detailed assessment for its monitoring sites at Bridge Street in Portadown and King Street (Flush Place), Lurgan to determine if there was a consistent breach of Nitrogen Dioxide (NO₂) levels at those sites.

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2.0 RESULTS

Table 1: NO₂ Diffusion Tube Results For 13 sites in Armagh from January 2009 to December 2009 analysed by Lambeth Scientific Services Ltd

Site ID	Location	Within AQMA?	Data Capture for full calendar year 2008 %	Data Capture for monitoring period %	Annual mean concentrations
					2009 ($\mu\text{g}/\text{m}^3$) Adjusted for bias
82760	Union Street, Lurgan	N	100	100	16
82979	West Street Portadown	N	100	100	20
82762	Ardboe Drive Lurgan	N	100	100	11
82763	Ballyhannon Rd Portadown	N	100	100	10
82764	Ashgrove Community Centre Portadown	N	100	100	10
82765	Castle Lane Lurgan	N	100	100	15
82766	Lord Lurgan Park Lurgan	N	100	100	11
82767	Cluandara Derrymacash	N	100	100	14
82768	Corcrain Road Portadown	N	100	100	27
82769	Lurgan Road Portadown	N	100	100	42
82770	Queen St Lurgan	N	100	100	34
82771	King St Lurgan	N	100	100	44
82772	Lough Rd Lurgan	N	100	100	35

Bridge Street and King Street study results

Table 2: Bias Adjusted Averages for Bridge Street & King Street and comparison with other AQMA sites in Armagh and Dungannon from September 2010 to March 2011.

MONTH	BRIDGE STREET	KING STREET	Dungannon Church St	Armagh 1 Barrack St	Armagh 80 Railway St	Armagh Mallview Terrace	Armagh Lonsdale Rd
SEPTEMBER	33	40		51	61	56	36
OCTOBER	39	41		45	62	55	41
NOVEMBER*	-	-		60	68	64	60
DECEMBER	47	49		55	73	67	58
JANUARY	57	49		56	75	67	60
FEBRUARY	22	28		59	68	65	49
MARCH	41	43		50	66	64	46
AVERAGE	40	42		54	68	63	50
BIAS ADJUSTED**	41	43		42	53	49	39

*Note: Craigavon Borough Council did not receive any monitoring results from Lambeth Scientific Services for November 2010. This issue was raised with the laboratory and data was still not made available by the time this assessment was prepared

**Note: The bias adjusted results above refer to the individual bias factors derived from the individual diffusion tube suppliers for each council.

Table 2 above outlines the NO₂ diffusion tube results for Bridge Street and King Street; and other AQMA sites in neighbouring authorities Armagh and Dungannon.

The table shows that during 7 months of triplicate diffusion tube sampling, King Street in Lurgan recorded the highest level of Nitrogen Dioxide (NO₂) pollution in the Craigavon borough.

Bias Factor Determination

The bias factor used to adjust the diffusion tube results was taken from the Defra Review and Assessment Website. The bias factor used to adjust the diffusion tubes is 1.02

3.0 Conclusions

Following the adjustment of the diffusion tube results by the bias factor gained, it was found that the site at Bridge Street had breached the objective limits for NO₂ (>40ug/m²) with a result of 41 ug/m³. The site recorded a result of 43 ug/m³ for the annual average as part of the 2010 monitoring programme.

The assessment also found that the site at King Street, Lurgan had breached the objective limits for NO₂ (>40ug/m²) with a result of 43 ug/m³. The site recorded a result of 41 ug/m³ for the annual average as part of the 2010 monitoring programme.

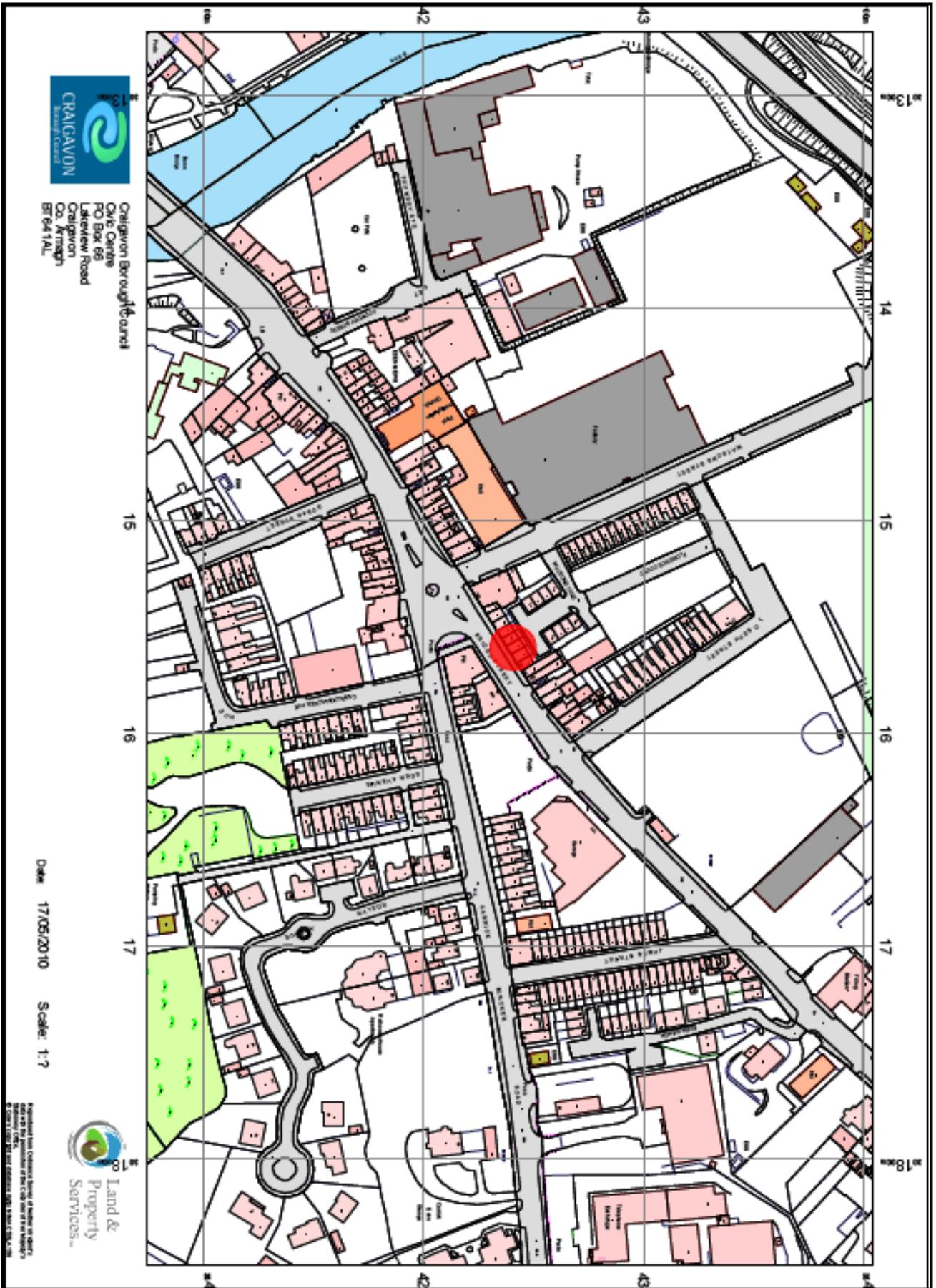
It is therefore considered by Craigavon Borough Council that an Air Quality Management Area (AQMA) **will be** declared for Bridge Street, Portadown and an Air Quality Management Area (AQMA) **will be** declared for King Street (Flush Place) in Lurgan.

4.0 Recommendations

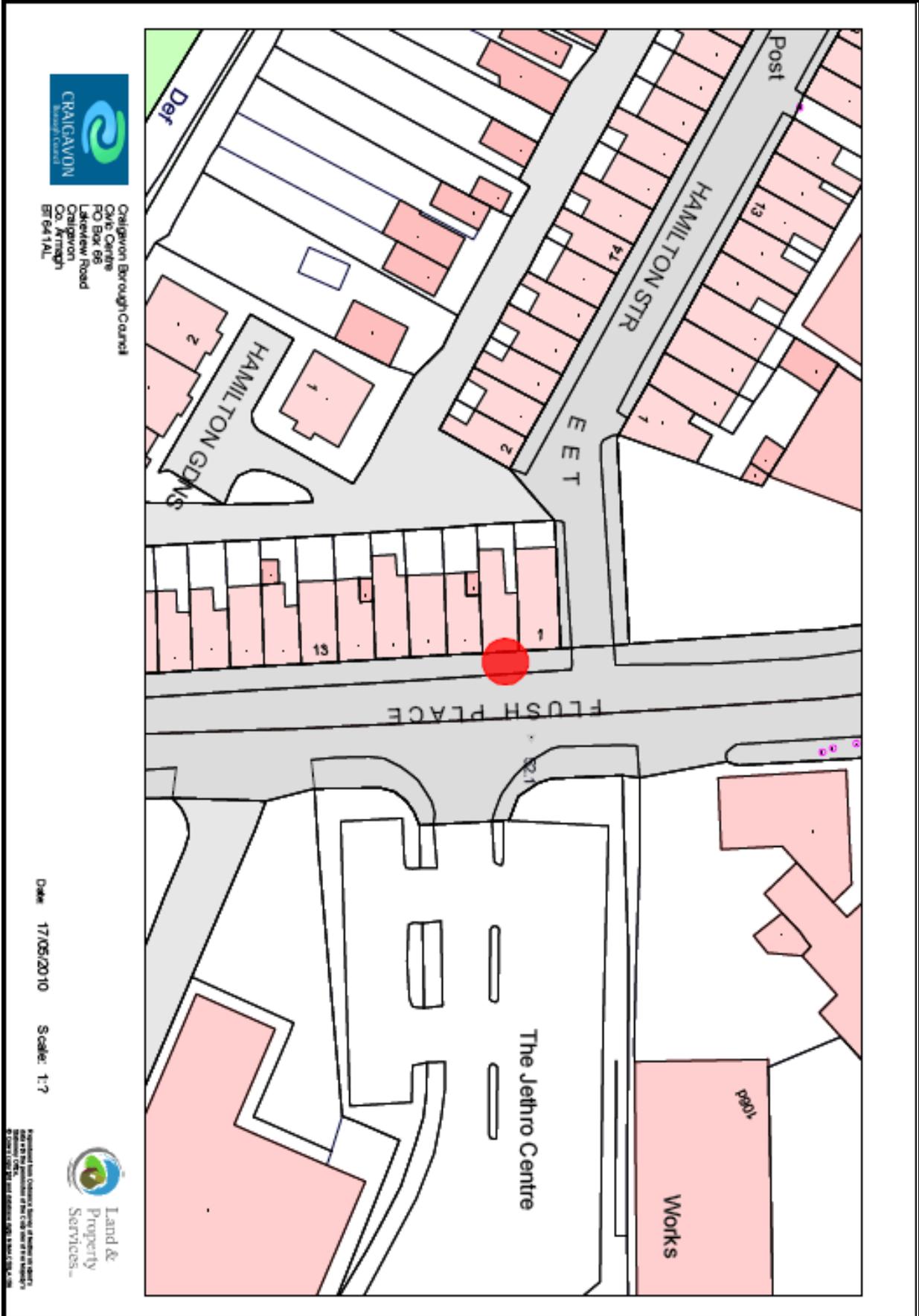
It is recommended that the Council continues to monitor NO₂ emissions at Bridge Street and King Street using the triplicate sampling method and provide an AQMA Action Plan for the site within 18 months of the declaration.

APPENDIX 1
Sampling Locations

Bridge Street, Portadown
King Street (Flush Place) Lurgan



Bridge Street - Portadown



King Street (Flush Place) - Lurgan

APPENDIX 2

Diffusion Tube Results in Craigavon Borough Council Area

January to December 2010

Site ID	Location	Within AQMA?	Data Capture for full calendar year 2010 %	Data Capture for monitoring period %	Annual mean concentrations
					2010 ($\mu\text{g}/\text{m}^3$) Adjusted for bias
82760	Union Street, Lurgan	N	67	100	24
82979	West Street Portadown	N	67	100	15
82762	Ardboe Drive Lurgan	N	92	100	14
82763	Ballyhannon Rd Portadown	N	92	100	13
82764	Ashgrove Community Centre Portadown	N	92	100	15
82765	Castle Lane Lurgan	N	67	100	18
82766	Lord Lurgan Park Lurgan	N	92	100	14
82767	Cluandara Derrymacash	N	67	100	18
82768	Corcrain Road Portadown	N	92	100	28
82769	Lurgan Road Portadown	N	92	100	43
82770	Queen St Lurgan	N	92	100	39
82771	King St Lurgan	N	92	100	41
82772	Lough Rd Lurgan	N	92	100	35