Glasgow City Council
Detailed Assessment
2014

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Executive Summary

During 2012 Glasgow City Council declared the entirety of the city to be an Air Quality Management Area (AQMA) in respect of both the annual mean PM_{10} objective and the daily mean PM_{10} objective. This followed the declaration of the City Centre AQMA for these objectives in 2007.

The declaration was based on previous Detailed Assessments and, ultimately, on the monitoring results from 2010. However subsequent monitoring has shown that the PM_{10} objectives have been largely met at monitoring locations within the Citywide AQMA although exceedences are still being recorded within the City Centre AQMA.

Consequently it was decided within the Further Assessment of 2013 that Glasgow City Council should proceed to a new Detailed Assessment for PM_{10} within the Citywide AQMA to establish whether the objectives were being met and whether the AQMA was still required.

This Detailed Assessment comprises an overview of the most recent monitoring results and a modelling exercise which has seen pollution dispersion modelling undertaken at 21 locations across the city. These locations have been identified as being subject to high traffic levels with relevant residential exposure close by. Many of these areas have been previously identified as having the potential to exceed the PM_{10} objective level or have been newly identified for this potential.

Monitoring results show that there have been two exceedences of the annual mean PM_{10} objective within the Citywide AQMA since 2010. Byres Rd recorded an exceedence in 2011 but the following two years has seen a fall in the observed levels to well within the objective. The monitoring station at Dumbarton Rd which was established in 2012 recorded a slight exceedence of the objective in 2013 when the annual mean was 19 $\mu g/m^3$.

Similarly, since 2010 there have been two recorded exceedences of the PM_{10} 24 hour objective. In 2011 Abercromby St exceeded the objective but has complied with the objective since then. In 2012 the objective was exceeded at Nithsdale Rd but this appears to have been due to nearby building work and is not considered representative of normal conditions.

Results from the modelling undertaken as part of this Detailed Assessment show widespread compliance with the objective levels. However, exceedences were predicted for 2013 within four of the modelled areas, three of which were at representative receptors. A single marginal exceedence of 18.1 $\mu g/m^3$ was predicted at both a location in Whittinghame Dr and Maryhill Rd but modelling for 2015 indicated that these receptors would meet the objective levels.

Seven residential receptors were identified as potentially exceeding the objective in the 2013 modelling for the area around the junction of Paisley Road West and Govan Road. These predicted exceedences ranged from 18.1 $\mu g/m^3$ to 18.5 $\mu g/m^3$. Again, modelling for 2015 indicated that all of these receptors would meet the objective level.

Given the widespread compliance with the objective levels through both monitoring and modelling and the predicted total compliance evidenced by the 2015 modelling, Glasgow City Council proposes to revoke the current Citywide AQMA in respect of PM_{10} since the results show that the objective is being met in the majority of the AQMA.

However, due to recent monitored exceedences, Glasgow City Council proposes to amend the existing Byres Rd /Dumbarton Rd AQMA to include the PM_{10} objectives.

Glasgow City Council further proposes to continue monitoring in those areas where it is indicated that levels are close to the objective level and to initiate monitoring to confirm the results of the modelling exercise where no

monitoring is currently undertaken. It is proposed to install monitoring as close as possible to the Paisley Road West / Govan Road junction in order to confirm that the area will meet the objectives as predicted by the 2015 modelling.

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1.0 Introduction

1.1 Air Quality Objectives

The air quality objectives applicable to LAQM in **Scotland** are set out in the Air Quality (Scotland) Regulations 2000 (Scottish SI 2000 No 97), the Air Quality (Scotland) (Amendment) Regulations 2002 (Scottish SI 2002 No 297), and are shown in Table 1.1. This table shows the objectives in units of micrograms per cubic metre $\mu g/m^3$ (milligrammes per cubic metre, mg/m^3 for carbon monoxide) with the number of exceedences in each year that are permitted (where applicable).

Table 1.1 Air Quality Objectives included in Regulations for the purpose of LAQM in Scotland

Pollutant	Air Quality Objective		Date to be achieved by
	Concentration	Measured as	
Benzene	16.25 $\mu g/m^3$	Running annual mean	31.12.2003
	3.25 $\mu g/m^3$	Running annual mean	31.12.2010
1,3-Butadiene	2.25 $\mu g/m^3$	Running annual mean	31.12.2003
Carbon monoxide	10.0 mg/m^3	Running 8-hour mean	31.12.2003
Lead	0.5 $\mu g/m^3$	Annual mean	31.12.2004
	0.25 $\mu g/m^3$	Annual mean	31.12.2008
Nitrogen dioxide	200 $\mu g/m^3$ not to be exceeded more than 18 times a year	1-hour mean	31.12.2005
	40 $\mu g/m^3$	Annual mean	31.12.2005
Particles (PM_{10}) (gravimetric)	50 $\mu g/m^3$, not to be exceeded more than 7 times a year	24-hour mean	31.12.2010
	18 $\mu g/m^3$	Annual mean	31.12.2010
Sulphur dioxide	350 $\mu g/m^3$, not to be exceeded more than 24 times a year	1-hour mean	31.12.2004
	125 $\mu g/m^3$, not to be exceeded more than 3 times a year	24-hour mean	31.12.2004
	266 $\mu g/m^3$, not to be exceeded more than 35 times a year	15-minute mean	31.12.2005

1.2 Summary of Previous Rounds of Review and Assessment

Glasgow's first AQMA was declared in 2002 for NO_2 within the City Centre area. In 2007 the boundary of the original AQMA required to be increased and new AQMAs for NO_2 were declared for both Parkhead Cross and for the Byres Rd / Dumbarton Rd area. The City Centre AQMA was also declared in respect of the PM_{10} objectives. In March 2012 further extensions were made to the City Centre and Byres Rd / Dumbarton Rd AQMA and the whole of the city was declared an AQMA in respect of the daily and annual mean PM_{10} objectives. At this time the City Centre was also declared in respect of the hourly mean NO_2 objective.

Table 1.2 shows a summary of the previous rounds of review and assessment and a brief description of the outcomes from each.

Table 1.2 Summary of Previous Rounds of Review and Assessment

Report	Date Produced	Outcome
Stage I	1998	Proceed to Stage II for CO. Proceed to Stage III for NO_2 and PM_{10}
Stage II	2000	Concluded that levels of CO and SO_2 will meet objectives.
Stage III	2001	Recommended an AQMA be declared for the city centre for NO_2
USA	2003	Proceed to DA for NO_2, SO_2 and PM_{10}
Stage IV	2004	Confirmed city centre AQMA declared for NO_2
Detailed Assessment	2005	Recommended AQMA's be declared for NO_2 at Parkhead Cross and Dumbarton Rd / Byres Rd. Extension of city centre AQMA to Royston Rd and recommended declaration of the city centre as an AQMA for PM_{10}
Progress Report	2005	Reported on continuing monitoring and recommended new monitoring at various locations
USA	2006	Proceed to DA for NO_2 in a variety of areas. Recommended new monitoring of PM_{10} at various locations
Detailed Assessment	2007	Recommended additional NO_2 monitoring at locations of concern
Further Assessment	2008	Confirmed ongoing exceedences of the objectives in the declared AQMA's
Progress Report	2008	Confirmed ongoing exceedences of the objectives in the declared AQMA's and predicted likely exceedences

Report	Date Produced	Outcome
		of PM_{10} objectives for 2010
USA	2009	Proceed to DA for NO_2 at a variety of locations and proceed to DA for PM_{10} citywide
Progress Report	2010	Highlighted exceedences of NO_2 hourly objective at Glasgow Kerbside site
Detailed Assessment	2010	Recommended extension of city centre AQMA to Bridge St for NO_2. Recommended further monitoring city wide for PM_{10} and Queen Margaret Drive for NO_2
Progress Report	2011	Confirmed exceedences at Bridge St and QMD for NO_2 and citywide for PM_{10}. Recommended new AQMA's be declared.
USA	2012	Proceed to DA for NO_2 in the Crow Rd and Great Western Rd areas.
Further Assessment	2013	Concluded that the objectives were largely being met in Citywide AQMA and recommended proceeding to Detailed Assessment
Detailed Assessment	2013	Confirmed NO2 objectives being met in Crow Rd and Great Western Road areas
Progress Report	2013	No new exceedences of objectives outwith existing AQMAs were identified.

1.3 Citywide PM_{10} Air Quality Management Area

The 2006 Updating and Screening Assessment stated,

"Concentrations of PM10 were last considered in Glasgow during the Detailed Assessment and Progress Report of 2005. It was considered in both these reports that there may be exceedences of the air quality objectives for PM_{10} due in 2010 at locations across the city. However, it was concluded that there was a requirement to conduct further monitoring to validate dispersion modelling results prior to declaration of one or more AQMAs."

The 2008 Progress Report included monitoring results and future year projections of PM_{10} in respect of the objectives due to come into effect in 2010. These showed that the objectives were likely to be exceeded at a variety of locations. These observations were based on partial year results from the three newly installed FDMS TEOMs and the then existing stations.

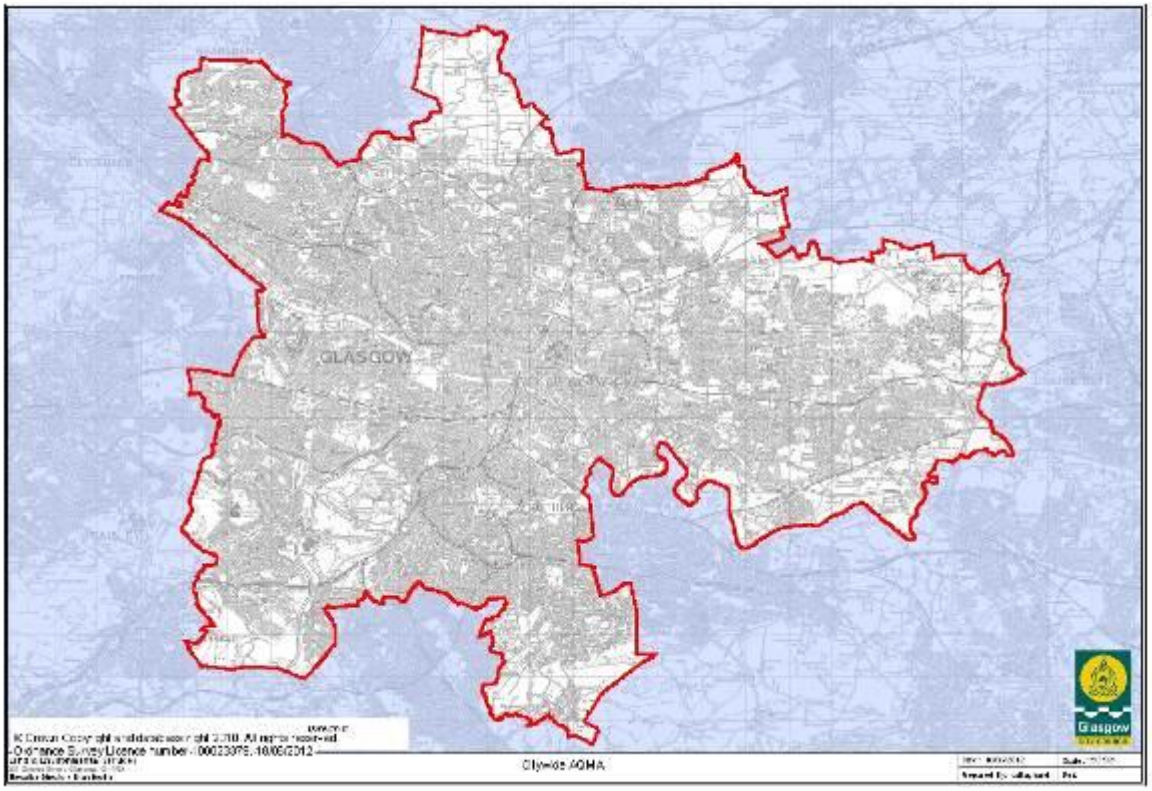
Further monitoring resulted in these conclusions being repeated in the 2009 USA and the decision made to proceed to a Detailed Assessment.
This DA was completed in 2010, however the results were inconclusive. It was felt that the uncertainties of the modelling exercise were such that further monitoring would be required to have confidence in declaring an AQMA for PM_{10} outwith the existing City Centre AQMA.

However, the 2011 Progress Report showed that the objective levels were breached at almost all locations where monitoring was undertaken during 2010.

Given this continued evidence of breaches, coupled with the recommendations of the DA, it was decided that little would be gained from a further Detailed Assessment and that Glasgow should proceed to declaring an AQMA for the whole of the city.

This AQMA came into effect in March 2012.

Figure 1.1 Citywide AQMA



The detailed street listing for this AQMA can be found in the March 2012 order.

Subsequent monitoring of PM_{10} within the Citywide AQMA, but outwith the City Centre AQMA, has shown that the objective levels have largely been met since 2010. It was therefore decided that a new Detailed Assessment of PM_{10} be undertaken to establish whether the Citywide AQMA was still necessary.

2 Methods

2.1 Model

The air dispersion modelling was undertaken using ADMS-Urban version 3.1 supplied by Cambridge Environmental Research Consultants Ltd.

Vehicle emissions were input into the model after being calculated from vehicle counts using the Emission Factor Toolkit version 6.0.1 supplied by the Department for Environment, Food and Rural Affairs (DEFRA).

The ADMS model was used to predict annual mean concentrations of PM_{10} over 2013 for the purpose of establishing the current pollutant concentrations at areas without monitoring data and also for the purpose of model verification. Annual mean concentrations of PM_{10} were also modelled for 2015 to establish potential future pollutant levels.

2.2 Modelled locations

All modelled locations were visited in order to assess building heights, canyon areas, building use and traffic movements with emphasis on congested areas. Road widths and canyon heights were also estimated during the visits and confirmed using GIS details. Locations of suitable receptor points were also collected.

Table 2.1 below shows the assumed building heights used in the modelling exercise.

Table 2.1 Assumed building heights

Type of Building	Estimated Height*
One storey building	10m
Two storey building	15m
Three storey traditional tenement/ Four storey modern flats	20m
Four storey traditional tenement/ Five storey modern flats	25m

*These estimates were adjusted if deemed necessary

2.3 Traffic counts and emissions

Traffic flow information was conducted on behalf of Glasgow City Council and comprised turning counts at a number of junctions broken down into suitable vehicle categories. The traffic data was provided as 12 hour counts and converted to AADT flows according to the approved methodology. Vehicle speeds were estimated based on local knowledge and observation. These estimates were further informed by limited traffic speed monitoring at some locations. Speeds were input for each modelled road segment and included reduced speed estimates at junctions or areas prone to congestion.

Vehicle emission rates were calculated using the Emission Factor Toolkit version 6.0.1 provided by DEFRA and released July 2014. This incorporates the most up to date emission factors per vehicle class and produced emission rates for each road segment in a format suitable for inclusion in the ADMS modelling software. Vehicle emission rates were produced for each of the years 2011 to 2013 for model verification purposes and for 2015 in order to model future pollution levels.

2.4 Model background PM_{10} concentrations

Background concentrations of PM_{10} for all respective modelling years were downloaded from the Scottish Air Quality website and are available from http://www.scottishairquality.co.uk/data/mapping. Where background map concentrations were deemed inappropriate, such as those instances where they were higher or very close to the monitored PM_{10} levels, the annual mean from the background site at Waulkmillglen Reservoir was used.

2.5 Weather data

Hourly weather data for Glasgow for each of the years 2011 to 2013 were obtained from the Met Office monitoring station in Bishopton in a format compatible with ADMS-Urban.

Data from each year was used for direct comparison with monitoring results for model verification. A study was also made to investigate the impact of the

various years weather data on the predicted concentrations. It was found that meteorological data for 2012 produced slightly higher predicted concentrations than the other years and therefore this data was used in modelling 2015 to ensure that a worst case scenario was followed.

Table 2.2 Modelled weather comparison

Weather Year used in Model	Average Modelled Output Annual Mean PM_{10} (ug/m3) over several receptors
2011	15.40
2012	15.42
2013	15.37

Figure 2.1 Modelled weather comparison graph

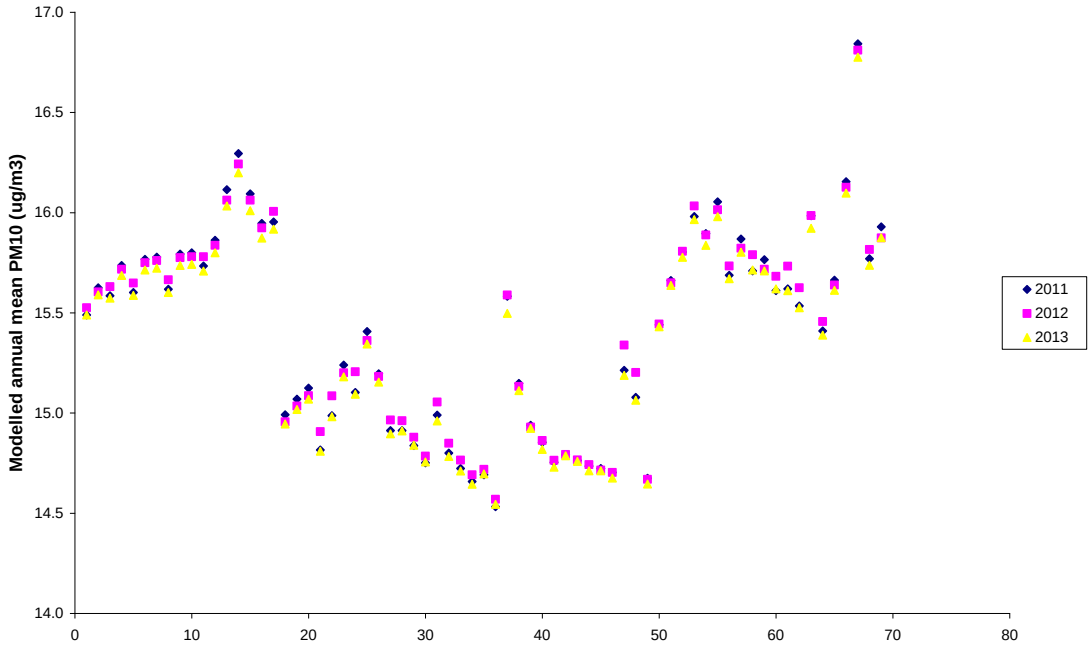


Figure 2.2 Bishopton wind rose 2011

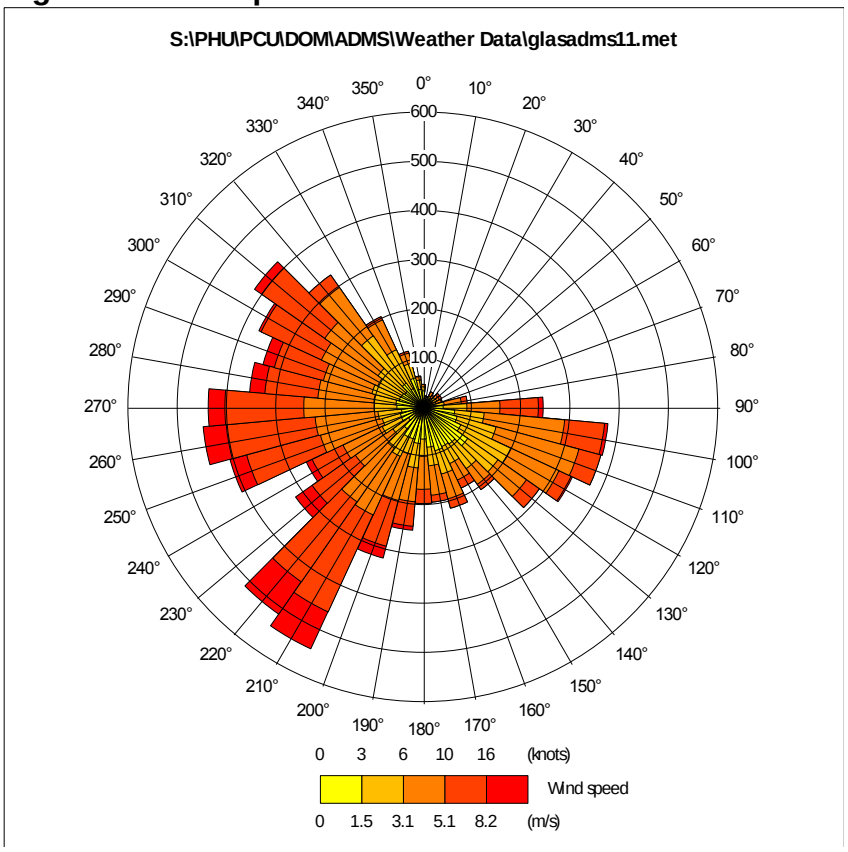


Figure 2.3 Bishopton wind rose 2012

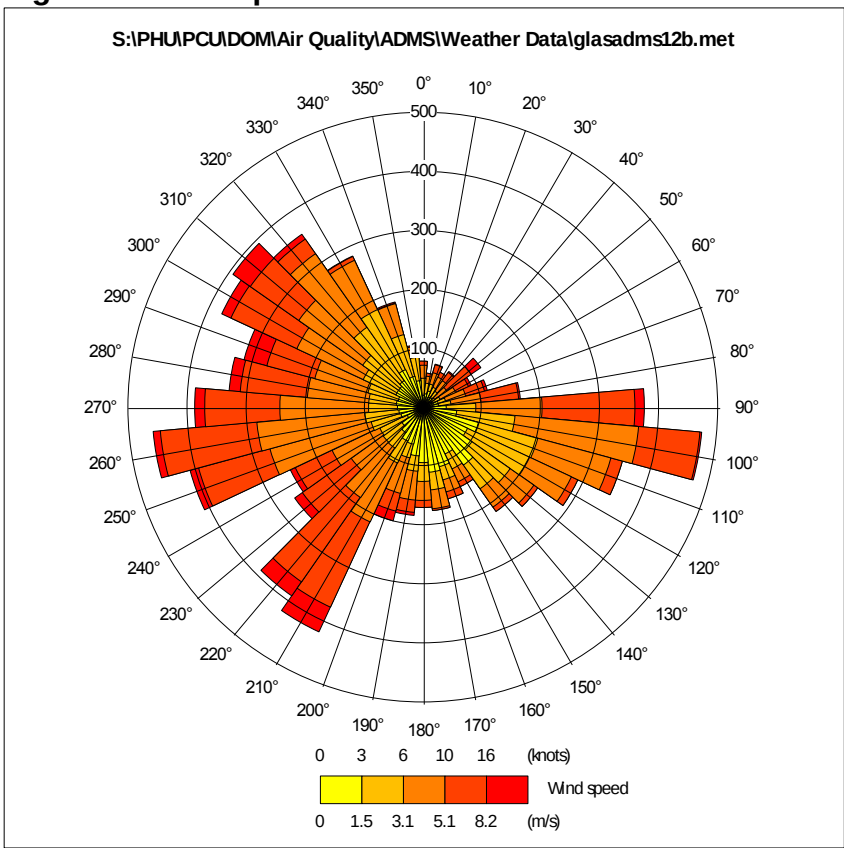
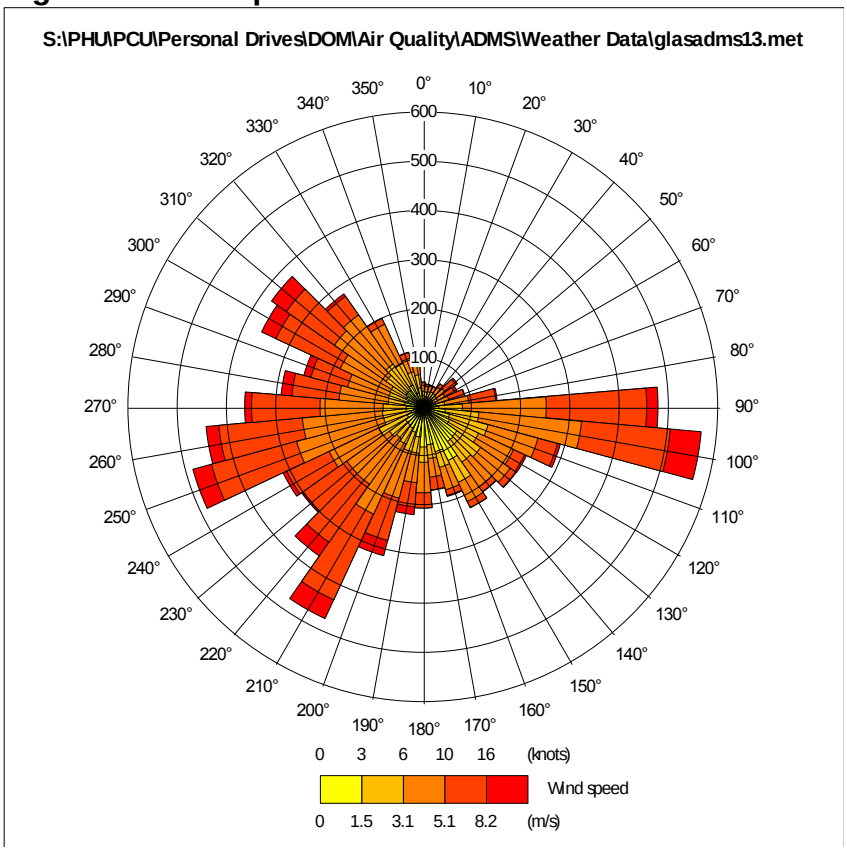


Figure 2.4 Bishopton wind rose 2013



2.6 Model validation and calibration

Table 2.3 below shows the comparison between modelled and measured concentrations of PM_{10} at those locations where monitoring data is available. Each location was modelled using the emission factors and weather data appropriate to the year of study and compared with that years monitoring results.

Table 2.3 Comparison between modelled and measured concentrations of PM_{10} (ug/m3)

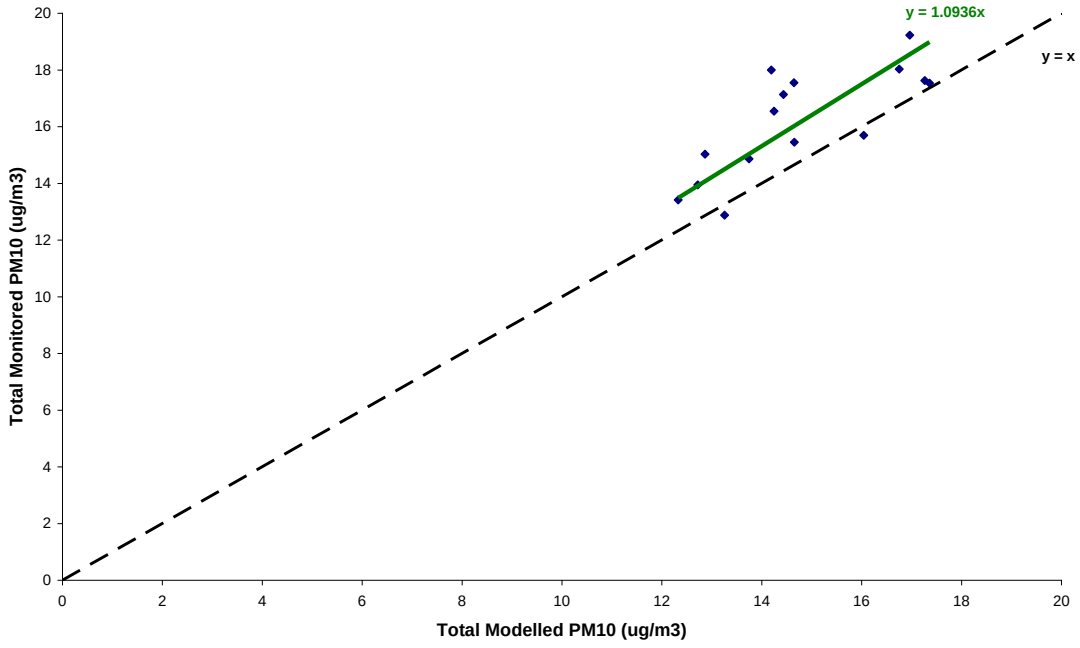
Site	Background PM_{10}	Monitored Total PM_{10}	Modelled Total PM_{10}	Difference %
Abercromby St 2011	15.0	18.0	16.8	-7.1
Abercromby St 2012	11.0	13.9	12.7	-8.8
Abercromby St 2013	14.5	15.7	16.0	2.3
Broomhill 2011	15.5	17.5	17.4	-1.0
Broomhill 2012	11.0	15.0	12.9	-14.4
Broomhill 2013	12.0	14.9	13.7	-7.5
Burgher St 2012	13.5	15.4	14.7	-5.1
Burgher St 2013	13.3	16.5	14.2	-13.9
Byres Rd 2012	11.0	13.4	12.3	-8.1
Byres Rd 2013	12.0	12.9	13.3	2.9
Dumbarton Rd 2012	15.3	17.6	17.3	-2.0
Dumbarton Rd 2013	15.1	19.2	17.0	-11.7
Nithsdale Rd 2011	13.4	17.6	14.6	-16.5
Nithsdale Rd 2012	13.2	17.1	14.4	-15.8
Nithsdale Rd 2013	13.1	18.0	14.2	-21.1

The model results indicate that the model is generally performing well with all of the results within ±25% of the monitored concentrations and most within ±10%. However, the majority of the results show that the model is generally under predicting PM_{10} concentrations.

Figure 2.5 below shows the modelled PM_{10} versus monitored total PM_{10} concentrations, and a linear regression line, through zero, has been derived.

Summary Table	
Within +10%	2
Within -10%	7
Within +-10%	9
Within +10% to +25%	0
Within -10% to -25%	6
Within +-10% to 25%	6
Over +25%	0
Under -25%	0
Greater +-25%	0
Within +-25%	15

Figure 2.5 modelled vs monitored annual average PM_{10}



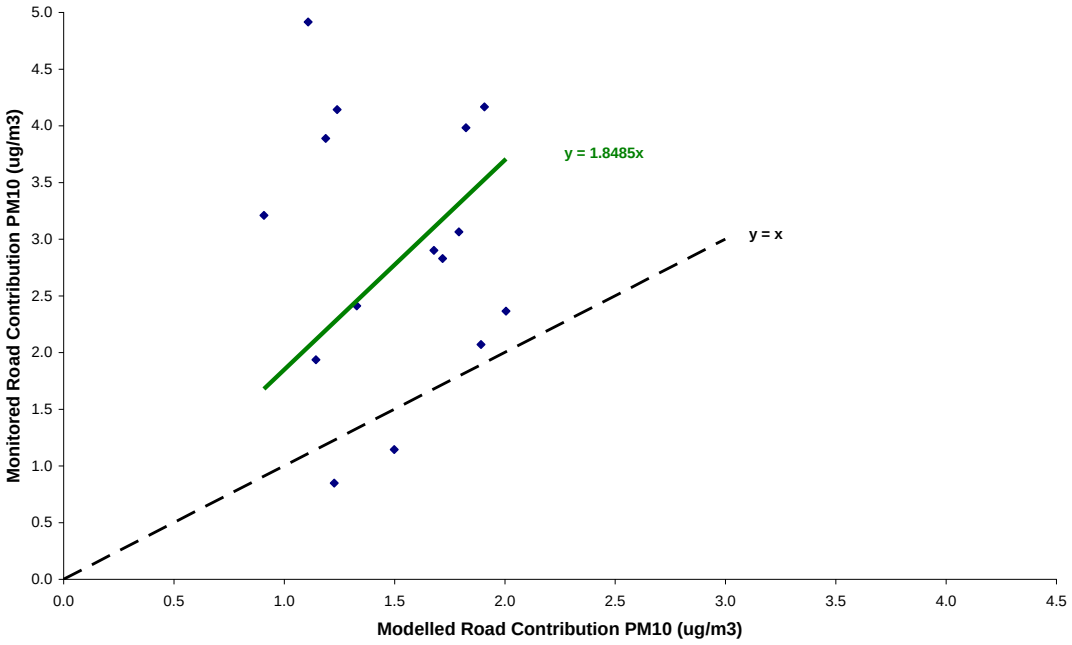
Since the majority of modelled results were under predicting the PM_{10} concentrations, adjustment of the model was deemed appropriate after consideration of other factors which may influence results such as background concentrations and vehicle speeds. The adjustment was conducted in accordance with the procedure set out in LAQM TG(09) and was based on the road source contribution of PM_{10}.

Table 2.4 Comparison between modelled and measured road contributions of PM_{10} (ug/m3)

Site	Monitored Total PM_{10}	Modelled Total PM_{10}	Monitored Road Cont PM_{10}	Modelled Road Cont PM_{10}	Ratio
Abercromby St 2011	18.0	16.8	3.1	1.8	1.71
Abercromby St 2012	13.9	12.7	2.9	1.7	1.73
Abercromby St 2013	15.7	16.0	1.1	1.5	0.76
Broomhill 2011	17.5	17.4	2.1	1.9	1.09
Broomhill 2012	15.0	12.9	4.0	1.8	2.18
Broomhill 2013	14.9	13.7	2.8	1.7	1.65
Burgher St 2012	15.4	14.7	1.9	1.1	1.69
Burgher St 2013	16.5	14.2	3.2	0.9	3.53
Byres Rd 2012	13.4	12.3	2.4	1.3	1.82
Byres Rd 2013	12.9	13.3	0.8	1.2	0.69
Dumbarton Rd 2012	17.6	17.3	2.4	2.0	1.18
Dumbarton Rd 2013	19.2	17.0	4.2	1.9	2.18
Nithsdale Rd 2011	17.6	14.6	4.1	1.2	3.34
Nithsdale Rd 2012	17.1	14.4	3.9	1.2	3.27
Nithsdale Rd 2013	18.0	14.2	4.9	1.1	4.43

Figure 2.6 below provides a comparison of the modelled road contribution PM_{10} versus monitored road contribution PM_{10}, and the equation of the trendline based on linear regression through zero.

Figure 2.6 modelled vs monitored road contribution PM_{10}



The modelled road contribution of PM_{10} was then adjusted based upon the above information and the adjusted modelled road contribution replotted against monitored road contribution.

Figure 2.7 adjusted modelled vs monitored road contribution PM_{10}

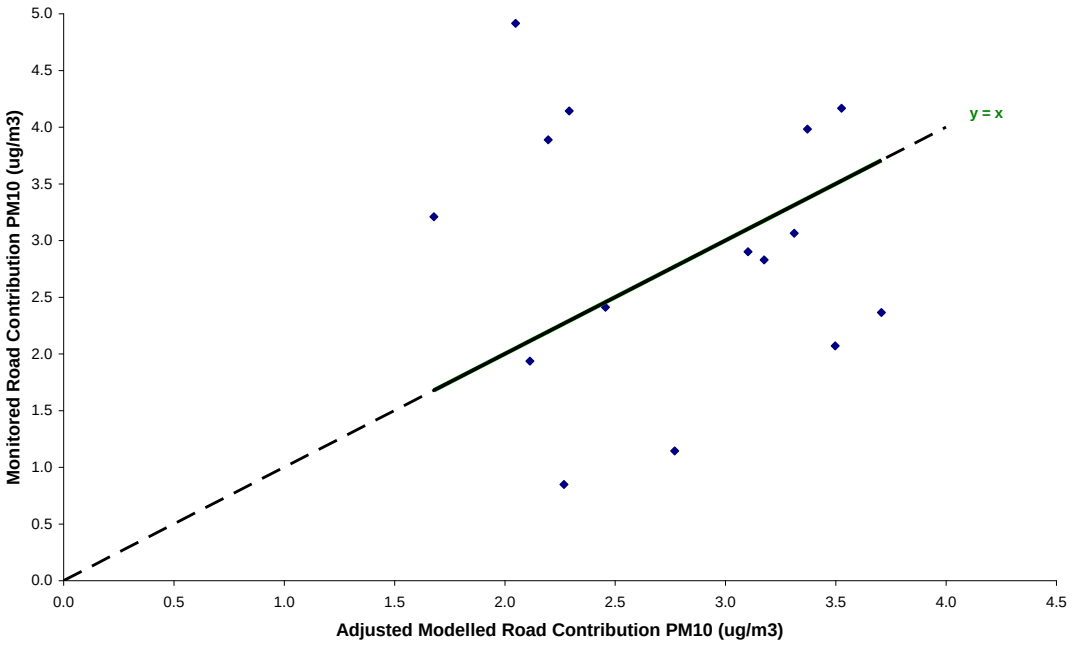


Table 2.5 Comparison between adjusted modelled and measured concentrations of PM_{10} (ug/m3)

Site	Modelled Total PM_{10}	Monitored Total PM_{10}	Adjusted Modelled Total PM_{10}	Difference %
Abercromby St 2011	16.8	18.0	18.3	1.4
Abercromby St 2012	12.7	13.9	14.1	1.4
Abercromby St 2013	16.0	15.7	17.3	10.4
Broomhill 2011	17.4	17.5	19.0	8.1
Broomhill 2012	12.9	15.0	14.4	-4.1
Broomhill 2013	13.7	14.9	15.2	2.3
Burgher St 2012	14.7	15.4	15.6	1.2
Burgher St 2013	14.2	16.5	15.0	-9.2
Byres Rd 2012	12.3	13.4	13.5	0.3
Byres Rd 2013	13.3	12.9	14.3	11.0
Dumbarton Rd 2012	17.3	17.6	19.0	7.6
Dumbarton Rd 2013	17.0	19.2	18.6	-3.3
Nithsdale Rd 2011	14.6	17.6	15.7	-10.5
Nithsdale Rd 2012	14.4	17.1	15.4	-9.9
Nithsdale Rd 2013	14.2	18.0	15.1	-15.9

Figure 2.8 adjusted modelled vs monitored annual average PM_{10}

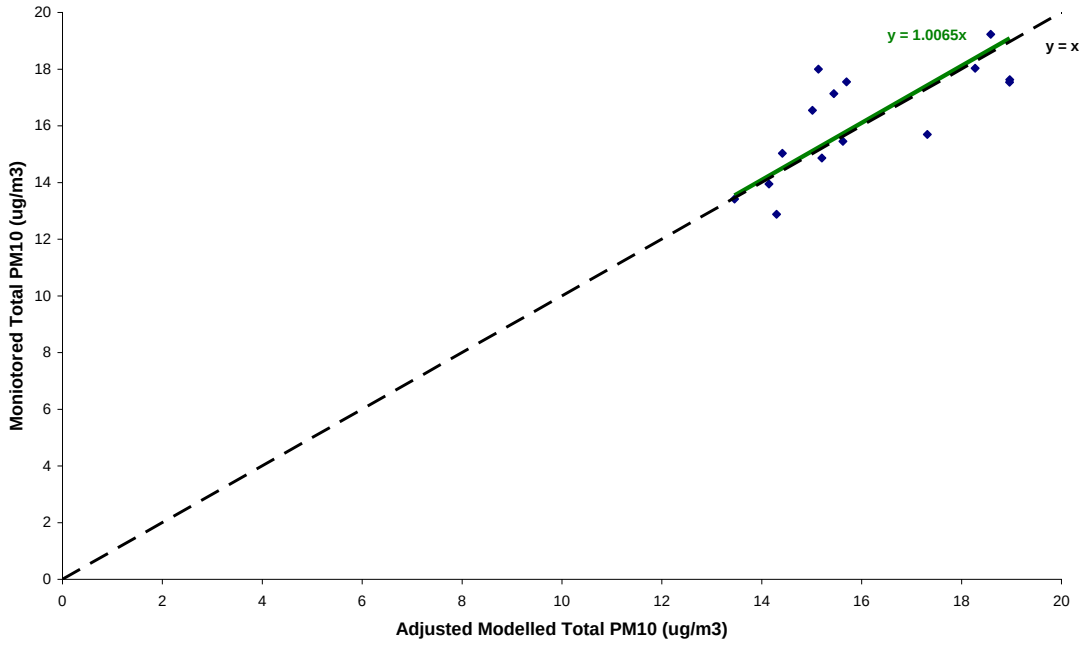


Figure 2.8 above shows the adjusted modelled PM_{10} versus monitored total PM_{10} concentrations, and a linear regression line, through zero, has been derived.

The model results indicate that the model performance has improved through adjustment with the model no longer consistently under predicting PM_{10} levels.

Summary Table	
Within +10%	7
Within -10%	4
Within +-10%	11
Within +10% to +25%	2
Within -10% to -25%	2
Within +-10% to 25%	4
Over +25%	0
Under -25%	0
Greater +-25%	0
Within +-25%	15

3.0 Results

3.1 Monitoring Results

3.1.1 Automatic Monitoring Sites

Glasgow City Council operates an extensive monitoring network across the city to measure ambient levels of air pollutants.

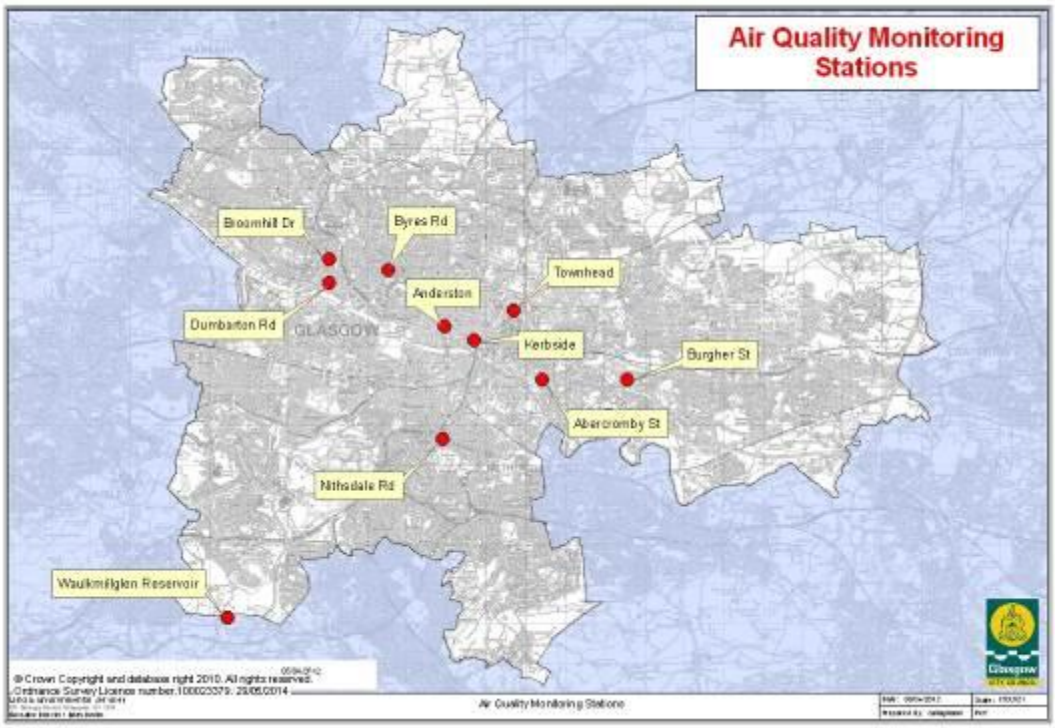
Automated monitoring equipment is located at ten sites with two of the units (Glasgow Kerbside and Glasgow Centre) forming part of the DEFRA Automated Urban and Rural Network (AURN). The Glasgow Centre site was relocated in 2013 and renamed Glasgow Townhead.

Instruments at these sites are calibrated according to the specific site guidelines by the Local Site Operators and audits are carried out every six months by AEA Technology. All of the automatic air quality data gathered is independently ratified by AEA Technology and made available for viewing by the public on the Scottish Government funded air quality website at: http://www.scottishairquality.co.uk

PM_{10} is monitored at all of these locations and, with the exception of the Waulkmillglen Reservoir site, they are all within the Citywide PM_{10} AQMA.

The monitoring stations Glasgow Kerbside, Glasgow Centre and Glasgow Anderston are all located within the City Centre AQMA. This AQMA was amended to include the declaration in respect of PM_{10} in 2007.

Figure 3.1 Map of automatic monitoring sites



PM_{10} is also monitored at two locations using Osiris particulate monitors. These devices use light scattering techniques to measure particles across a range of sizes. The accuracy of these instruments is not as high as that for the TEOM units used elsewhere, however, they provide a very good indication of PM_{10} levels and are widely used for screening assessments. These units were located at sites which were identified as potentially exceeding the annual mean PM_{10} objective within the 2010 Detailed Assessment.

3.1.2 New Monitoring Data

Table 3.1 Results of automatic monitoring for PM_{10}: comparison with annual mean objective

Site ID	Site Type	Within AQMA?	Valid Data Capture 2013 %	Confirm Gravimetric Equivalent (Y or NA)	Annual Mean Concentration μg/m^3				
					2009	2010	2011	2012	2013
Glasgow Kerbside	Kerbside	Y	85	Y	26	29	18	24	23
Glasgow Centre	Urban Centre	Y	-	Y	25	21	17	16	-
Glasgow Anderston	Urban Background	Y	92	Y	20	16	16	14	16
Glasgow Byres Rd	Roadside	Y	60	Y	19	23	24	13	13
Glasgow Dumbarton Rd	Roadside	Y	91	Y	-	-	-	18	19
Glasgow Abercromby St	Roadside	Y	92	Y	18	21	18	14	16
Glasgow Broomhill	Roadside	Y	90	Y	18	19	18	15	15
Glasgow Nithsdale Rd	Roadside	Y	65	Y	17	21	18	17	18
Glasgow Waulkmillglen Reservoir	Rural	N	97	Y	11	16	12	11	12
Glasgow Burgher St	Roadside	Y	91	Y	-	-	-	15	17

Trend graphs are shown below for those monitoring locations within the City Centre and Citywide AQMAs for which five years of data exist. These generally show a downward trend in monitored PM10 levels with the Scottish annual mean objective shown by the black dotted lines.

Figure 3.2 Glasgow Kerbside PM_{10} trend

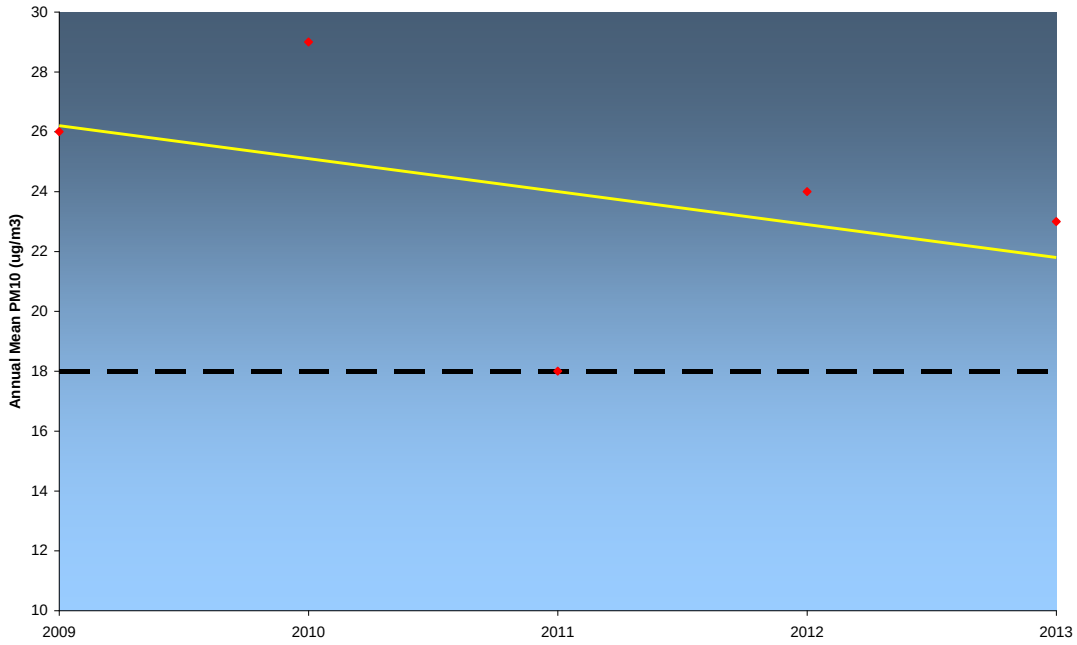


Figure 3.3 Glasgow Anderston PM_{10} trend

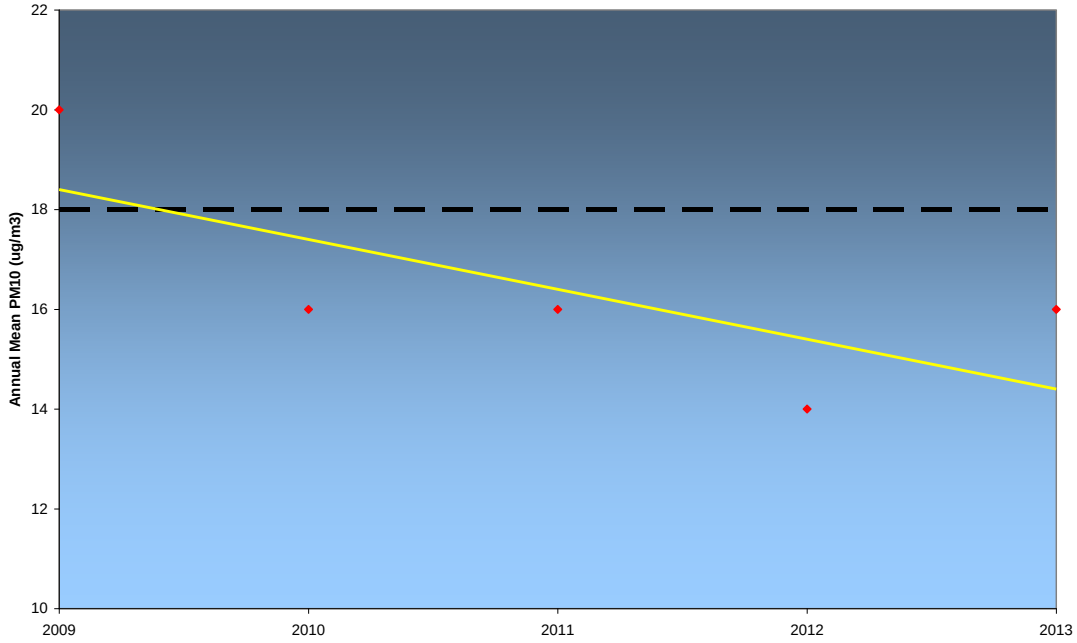


Figure 3.4 Glasgow Byres Rd PM_{10} trend

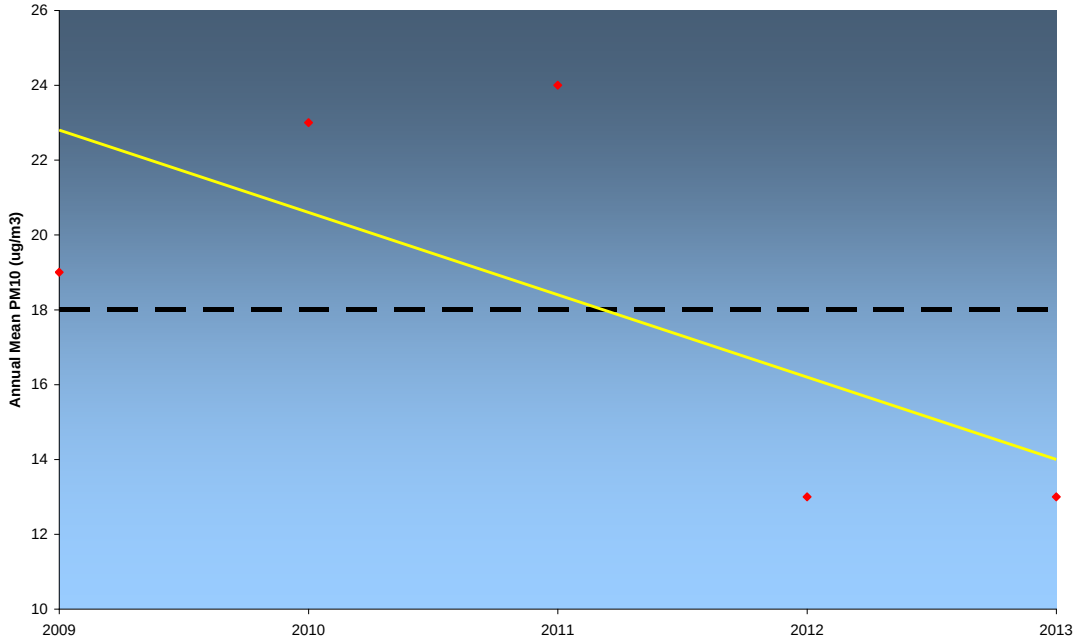


Figure 3.5 Glasgow Abercromby St PM_{10} trend

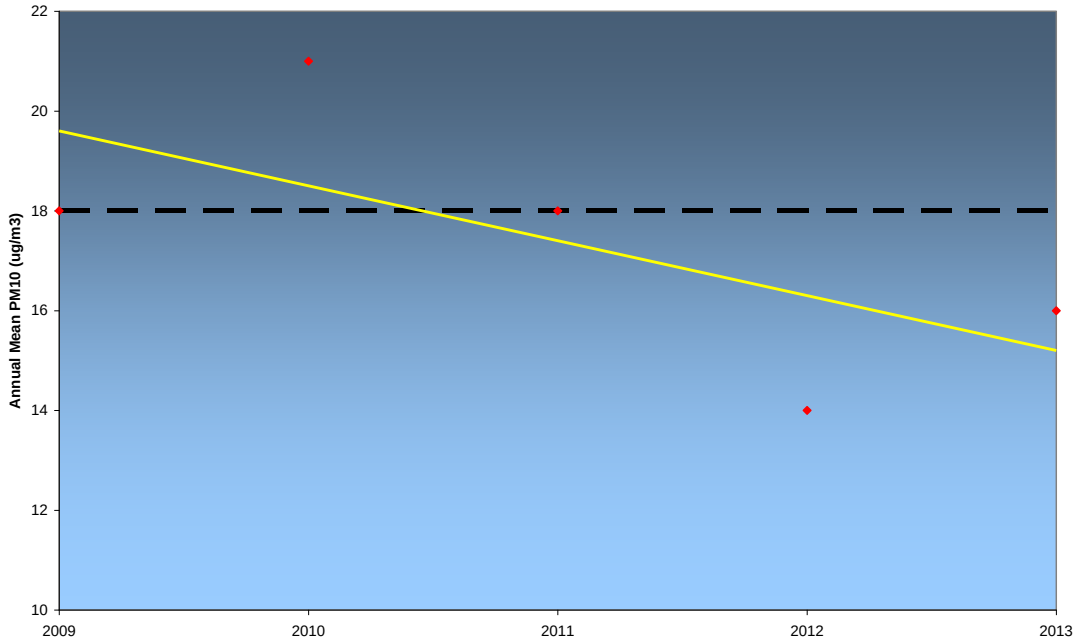


Figure 3.6 Glasgow Broomhill PM_{10} trend

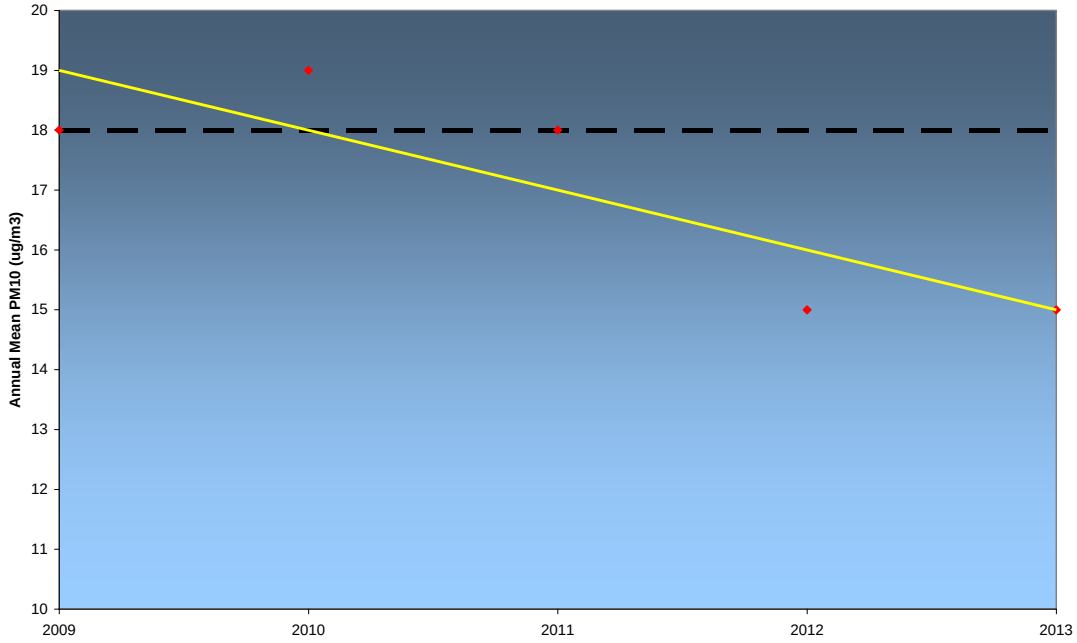


Figure 3.7 Glasgow Nithsdale Rd PM_{10} trend

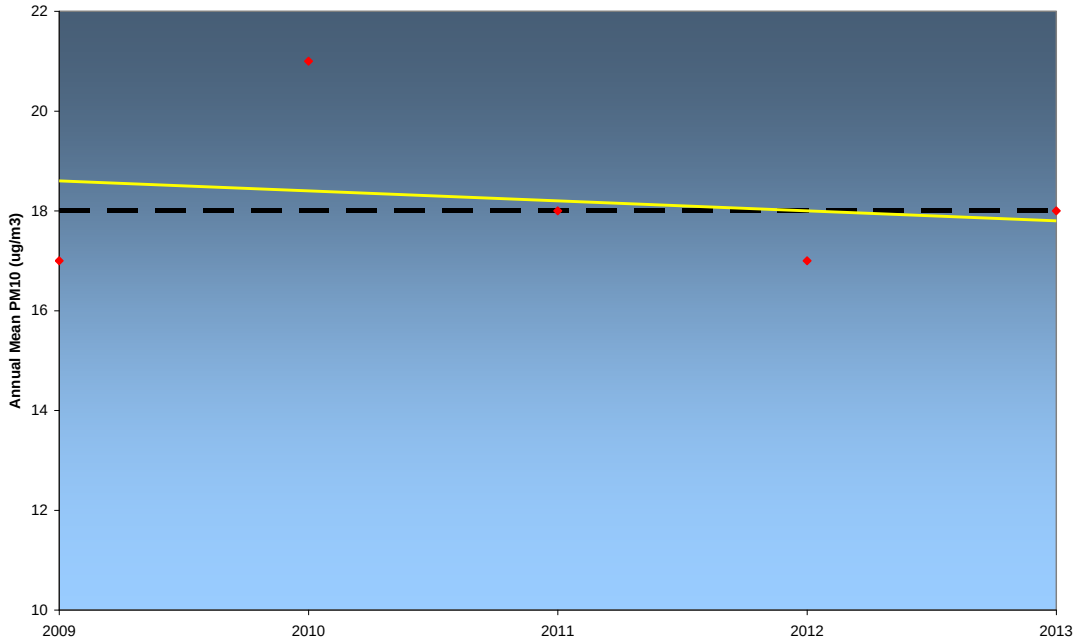


Figure 3.8 Glasgow Waulkmillglen PM_{10} trend

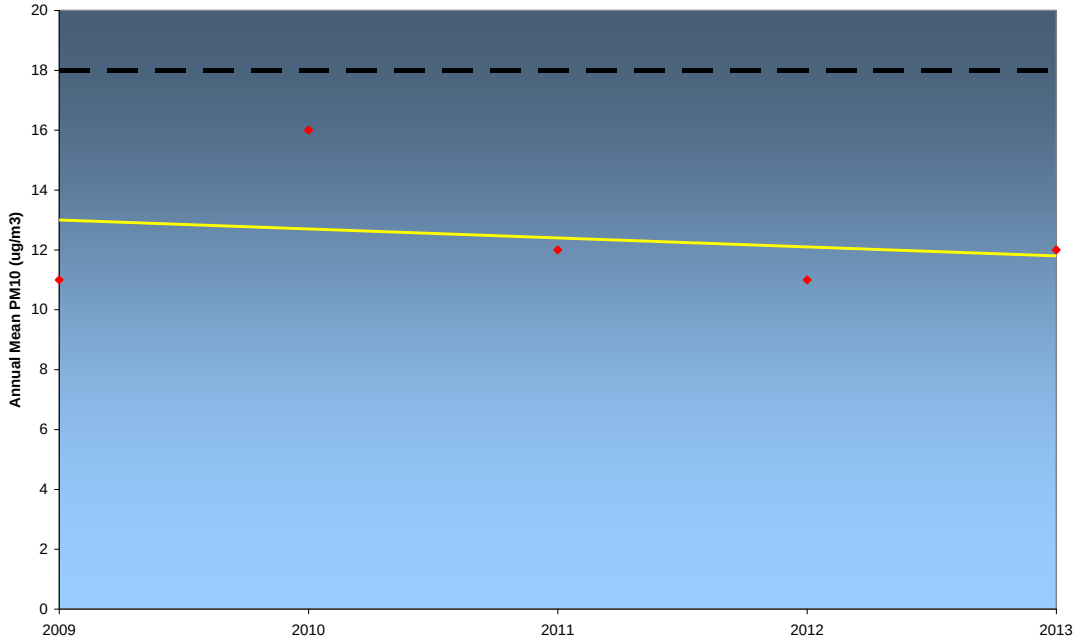


Table 3.2 Results of automatic monitoring for PM_{10} using Osiris

Site Name	Within AQMA?	Gravimetric Equivalent	% Valid Data Capture 2013	Annual Mean Concentration (µg/m^3)	
				2012	2013
Sauchiehall Street	Y	Y	65	16	12
Maryhill Road	Y	Y	89	14	13

Table 3.3 Results of automatic monitoring for PM_{10}: comparison with 24-hour mean objective

Site ID	Site Type	Within AQMA?	Valid Data Capture 2013 %	Confirm Gravimetric Equivalent	Number of Exceedences of 24-Hour Mean (50 µg/m^3)				
					2009	2010	2011	2012	2013
Glasgow Kerbside	Kerbside	Y	85	Y	18	25	0 (28)	7 (59)	4 (50)
Glasgow Centre	Urban Centre	Y	-	Y	21	7 (80)	2	3 (39)	-
Glasgow Anderston	Urban Background	Y	92	Y	12	4 (45)	2 (25)	3 (39)	2
Glasgow Byres Rd	Roadside	Y	60	Y	2	9	2 (40)	3 (37)	0 (31)
Glasgow Dumbarton Rd	Roadside	Y	91	Y	-	-	-	2 (39)	1
Glasgow Abercromby St	Roadside	Y	92	Y	7	9 (60)	9	4	2
Glasgow Broomhill	Roadside	Y	90	Y	7	9	6	6	0
Glasgow Nithsdale Rd	Roadside	Y	65	Y	6	10 (57)	6	9	3 (43)
Glasgow Waulkmillglen Reservoir	Rural	N	97	Y	0	4	0 (20)	0 (29)	0
Glasgow Burgher St	Roadside	Y	91	Y	-	-	-	4	3

If the period of valid data is less than 90%, the 98th percentile of hourly means is in brackets

3.2 Modelling Results

Modelling was undertaken at twenty-one locations across the Citywide AQMA where previous monitoring or modelling had indicated the possibility of undertaken at 21 locations across the city. These locations have been identified as being subject to high traffic levels with relevant residential exposure close by. Many of these areas have been previously identified as having the potential to exceed the PM_{10} objective level or have been newly identified for this potential.

In the following sections the modelled streets are indicated by blue lines with relevant receptors indicated by green dots.

3.2.1 Argyle St at Finnieston St

Figure 3.9 Argyle St at Finnieston St modelled streets and receptors

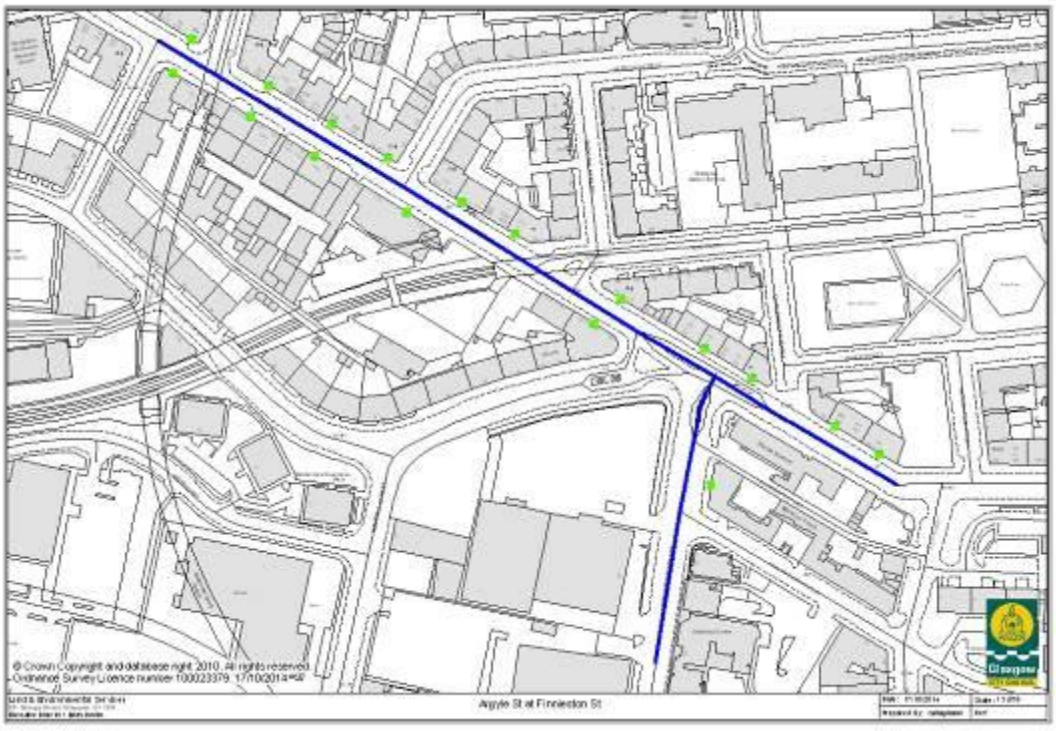
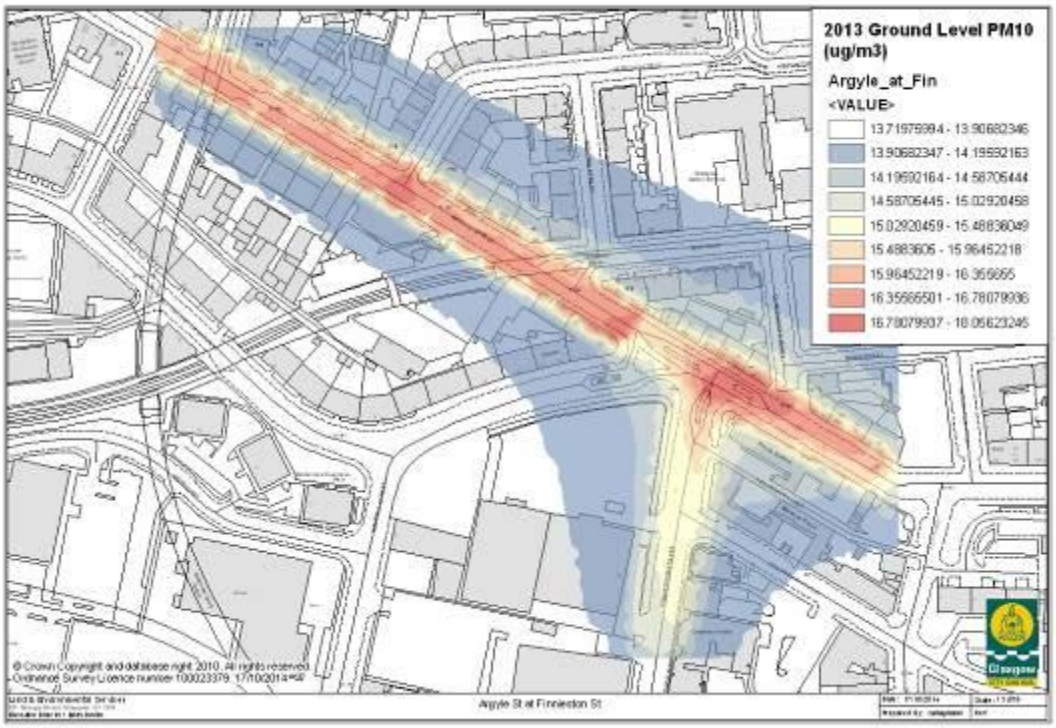


Table 3.4 Argyle St at Finnieston St modelling results

Receptor Location	Modelled Annual Mean PM_{10} Concentration ($\mu g/m^3$)			
	Raw Modelled Output		Adjusted Model Output	
	2013	2015	2013	2015
1143 Argyle St	15.5	15.1	15.7	15.4
1102 Argyle St	15.6	15.2	15.9	15.5
1113 Argyle St	15.6	15.2	15.9	15.6
1092 Argyle St	15.7	15.3	16.1	15.7
1091 Argyle St	15.6	15.3	15.9	15.6
1068 Argyle St	15.7	15.4	16.1	15.8
1056 Argyle St	15.7	15.4	16.1	15.8
1075 Argyle St	15.6	15.3	15.9	15.6
1026 Argyle St	15.7	15.4	16.2	15.8
1014 Argyle St	15.7	15.4	16.2	15.8
1003 Argyle St	15.7	15.4	16.1	15.8
998 Argyle St	15.8	15.4	16.3	15.9
974 Argyle St	16.0	15.6	16.7	16.3
952 Argyle St	16.2	15.8	17.0	16.6
944 Argyle St	16.0	15.6	16.7	16.3
936 Argyle St	15.9	15.5	16.4	16.1
Minerva Court	15.9	15.6	16.5	16.2

Figure 3.10 Argyle St at Finnieston St PM_{10} contours



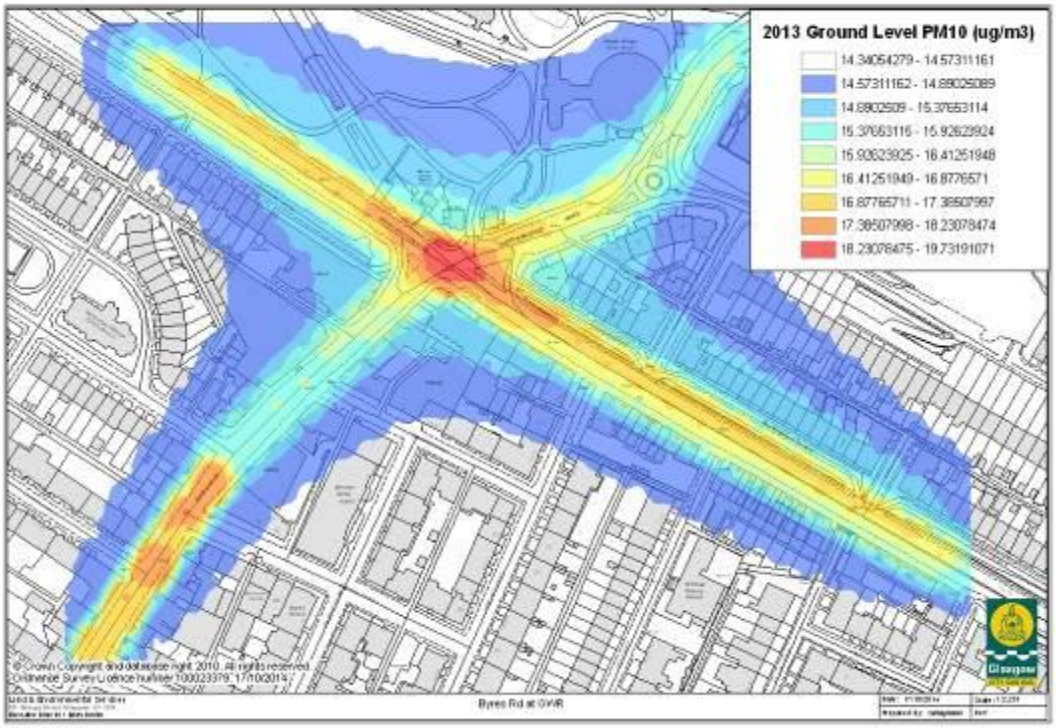
3.2.2 Byres Rd at Great Western Road

Figure 3.11 Byres Rd at Great Western Road modelled streets and receptors

Table 3.5 Byres Rd at Great Western Road modelling results

Receptor Location	Modelled Annual Mean PM_{10} Concentration (µg/m^3)			
	Raw Modelled Output		Adjusted Model Output	
	2013	2015	2013	2015
277 Byres Rd	14.6	14.1	14.8	14.4
305 Byres Rd	14.7	14.2	15.1	14.6
331 Byres Rd	14.7	14.2	15.1	14.6
339 Byres Rd	14.8	14.3	15.2	14.7
373 Byres Rd	14.9	14.4	15.4	14.9
398 Byres Rd	15.0	14.6	15.6	15.2
330 Byres Rd	14.7	14.2	15.0	14.6
316 Byres Rd	14.7	14.2	15.0	14.6
310 Byres Rd	14.6	14.2	15.0	14.5
274 Byres Rd	14.6	14.1	14.8	14.4
Hotel Entrance	15.0	14.5	15.6	15.2
QMD hotel	15.7	15.2	16.9	16.3
12 QMD	15.2	14.7	15.9	15.5
77 QMD	14.8	14.4	15.3	14.8
729 QMD	15.1	14.7	15.8	15.4
713 QMD	15.0	14.6	15.6	15.3
701 QMD	15.0	14.6	15.5	15.2
679 QMD	14.9	14.5	15.5	15.1
641 QMD	14.9	14.5	15.5	15.1
1 Buckingham Terr	15.1	14.6	15.7	15.2
16 Buckingham Terr	15.2	14.7	16.0	15.4
30 Buckingham Terr	15.5	15.0	16.5	16.0

Figure 3.12 Byres Rd at Great Western Road PM_{10} contours



3.2.3 Byres Rd at University Avenue

Figure 3.13 Byres Rd at University Avenue modelled streets and receptors

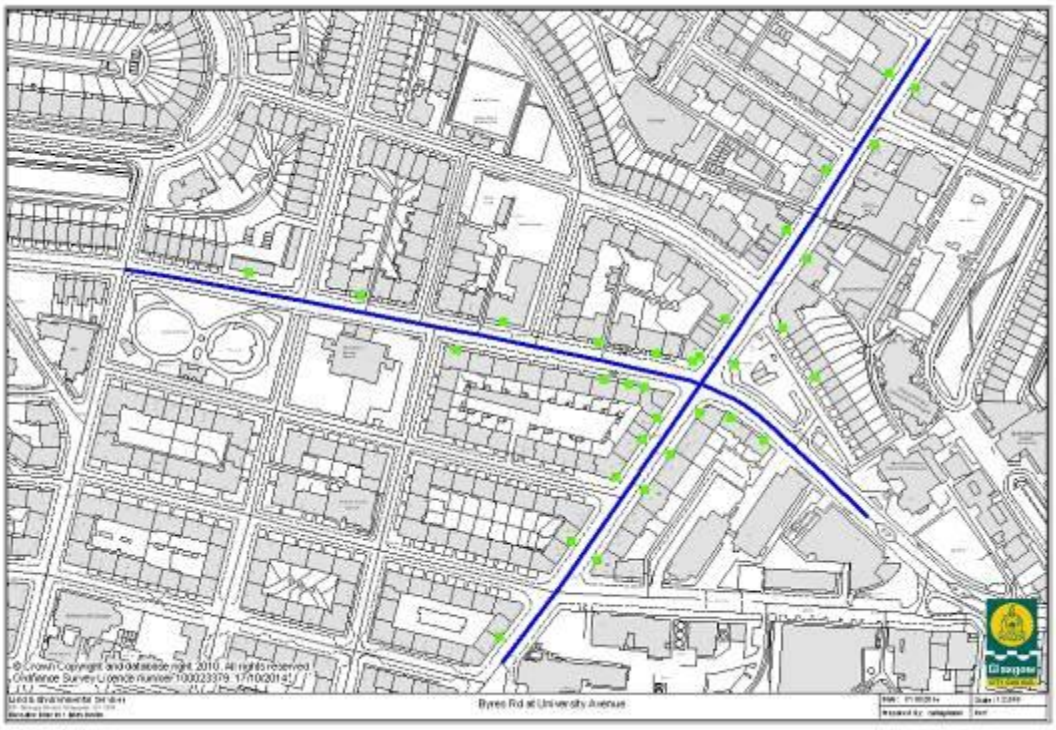


Table 3.6 Byres Rd at University Avenue modelling results

Receptor Location	Modelled Annual Mean PM_{10} Concentration (µg/m^3)			
	Raw Modelled Output		Adjusted Model Output	
	2013	2015	2013	2015
44 Highburgh Rd	12.7	12.3	13.3	12.8
38 Highburgh Rd	12.8	12.4	13.4	13.0
24 Highburgh Rd	12.8	12.4	13.5	13.1
27 Highburgh Rd	12.6	12.3	13.0	12.8
15 Highburgh Rd	12.7	12.4	13.3	13.0
18 Highburgh Rd	12.9	12.5	13.7	13.2
11 Highburgh Rd	12.9	12.5	13.6	13.2
8 Highburgh Rd	13.1	12.7	14.0	13.5
2 Highburgh Rd	12.9	12.5	13.7	13.2
5 Highburgh Rd	12.7	12.3	13.2	12.8
181 Byres Rd	12.7	12.3	13.2	12.8
167Byres Rd	12.6	12.2	13.1	12.7
149 Byres Rd	12.5	12.1	12.9	12.5
146 Byres Rd	12.7	12.4	13.3	13.0
123 Byres Rd	12.5	12.2	13.0	12.6
120 Byres Rd	12.5	12.1	12.8	12.5
94 Byres Rd	12.4	12.1	12.7	12.4
131 Byres Rd	12.5	12.1	12.8	12.4
103 Byres Rd	12.3	11.9	12.5	12.2
AQ Station	13.3	12.9	14.3	13.9
191 Byres Rd	12.9	12.4	13.6	13.1
203 Byres Rd	12.7	12.3	13.2	12.8
3 Ashton Place	12.6	12.2	13.0	12.7
180 Byres Rd	12.5	12.1	12.9	12.5

Receptor Location	Modelled Annual Mean PM_{10} Concentration ($\mu g/m^3$)			
	Raw Modelled Output		Adjusted Model Output	
	2013	2015	2013	2015
225 Byres Rd	12.5	12.1	13.0	12.6
253 Byres Rd	12.5	12.1	12.9	12.5
266 Byres Rd	12.5	12.1	12.8	12.5
285 Byres Rd	12.5	12.1	12.8	12.4
290 Byres Rd	12.4	12.1	12.8	12.4
173 University Ave	12.9	12.6	13.7	13.4
171 University Ave	12.8	12.5	13.5	13.2
13 Ashton Rd	12.4	12.0	12.7	12.3

Figure 3.14 Byres Rd at University Avenue PM_{10} contours

3.2.4 Clarence Dr at Crow Rd

Figure 3.15 Clarence Dr at Crow Rd modelled streets and receptors

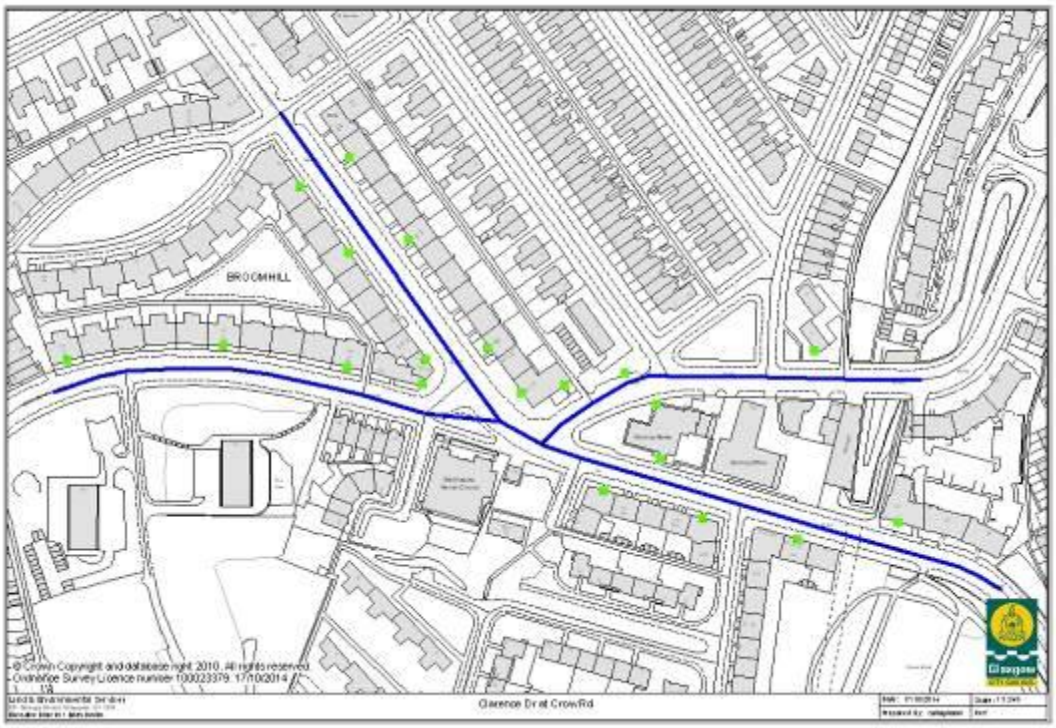
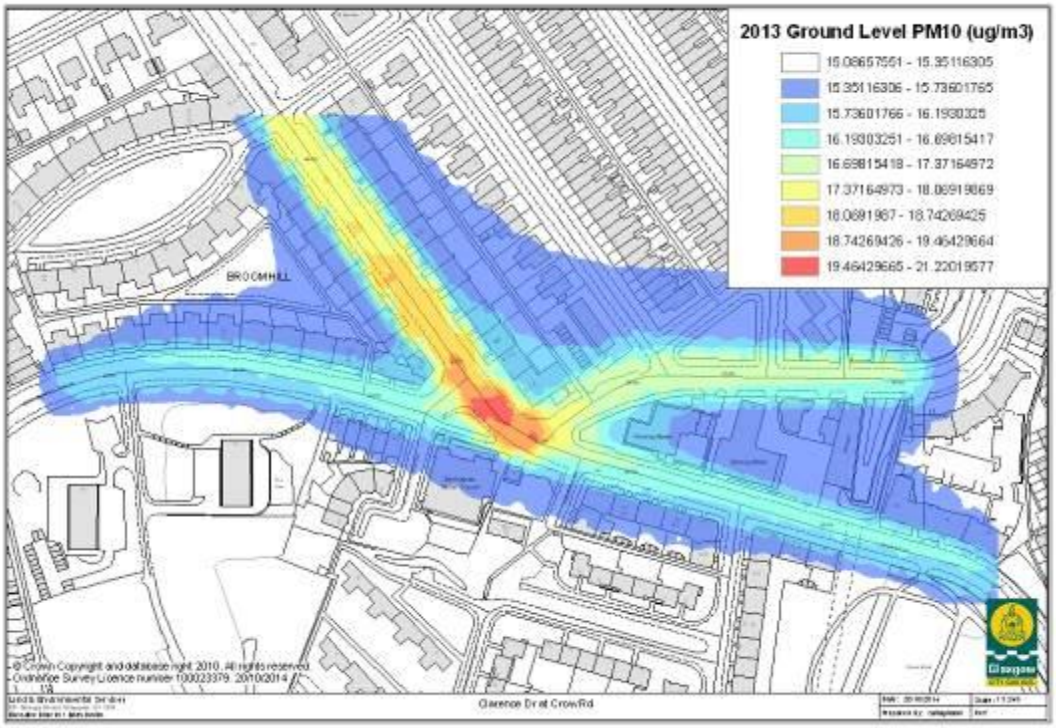


Table 3.7 Clarence Dr at Crow Rd modelling results

Receptor Location	Modelled Annual Mean PM_{10} Concentration ($\mu g/m^3$)			
	Raw Modelled Output		Adjusted Model Output	
	2013	2015	2013	2015
101 Broomhill Dr	12.4	12.0	12.7	12.3
131 Broomhill Dr	12.6	12.2	13.1	12.7
155 Broomhill Dr	12.7	12.4	13.4	12.9
183 Broomhill Dr	12.9	12.6	13.7	13.3
240 Crow Rd	12.8	12.4	13.5	13.1
256 Crow Rd	13.0	12.5	13.7	13.3
247 Crow Rd	12.6	12.3	13.2	12.8
276 Crow Rd	12.8	12.4	13.4	13.0
273 Crow Rd	12.7	12.4	13.2	12.9
294 Crow Rd	12.7	12.3	13.2	12.8
291 Crow Rd	12.6	12.3	13.1	12.7
217 Crow Rd	12.6	12.3	13.1	12.8
203 Crow Rd	12.5	12.2	12.9	12.6
Nursing Home Sth	12.9	12.5	13.6	13.3
189 Crow Rd	12.4	12.0	12.6	12.4
172 Crow Rd	12.6	12.2	13.1	12.7
3 Clarence Dr	13.1	12.6	14.0	13.5
AQ Station	13.7	13.3	15.2	14.7
Nursing Home Nth	12.7	12.4	13.3	13.0
6 Clarence Dr	12.8	12.4	13.5	13.1

Figure 3.16 Clarence Dr at Crow Rd PM_{10} contours



3.2.5 Crow Rd at Balshagray Ave

Figure 3.17 Crow Rd at Balshagray Ave modelled streets and receptors

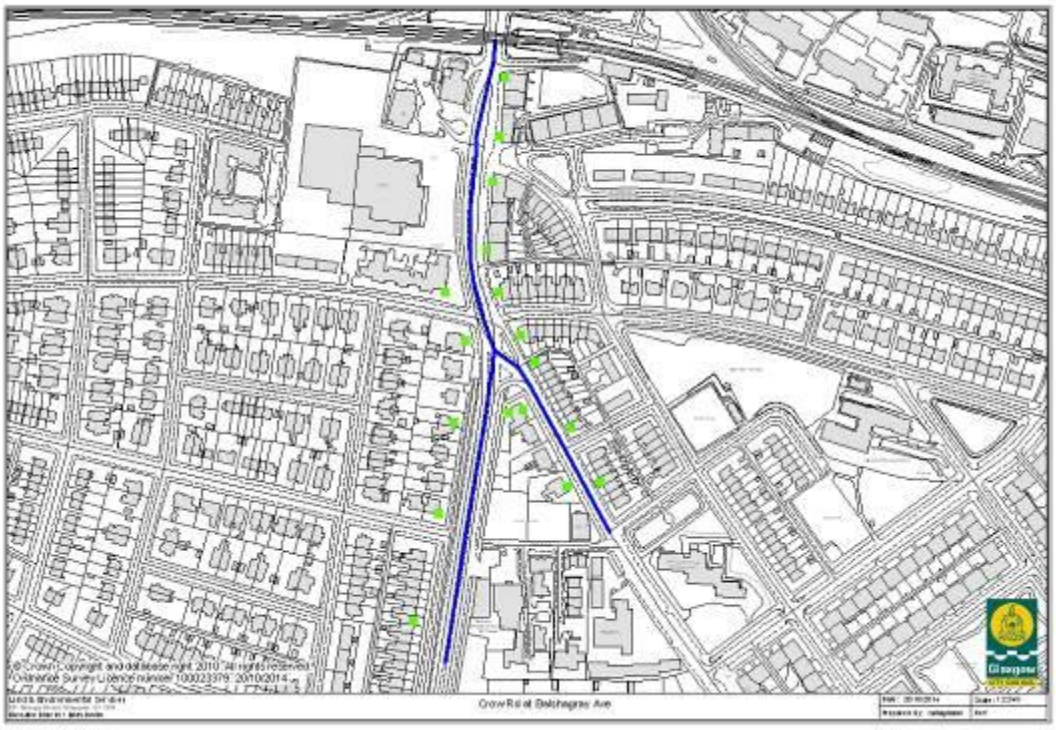
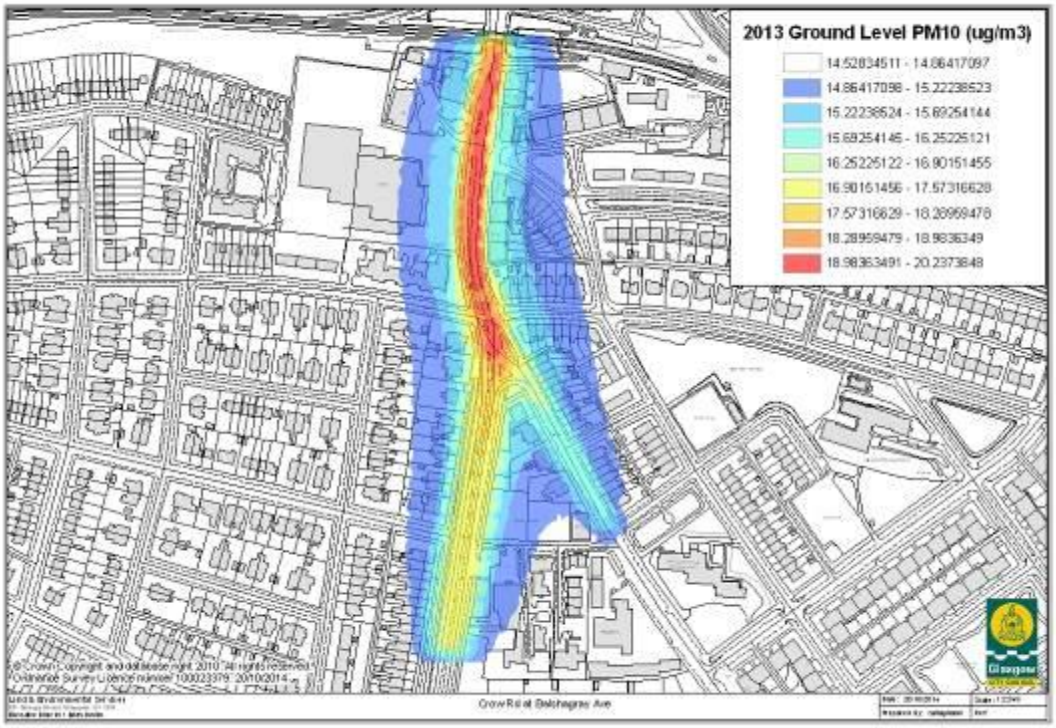


Table 3.8 Crow Rd at Balshagray Ave modelling results

Receptor Location	Modelled Annual Mean PM_{10} Concentration (µg/m^3)			
	Raw Modelled Output		Adjusted Model Output	
	2013	2015	2013	2015
494 Crow Rd	15.1	14.8	15.7	15.4
5 Randolph Gate	15.2	14.8	15.8	15.5
480 Crow Rd	15.2	14.9	15.9	15.6
454 Crow Rd	15.3	14.9	16.0	15.7
164 Beechwood Dr	16.1	15.7	17.6	17.2
450 Crow Rd	15.8	15.4	17.0	16.6
446 Crow Rd	15.6	15.3	16.6	16.3
428 Crow Rd	15.2	14.9	15.9	15.6
420 Crow Rd	15.1	14.7	15.6	15.3
423 Crow rd	15.0	14.7	15.6	15.3
437 Crow Rd	15.6	15.3	16.6	16.3
154 Bashagray Av	15.9	15.6	17.2	16.9
121 Balshagray Av	14.9	14.6	15.3	15.0
139 Balshagray Av	15.2	14.9	15.9	15.6
151 Balshagray Av	15.4	15.0	16.1	15.8
157 Balshagray Av	15.8	15.4	16.9	16.6
20 Abbey Dr	15.4	15.1	16.2	15.9

Figure 3.18 Crow Rd at Balshagray Ave PM_{10} contours



3.2.6 Crow Rd at Southbrae Dr

Figure 3.19 Crow Rd at Southbrae Dr modelled streets and receptors

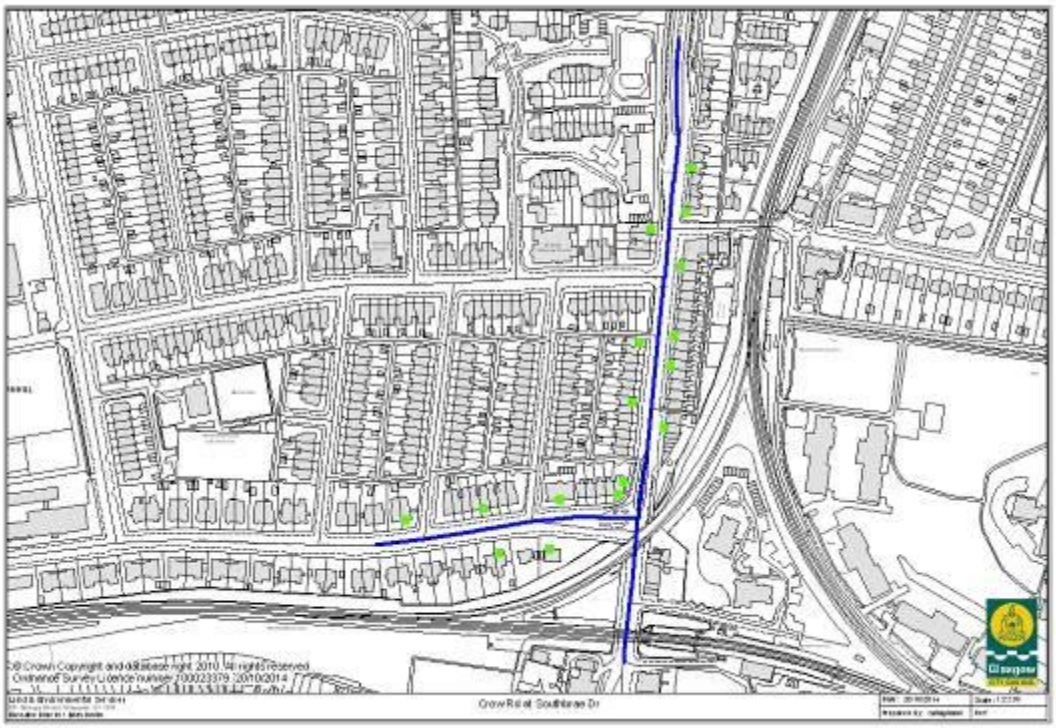
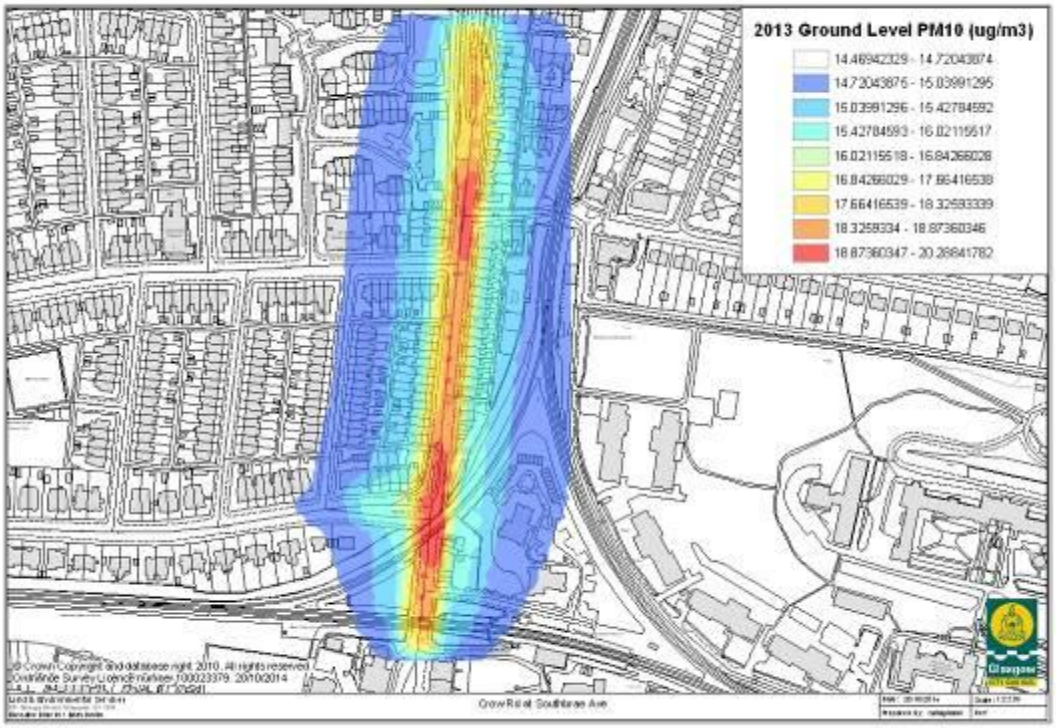


Table 3.9 Crow Rd at Southbrae Dr modelling results

Receptor Location	Modelled Annual Mean PM_{10} Concentration (µg/m^3)			
	Raw Modelled Output		Adjusted Model Output	
	2013	2015	2013	2015
34 Southbrae Dr	14.5	14.4	14.6	14.6
24 Southbrae Dr	14.6	14.5	14.8	14.9
12 Southbrae Dr	15.0	14.7	15.5	15.3
2 Southbrae Dr	15.9	15.5	17.1	16.8
17 Southbrae Dr	14.8	14.5	15.1	14.9
21 Southbrae Dr	14.6	14.4	14.8	14.7
2 Southbrae Dr (Crow Rd side)	16.1	15.7	17.5	17.1
546 Crow Rd	15.5	15.2	16.5	16.2
555 Crow Rd	15.8	15.5	17.0	16.8
569 Crow Rd	15.9	15.6	17.1	16.8
562 Crow Rd	16.3	16.0	17.9	17.6
584 Crow Rd	16.3	16.0	17.8	17.5
612 Crow Rd	16.3	16.0	18.0	17.6
136 Whittinghame	16.4	16.1	18.1	17.8
636 Crow Rd	16.3	16.0	17.9	17.6
575 Crow Rd	16.0	15.7	17.3	17.0

Figure 3.20 Crow Rd at Southbrae Dr PM_{10} contours



3.2.7 Dumbarton Rd at Byres Rd

Figure 3.21 Dumbarton Rd at Byres Rd modelled streets and receptors

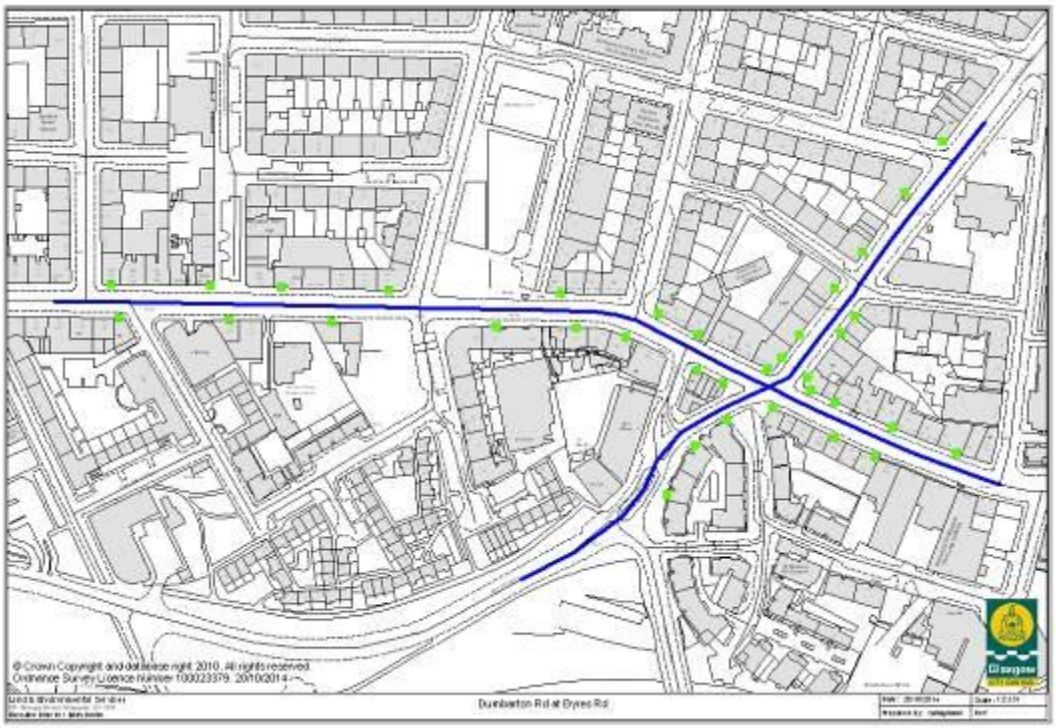
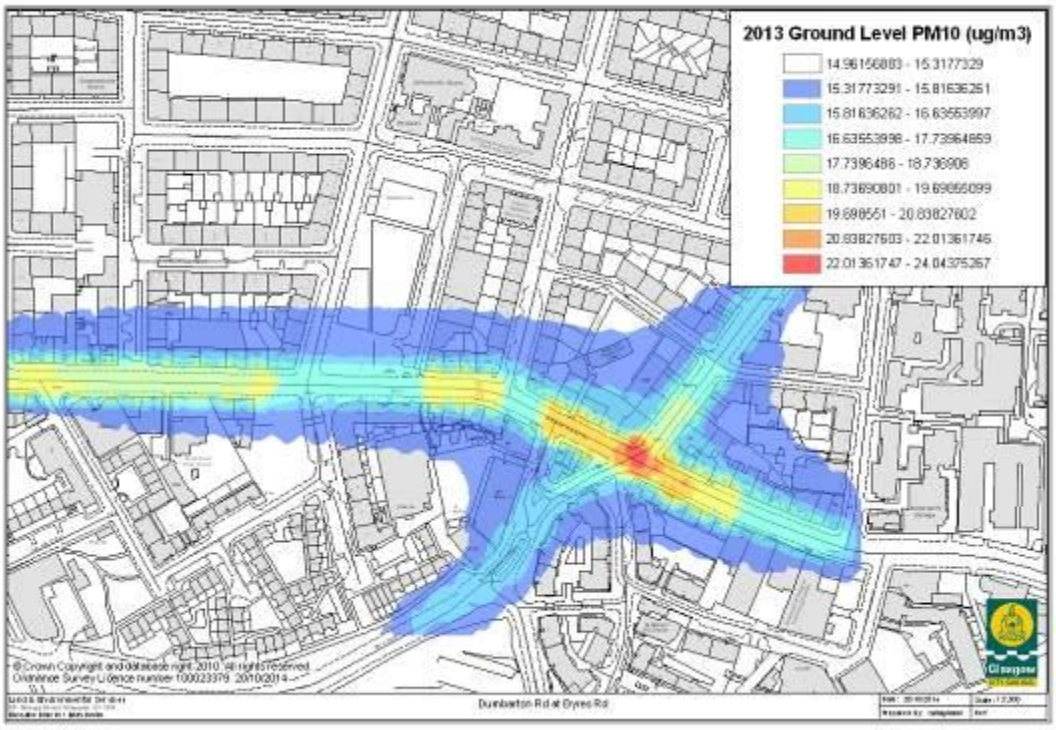


Table 3.10 Dumbarton Rd at Byres Rd modelling results

Receptor Location	Modelled Annual Mean PM_{10} Concentration (µg/m^3)			
	Raw Modelled Output		Adjusted Model Output	
	2013	2015	2013	2015
3 Byres Rd	15.9	15.4	16.7	16.2
9 Byres Rd	15.7	15.2	16.3	15.8
29 Byres Rd	15.5	15.0	15.9	15.4
37 Byres Rd	15.4	14.9	15.8	15.3
61 Byres Rd	15.3	14.9	15.6	15.2
71 Byres Rd	15.3	14.8	15.5	15.1
22 Byres Rd	15.5	15.0	15.9	15.5
14 Byres Rd	15.5	15.1	16.0	15.6
2 Byres Rd	15.9	15.5	16.7	16.3
142 Dumbarton Rd	16.0	15.5	16.8	16.4
126 Dumbarton Rd	15.9	15.4	16.7	16.2
108 Dumbarton Rd	15.7	15.3	16.4	16.0
86 Dumbarton Rd	15.6	15.2	16.2	15.8
109 Dumbarton Rd	15.5	15.1	16.0	15.7
127 Dumbarton Rd	15.6	15.2	16.1	15.8
141 Dumbarton Rd	15.8	15.4	16.5	16.1
3 Cooperswell St	15.6	15.2	16.1	15.8
5 Cooperswell St	15.7	15.3	16.3	16.0
7 Cooperswell St	15.5	15.1	15.9	15.6
143 Dumbarton Rd	15.9	15.4	16.6	16.2
157 Dumbarton Rd	15.7	15.3	16.4	16.0
167 Dumbarton Rd	15.6	15.2	16.2	15.8
181 Dumbarton Rd	15.6	15.2	16.1	15.7
205 Dumbarton Rd	15.5	15.1	16.0	15.7

Receptor Location	Modelled Annual Mean PM_{10} Concentration ($\mu g/m^3$)			
	Raw Modelled Output		Adjusted Model Output	
	2013	2015	2013	2015
257 Dumbarton Rd	15.5	15.1	15.9	15.6
285 Dumbarton Rd	15.5	15.1	15.9	15.6
309 Dumbarton Rd	15.4	15.0	15.8	15.4
310 Dumbarton Rd	15.5	15.1	16.0	15.6
280 Dumbarton Rd	15.6	15.2	16.2	15.7
262 Dumbarton Rd	15.6	15.2	16.2	15.8
238 Dumbarton Rd	15.7	15.2	16.3	15.8
202 Dumbarton Rd	15.7	15.3	16.3	15.9
182 Dumbarton Rd	15.8	15.3	16.5	16.0
168 Dumbarton Rd	15.9	15.4	16.6	16.1
148 Dumbarton Rd	16.1	15.6	17.1	16.6

Figure 3.22 Dumbarton Rd at Byres Rd PM_{10} contours



3.2.8 Dumbarton Rd at Rosevale St

Figure 3.23 Dumbarton Rd at Rosevale St modelled streets and receptors

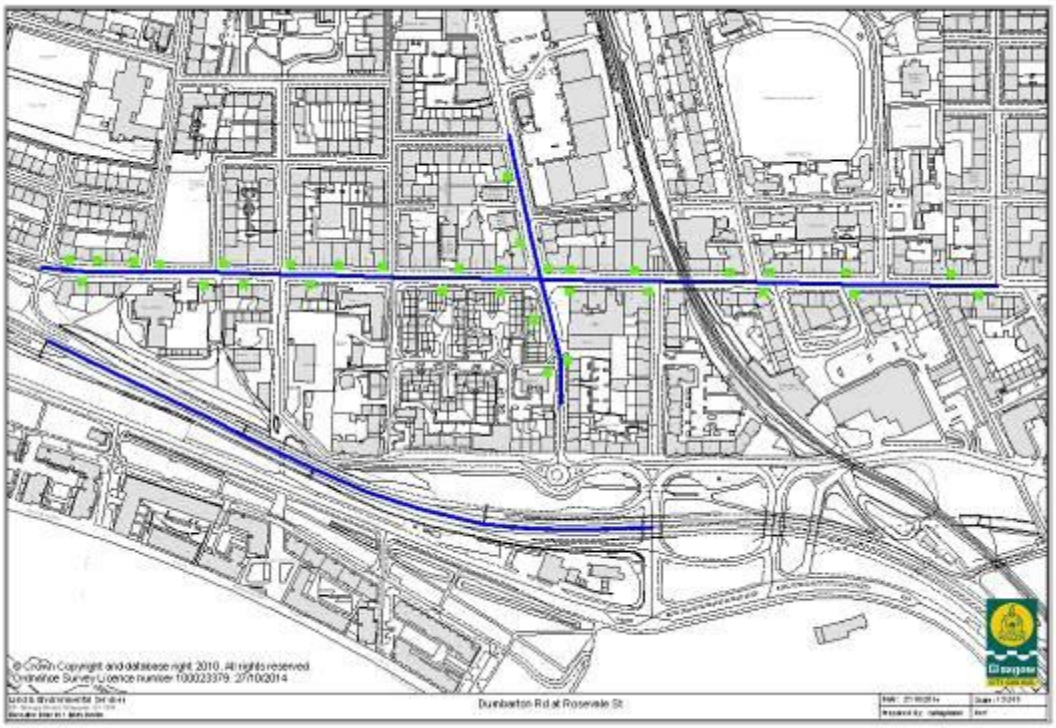
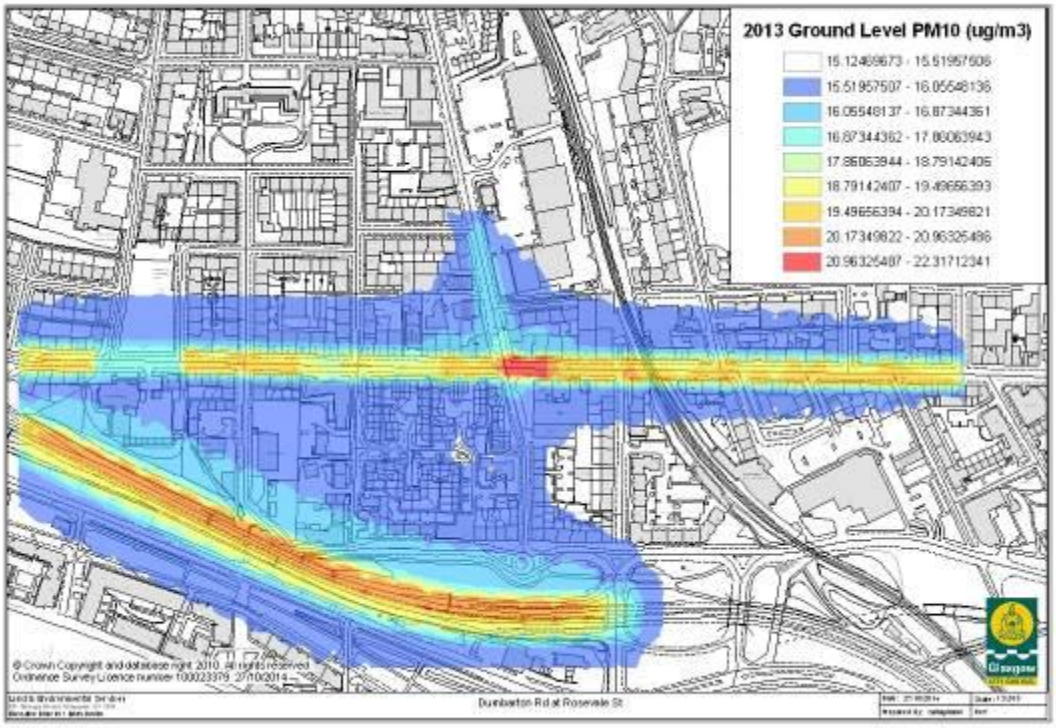


Table 3.11 Dumbarton Rd at Rosevale St modelling results

Receptor Location	Modelled Annual Mean PM_{10} Concentration (µg/m^3)			
	Raw Modelled Output		Adjusted Model Output	
	2013	2015	2013	2015
AQ Station	17.0	16.4	18.6	17.9
676 Dumbarton Rd	16.4	15.9	17.6	17.0
664 Dumbarton Rd	16.6	16.1	17.8	17.2
656 Dumbarton Rd	16.0	15.6	16.8	16.3
610 Dumbarton Rd	16.0	15.6	16.9	16.4
594 Dumbarton Rd	16.0	15.6	16.8	16.3
572 Dumbarton Rd	16.0	15.6	16.8	16.3
550 Dumbarton Rd	16.0	15.5	16.8	16.3
512 Dumbarton Rd	16.0	15.6	16.8	16.3
486 Dumbarton Rd	16.1	15.6	17.0	16.5
466 Dumbarton Rd	16.2	15.7	17.1	16.6
434 Dumbarton Rd	16.0	15.6	16.9	16.4
394 Dumbarton Rd	16.0	15.5	16.8	16.3
386 Dumbarton Rd	16.0	15.5	16.7	16.2
362 Dumbarton Rd	15.9	15.5	16.6	16.1
332 Dumbarton Rd	15.8	15.4	16.5	16.0
329 Dumbarton Rd	15.5	15.2	15.9	15.6
381 Dumbarton Rd	15.7	15.3	16.3	15.9
411 Dumbarton Rd	15.8	15.4	16.4	16.0
449 Dumbarton Rd	15.8	15.5	16.5	16.1
483 Dumbarton Rd	15.9	15.5	16.7	16.3
501 Dumbarton Rd	16.2	15.8	17.1	16.8
521 Dumbarton Rd	16.1	15.7	16.9	16.6
569 Dumbarton Rd	15.9	15.5	16.5	16.2

Receptor Location	Modelled Annual Mean PM_{10} Concentration ($\mu g/m^3$)			
	Raw Modelled Output		Adjusted Model Output	
	2013	2015	2013	2015
593 Dumbarton Rd	15.9	15.5	16.6	16.2
603 Dumbarton Rd	16.2	15.8	17.2	16.8
635 Dumbarton Rd	16.3	15.9	17.3	17.0
13 Crow Rd	16.2	15.7	17.1	16.6
35 Crow Rd	15.8	15.4	16.5	16.0
472 Dumbarton Rd	16.3	15.8	17.3	16.8
16 Rosevale St	15.7	15.3	16.2	15.8
Childrens Home	15.6	15.2	16.0	15.6
17 Rosevale St	15.6	15.2	16.1	15.7

Figure 3.24 Dumbarton Rd at Rosevale St PM_{10} contours



3.2.9 Great Western Rd at Bank St

Figure 3.25 Great Western Rd at Bank St modelled streets and receptors

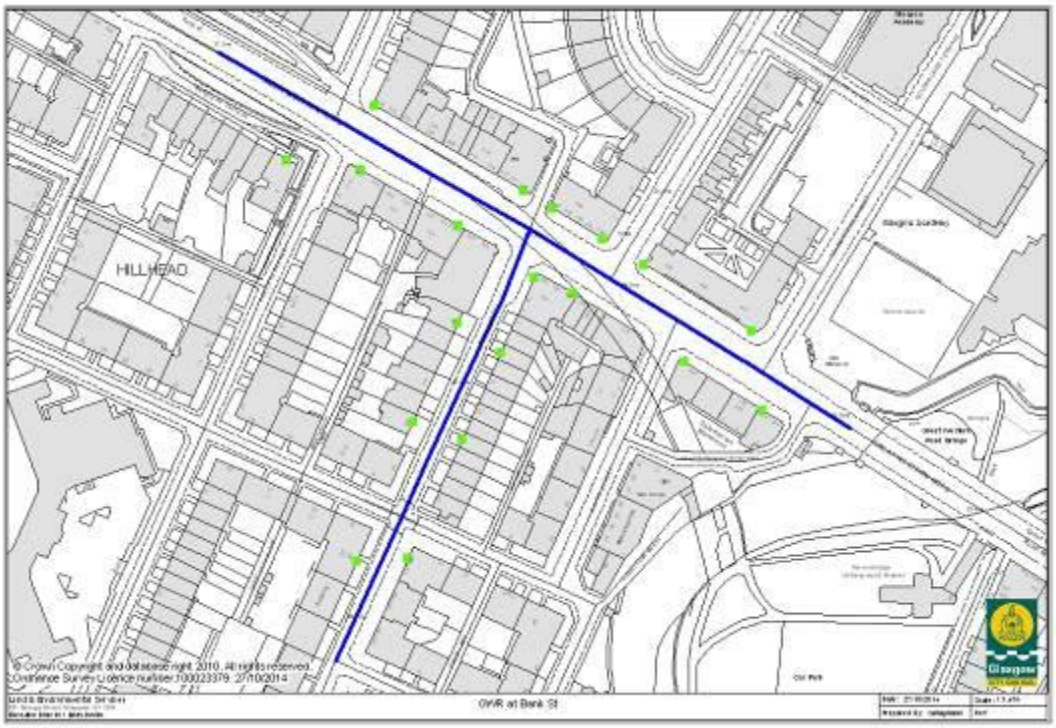
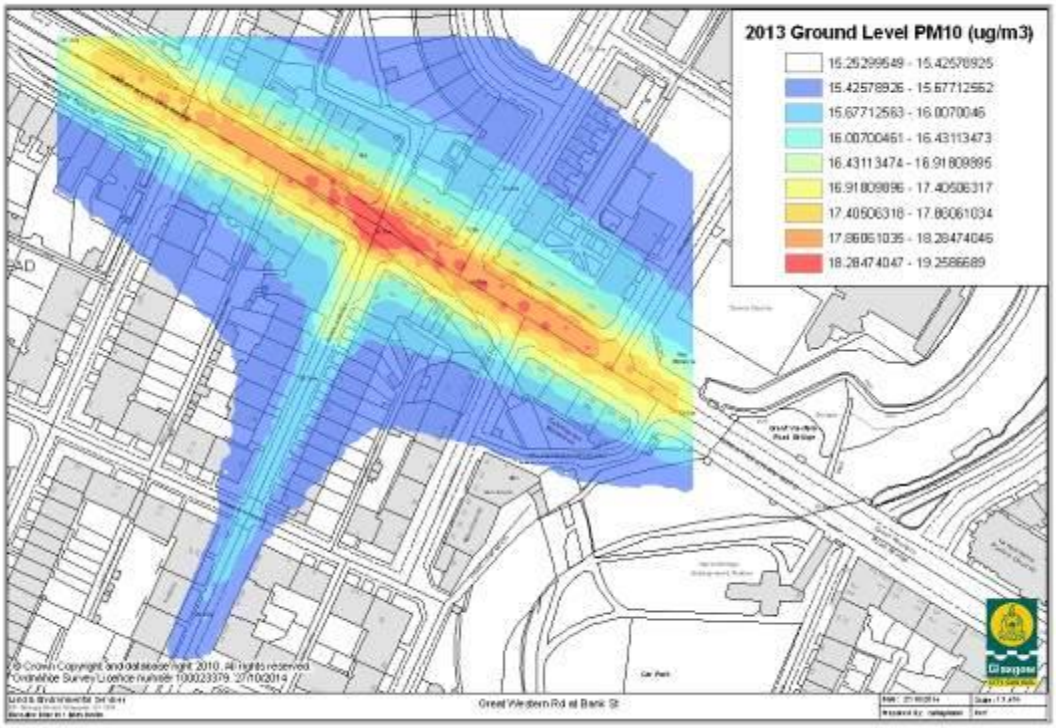


Table 3.12 Great Western Rd at Bank St modelling results

Receptor Location	Modelled Annual Mean PM_{10} Concentration (µg/m^3)			
	Raw Modelled Output		Adjusted Model Output	
	2013	2015	2013	2015
22 Bank St	15.4	15.0	15.6	15.2
29 Bank St	15.4	15.0	15.6	15.2
16 Bank St	15.5	15.0	15.7	15.3
19 Bank St	15.5	15.1	15.7	15.4
6 Bank St	15.6	15.2	16.0	15.6
7 Bank St	15.7	15.3	16.0	15.7
1a Bank St	16.0	15.6	16.7	16.3
517 GWR	15.9	15.5	16.4	16.1
535 GWR	15.8	15.4	16.3	16.0
1 Belgrave Ter	15.7	15.3	16.1	15.8
536 GWR	16.0	15.5	16.6	16.2
508 GWR	16.1	15.6	16.9	16.4
498 GWR	16.1	15.7	16.9	16.4
488 GWR	16.1	15.7	16.9	16.4
486 GWR	16.2	15.7	17.1	16.6
482 GWR	16.0	15.6	16.7	16.2
447 GWR	15.7	15.3	16.1	15.8
549 GWR	15.8	15.4	16.3	16.0
491 GWR	15.9	15.5	16.4	16.1

Figure 3.26 Great Western Rd at Bank St PM_{10} contours



3.2.10 Great Western Rd at Park Rd

Figure 3.27 Great Western Rd at Park Rd modelled streets and receptors

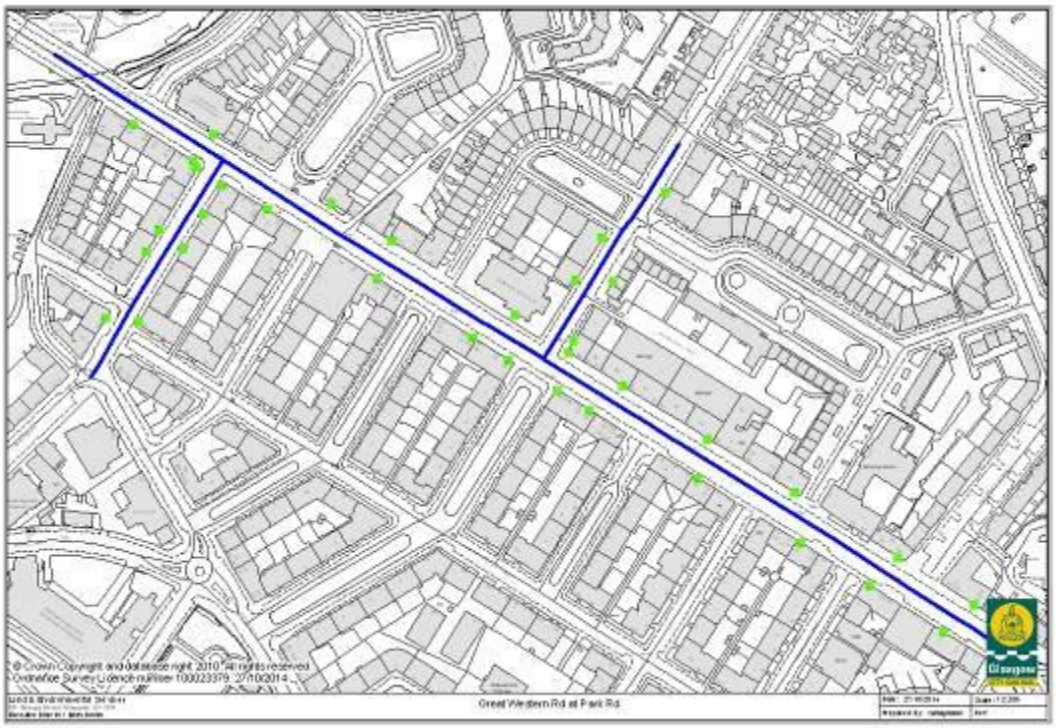
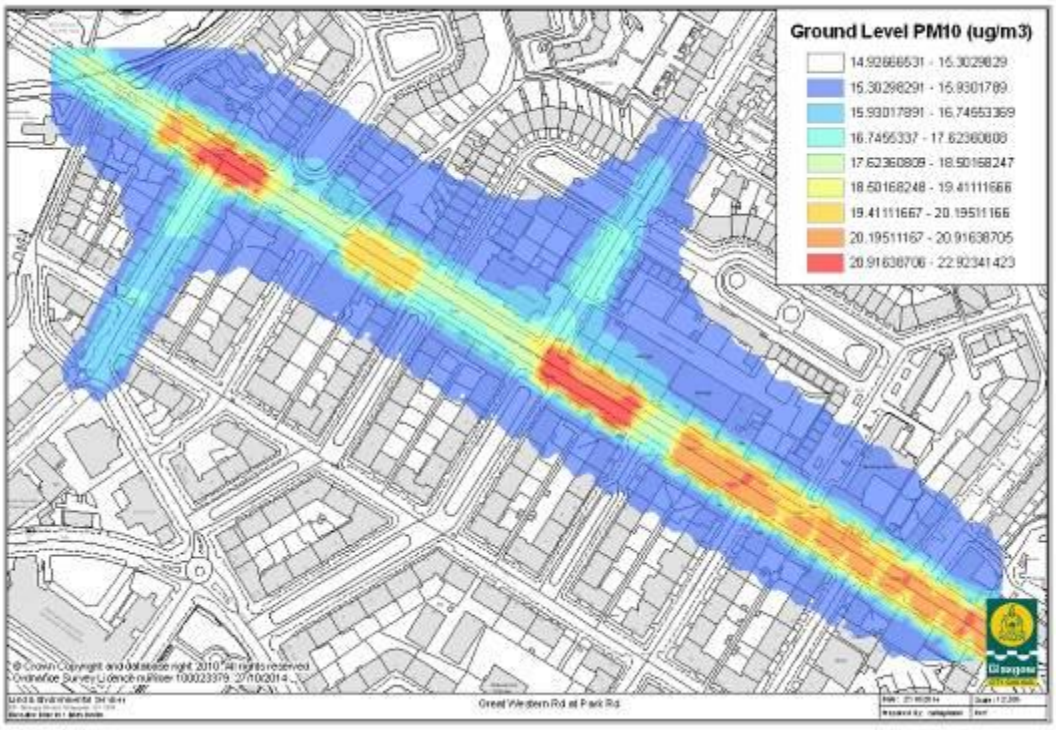


Table 3.13 Great Western Rd at Park Rd modelling results

Receptor Location	Modelled Annual Mean PM_{10} Concentration (µg/m^3)			
	Raw Modelled Output		Adjusted Model Output	
	2013	2015	2013	2015
7 Park Rd	15.7	15.3	16.4	16.0
19 Park Rd	15.8	15.4	16.6	16.2
29 Park Rd	15.6	15.2	16.2	15.8
326 West Princes St	15.5	15.0	15.9	15.5
62 Park Rd	15.2	14.7	15.4	14.9
38 Park Rd	15.5	15.0	16.0	15.5
22 Park Rd	15.3	14.9	15.7	15.2
409 GWR	15.7	15.3	16.5	16.0
411 GWR	15.8	15.3	16.5	16.1
431 GWR	15.6	15.1	16.2	15.8
386 GWR	16.4	15.8	17.6	17.0
372 GWR	15.8	15.3	16.6	16.1
St Mary Cathedral	16.5	16.0	17.9	17.3
298 GWR	16.1	15.6	17.1	16.6
280 GWR	16.0	15.5	16.9	16.4
240 GWR	15.9	15.4	16.7	16.3
208 GWR	15.9	15.4	16.7	16.2
156 GWR	15.8	15.3	16.6	16.1
122 GWR	15.7	15.2	16.3	15.8
93 GWR	15.5	15.1	16.0	15.6
153 GWR	15.6	15.2	16.1	15.8
157 GWR	15.6	15.2	16.2	15.8
199 GWR	15.6	15.2	16.2	15.9

Receptor Location	Modelled Annual Mean PM_{10} Concentration ($\mu g/m^3$)			
	Raw Modelled Output		Adjusted Model Output	
	2013	2015	2013	2015
257 GWR	15.7	15.3	16.4	16.0
273 GWR	15.7	15.3	16.4	16.0
285 GWR	15.7	15.3	16.4	16.0
303 GWR	15.7	15.3	16.3	16.0
339 GWR	15.6	15.2	16.2	15.9
387 GWR	15.7	15.2	16.3	15.9
2 Napiershall St	16.5	16.0	17.9	17.3
10 Napiershall St	15.7	15.2	16.4	15.9
20 Napiershall St	15.6	15.1	16.1	15.6
15 Napiershall St	15.8	15.3	16.6	16.0
5 Napiershall St	15.9	15.4	16.8	16.2

Figure 3.28 Great Western Rd at Park Rd PM_{10} contours



3.2.11 Hyndland Rd at Clarence Dr

Figure 3.29 Hyndland Rd at Clarence Dr modelled streets and receptors

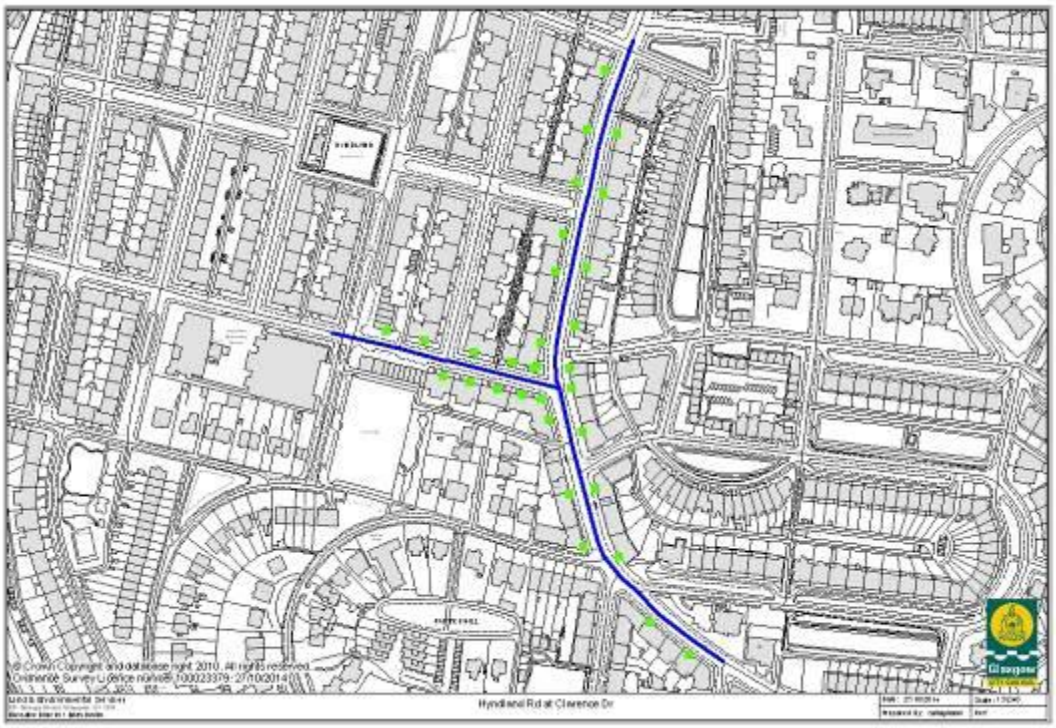
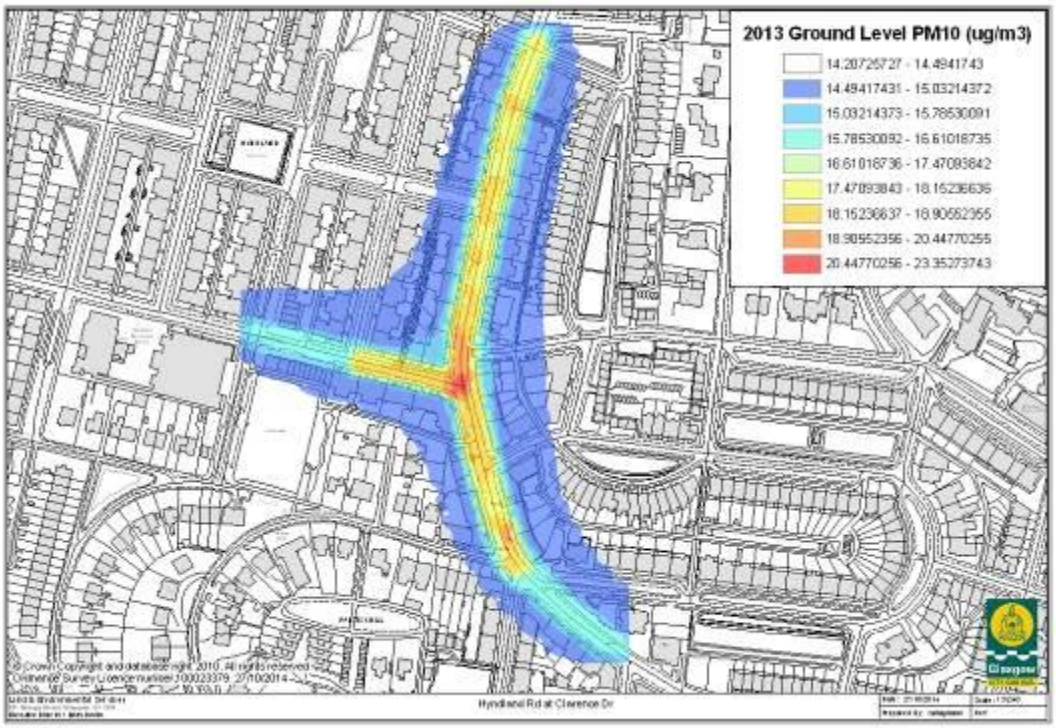


Table 3.14 Hyndland Rd at Clarence Dr modelling results

Receptor Location	Modelled Annual Mean PM_{10} Concentration (µg/m^3)			
	Raw Modelled Output		Adjusted Model Output	
	2013	2015	2013	2015
20 Clarence Dr	14.7	14.3	15.1	14.7
16 Clarence Dr	15.1	14.6	15.9	15.4
8 Clarence Dr	15.2	14.7	16.1	15.5
4 Clarence Dr	15.4	14.9	16.4	15.8
2 Clarence Dr	15.7	15.1	17.0	16.3
1 Clarence Dr	15.3	14.8	16.2	15.6
3 Clarence Dr	15.0	14.5	15.7	15.2
9 Clarence Dr	14.9	14.4	15.5	15.0
13 Clarence Dr	14.9	14.4	15.4	14.9
17 Clarence Dr	14.8	14.4	15.4	14.9
152a Hyndland Rd	15.6	15.1	16.9	16.2
150 Hyndland Rd	15.3	14.8	16.2	15.6
136 Hyndland Rd	15.1	14.6	15.9	15.3
130 Hyndland Rd	15.1	14.6	15.8	15.3
98 Hyndland Rd	15.1	14.6	15.9	15.3
92 Hyndland Rd	15.0	14.6	15.8	15.2
84 Hyndland Rd	15.0	14.5	15.6	15.1
83 Hyndland Rd	15.1	14.6	15.8	15.3
95 Hyndland Rd	15.1	14.6	15.9	15.4
111 Hyndland Rd	15.1	14.6	15.9	15.4
125 Hyndland Rd	15.2	14.7	16.1	15.5
131 Hyndland Rd	15.0	14.5	15.7	15.1
133 Hyndland Rd	15.0	14.5	15.7	15.1
151 Hyndland Rd	14.8	14.4	15.4	14.9

Receptor Location	Modelled Annual Mean PM_{10} Concentration ($\mu g/m^3$)			
	Raw Modelled Output		Adjusted Model Output	
	2013	2015	2013	2015
163 Hyndland Rd	14.8	14.3	15.3	14.8
195 Hyndland Rd	14.8	14.3	15.3	14.8
194 Hyndland Rd	14.8	14.3	15.3	14.8
198 Hyndland Rd	15.0	14.5	15.6	15.1
176 Hyndland Rd	14.9	14.4	15.5	15.0
170 Hyndland Rd	15.0	14.5	15.7	15.2
156 Hyndland Rd	15.1	14.6	15.8	15.3

Figure 3.30 Hyndland Rd at Clarence Dr Rd PM_{10} contours



3.2.12 London Rd at Abercromby St

Figure 3.31 London Rd at Abercromby St modelled streets and receptors

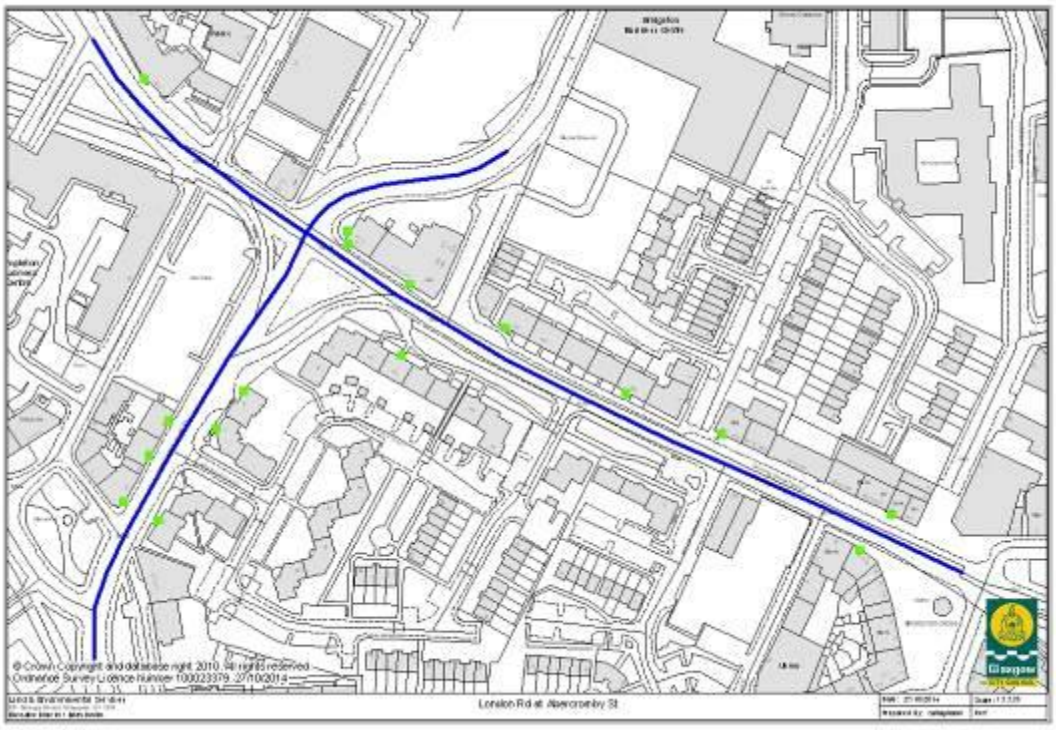
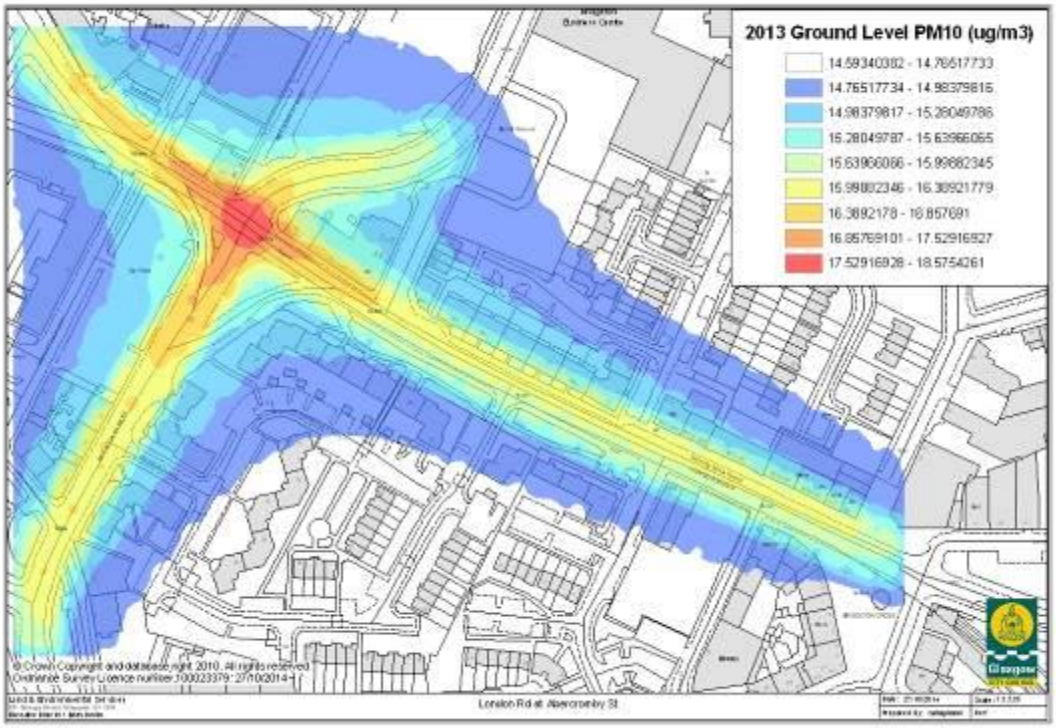


Table 3.15 London Rd at Abercromby St modelling results

Receptor Location	Modelled Annual Mean PM_{10} Concentration (µg/m^3)			
	Raw Modelled Output		Adjusted Model Output	
	2013	2015	2013	2015
108 Arcadia St	15.7	15.2	16.6	16.1
100 Arcadia St	15.7	15.2	16.7	16.2
94 Arcadia St	15.7	15.2	16.6	16.1
69 Arcadia St	15.4	15.0	16.1	15.7
51 Arcadia St	15.3	14.9	16.0	15.6
45 Arcadia St	15.3	14.9	15.9	15.5
423 London Rd	15.6	15.1	16.4	15.9
AQ Station	16.0	15.5	17.3	16.8
501 London Rd	15.5	15.0	16.2	15.8
515 London Rd	15.3	14.8	15.9	15.4
528 London Rd	15.0	14.6	15.4	15.0
521 London Rd	15.4	15.0	16.1	15.7
543 London Rd	15.4	15.0	16.2	15.7
577 London Rd	15.0	14.6	15.4	15.0
617 London Rd	15.0	14.5	15.3	14.9
32 Bridgeton Cross	14.9	14.5	15.1	14.8

Figure 3.32 London Rd at Abercromby St PM_{10} contours



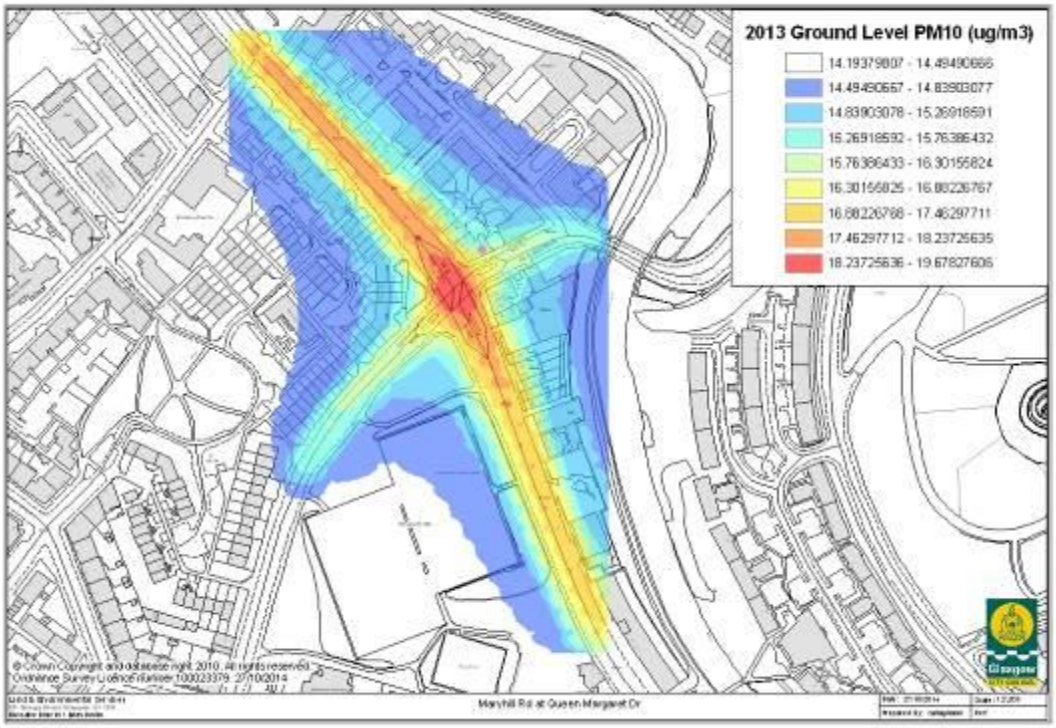
3.2.13 Maryhill Rd at Queen Margaret Dr

Figure 3.33 Maryhill Rd at Queen Margaret Dr modelled streets and receptors

Table 3.16 Maryhill Rd at Queen Margaret Dr modelling results

Receptor Location	Modelled Annual Mean PM_{10} Concentration (µg/m^3)			
	Raw Modelled Output		Adjusted Model Output	
	2013	2015	2013	2015
37 QMD	14.9	14.5	15.5	15.1
27 QMD	15.0	14.6	15.7	15.3
25 QMD	15.1	14.7	15.9	15.4
1001 Maryhill Rd	15.2	14.8	16.1	15.8
15 Oran Gate	15.2	14.8	16.0	15.7
1019 Maryhill Rd	15.2	14.9	16.2	15.9
1037 Maryhill Rd	15.1	14.7	15.9	15.6
1049 Maryhill Rd	14.8	14.4	15.3	14.9
1048 Maryhill Rd	15.8	15.3	17.2	16.7
1028 Maryhill Rd	15.2	14.8	16.0	15.6
1008 Maryhill Rd	16.3	15.7	18.1	17.4
998 Maryhill Rd	16.3	15.7	18.0	17.4
990 Maryhill Rd	16.2	15.6	17.9	17.2
978 Maryhill Rd	15.5	15.0	16.6	16.1
5 Bilsland Dr	15.3	14.8	16.2	15.7
5 Leyden St	15.1	14.7	15.9	15.4
974 Maryhill Rd	15.3	14.9	16.3	15.8
16 Bilsland Dr	15.2	14.8	16.2	15.8
964 Maryhill Rd	15.3	14.9	16.3	15.9
948 Maryhill Rd	16.0	15.6	17.6	17.1
932 Maryhill Rd	15.9	15.5	17.4	16.9
900 Maryhill Rd	15.7	15.3	17.1	16.7

Figure 3.34 Maryhill Rd at Queen Margaret Dr PM_{10} contours



3.2.14 Maryhill Rd at Ruchill St

Figure 3.35 Maryhill Rd at Ruchill St modelled streets and receptors

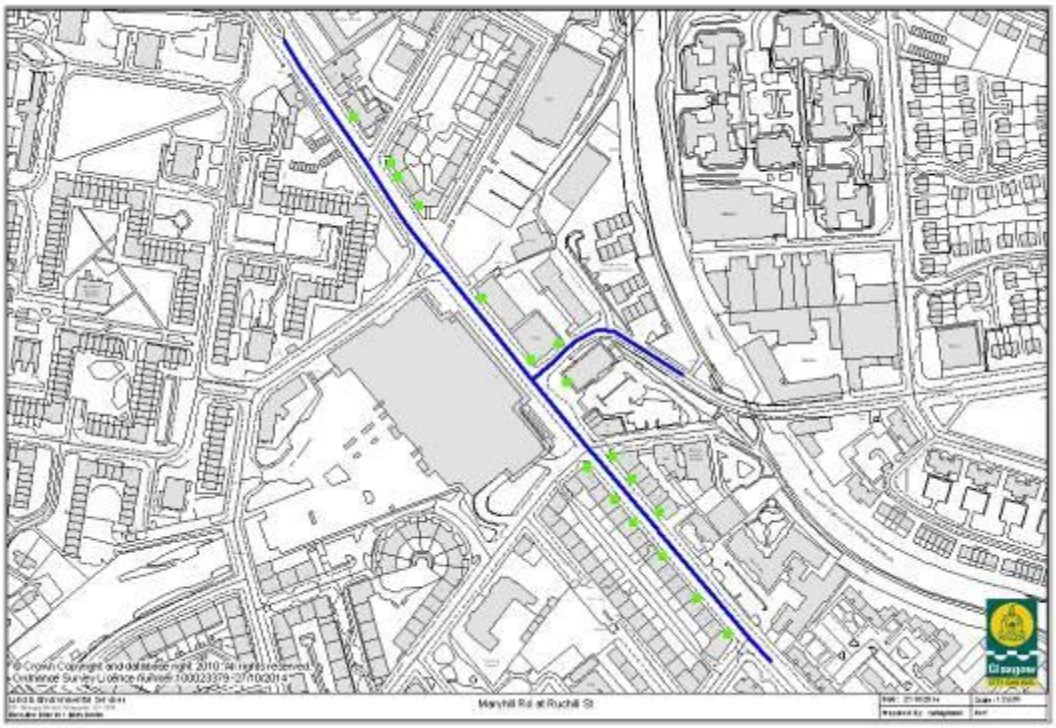
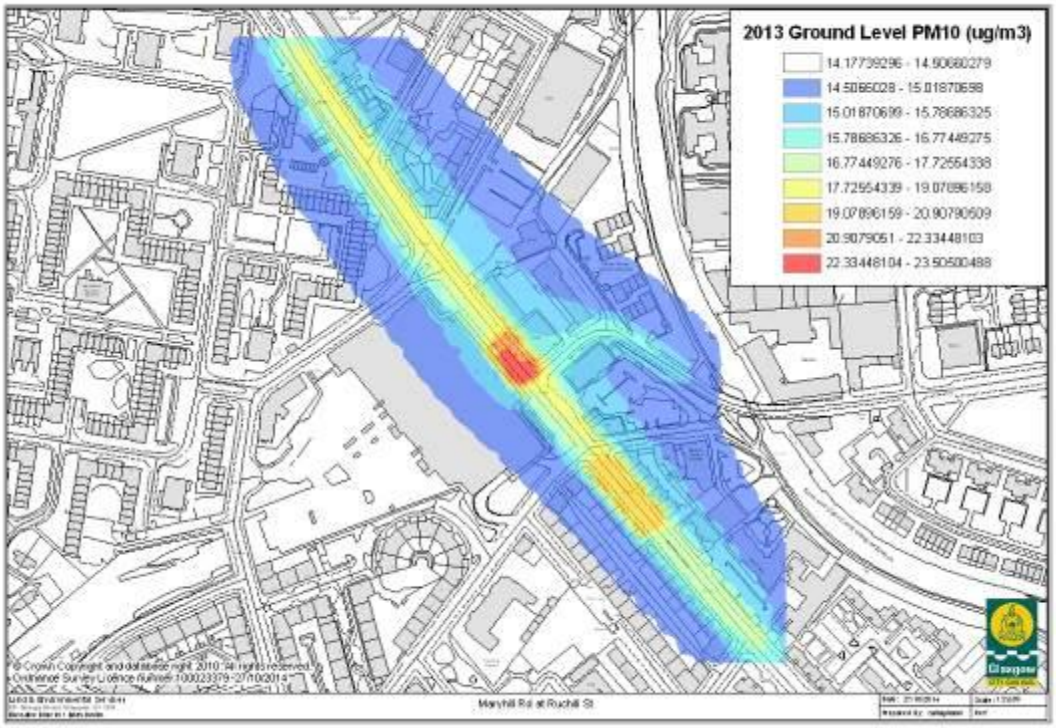


Table 3.17 Maryhill Rd at Ruchill St modelling results

Receptor Location	Modelled Annual Mean PM_{10} Concentration (µg/m^3)			
	Raw Modelled Output		Adjusted Model Output	
	2013	2015	2013	2015
1 Shawpark St	16.2	15.7	17.9	17.4
6 Shawpark St	15.9	15.4	17.3	16.8
1396 Maryhill Rd	16.0	15.5	17.5	17.0
9 Craigmont Dr	15.9	15.5	17.4	16.9
Maryhill Rd	15.7	15.3	17.0	16.6
Maryhill Rd	15.2	14.8	16.0	15.6
Maryhill Rd	15.1	14.8	16.0	15.6
Maryhill Rd	15.1	14.7	15.9	15.6
Maryhill Rd	14.7	14.4	15.2	15.0
Maryhill Rd	14.8	14.5	15.4	15.1
Maryhill Rd	14.9	14.6	15.5	15.2
Maryhill Rd	14.9	14.6	15.5	15.3
Maryhill Rd	14.9	14.6	15.6	15.3
Maryhill Rd	14.9	14.6	15.6	15.4
7 Ruchill St	15.2	14.7	16.0	15.6

Figure 3.36 Maryhill Rd at Ruchill St PM_{10}contours



3.2.15 Parkhead Cross

Figure 3.37 Parkhead Cross modelled streets and receptors

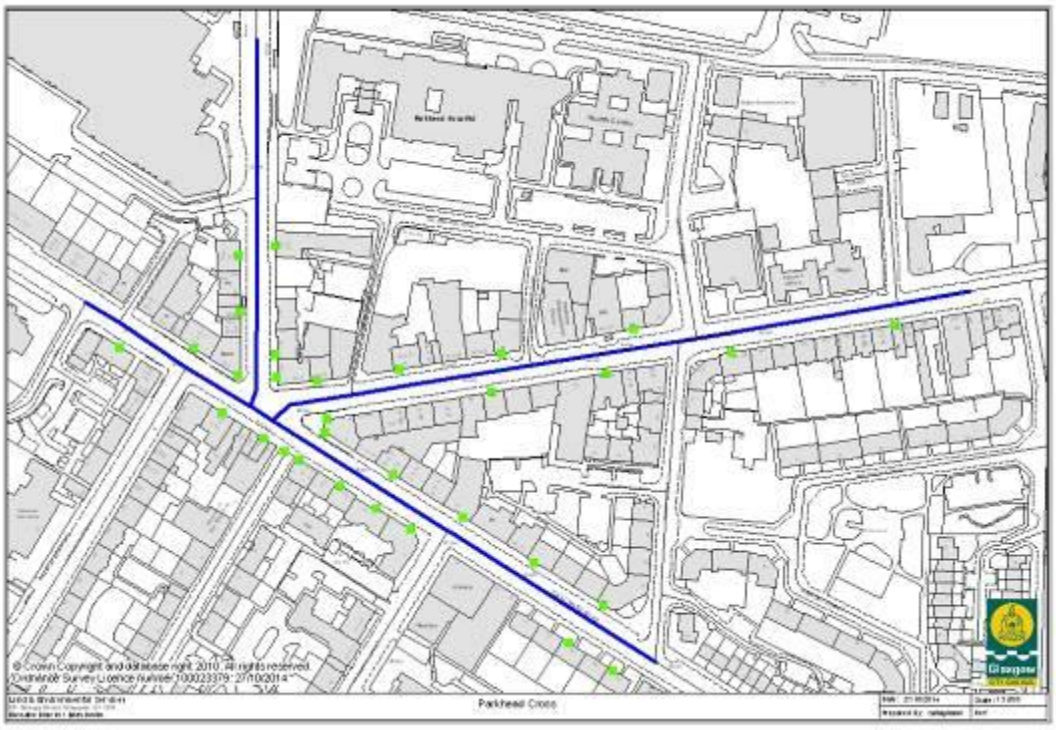
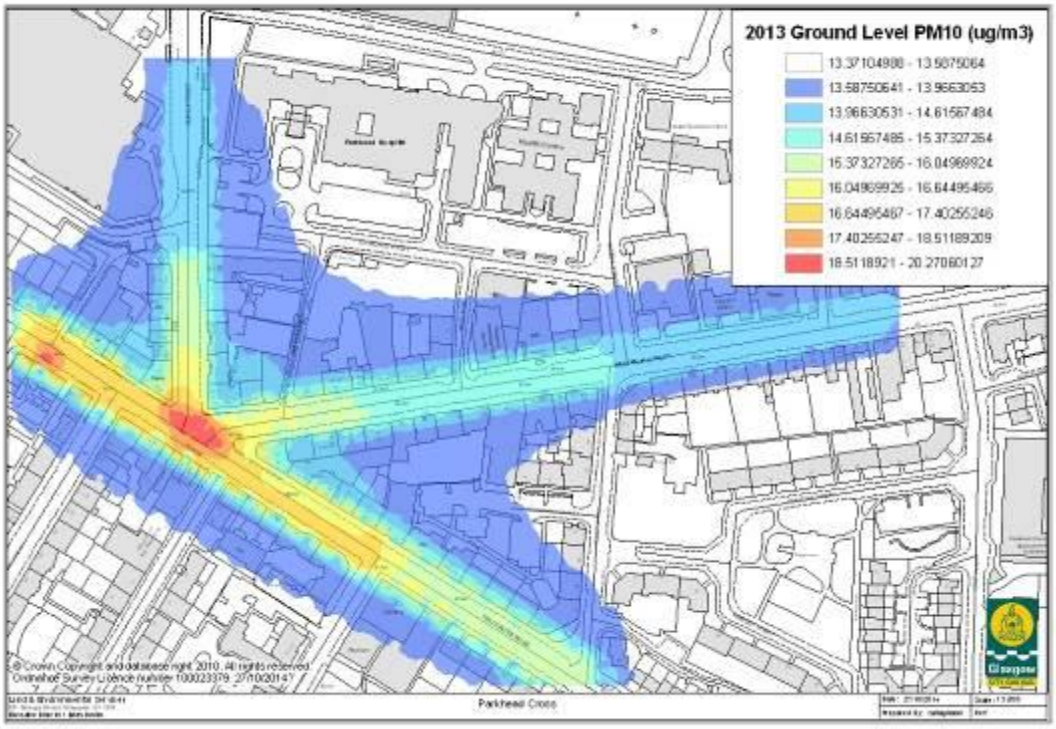


Table 3.18 Parkhead Cross modelling results

Receptor Location	Modelled Annual Mean PM_{10} Concentration (µg/m^3)			
	Raw Modelled Output		Adjusted Model Output	
	2013	2015	2013	2015
AQ Station	14.2	13.9	15.0	14.8
1452 Gallowgate	13.9	13.6	14.3	14.0
1438 Gallowgate	13.9	13.6	14.4	14.0
1425 Gallowgate	14.0	13.7	14.6	14.2
1435 Gallowgate	14.2	13.8	14.9	14.5
1348 Duke St	13.9	13.5	14.3	13.9
1330 Duke St	13.7	13.4	14.1	13.7
1321 Duke St	13.8	13.4	14.1	13.7
1351 Duke St	14.5	14.0	15.4	14.9
1361 Duke St	14.1	13.7	14.8	14.4
9 Westmuir St	14.1	13.7	14.7	14.2
33 Westmuir St	13.9	13.5	14.4	13.9
69 Westmuir St	13.8	13.4	14.1	13.7
101 Westmuir St	13.7	13.3	14.0	13.6
174 Westmuir St	13.5	13.2	13.7	13.4
120 Westmuir St	13.6	13.3	13.8	13.5
92 Westmuir St	13.6	13.3	13.9	13.6
52 Westmuir St	13.7	13.4	14.0	13.7
2 Westmuir St	14.1	13.7	14.7	14.3
1 Tollcross Rd	14.1	13.7	14.7	14.4
31 Tollcross Rd	14.0	13.6	14.5	14.2
49 Westmuir St	13.9	13.5	14.4	14.0
103 Westmuir St	14.3	13.9	15.1	14.7
109 Westmuir St	14.2	13.9	15.0	14.6

Receptor Location	Modelled Annual Mean PM_{10} Concentration ($\mu g/m^3$)			
	Raw Modelled Output		Adjusted Model Output	
	2013	2015	2013	2015
130 Westmuir St	13.7	13.4	13.9	13.7
110 Westmuir St	13.7	13.4	14.1	13.8
32 Westmuir St	14.2	13.9	14.8	14.6
30 Westmuir St	14.2	13.9	14.9	14.6
24 Westmuir St	13.8	13.5	14.2	14.0
10 Westmuir St	13.9	13.5	14.3	14.0

Figure 3.38 Parkhead Cross PM_{10} contours



3.2.16 Pollokshaws Rd at Calder St

Figure 3.39 Pollokshaws Rd at Calder St modelled streets and receptors

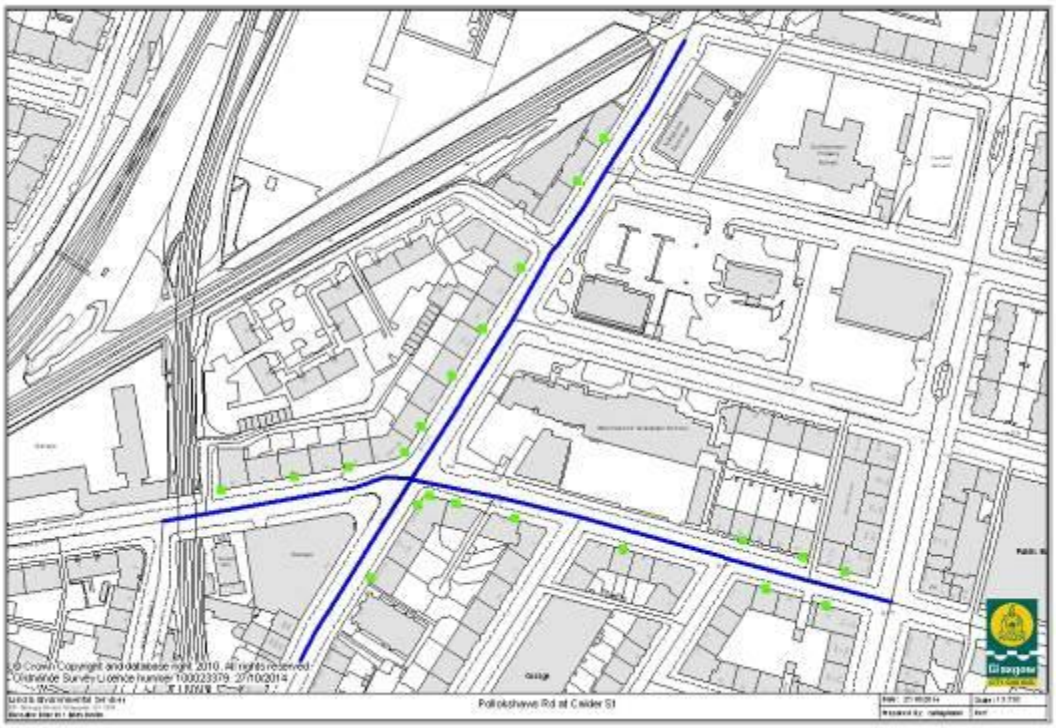
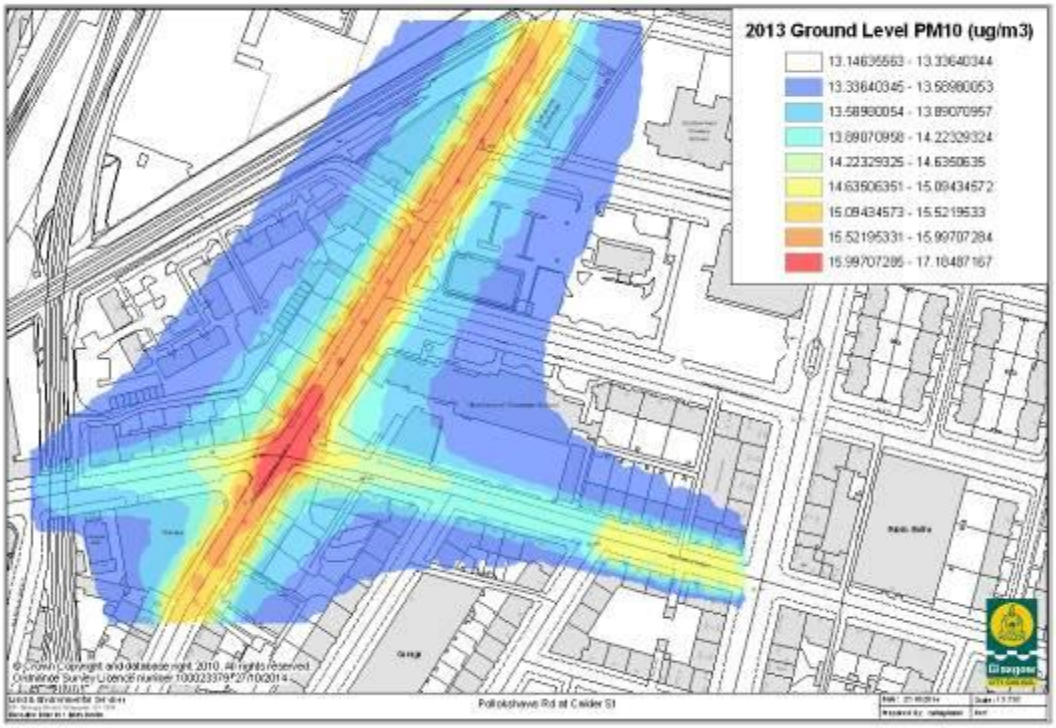


Table 3.19 Pollokshaws Rd at Calder St modelling results

Receptor Location	Modelled Annual Mean PM_{10} Concentration (µg/m^3)			
	Raw Modelled Output		Adjusted Model Output	
	2013	2015	2013	2015
583 Pollokshaws Rd	13.7	13.4	14.2	13.9
559 Pollokshaws Rd	13.9	13.6	14.6	14.3
630 Pollokshaws Rd	14.0	13.6	14.8	14.4
624 Pollokshaws Rd	14.8	14.3	16.2	15.7
608 Pollokshaws Rd	14.6	14.2	15.9	15.4
592 Pollokshaws Rd	14.6	14.2	15.8	15.3
570 Pollokshaws Rd	14.7	14.2	16.0	15.5
550 Pollokshaws Rd	13.8	13.4	14.4	14.0
540 Pollokshaws Rd	13.8	13.4	14.4	14.0
2 Calder St	13.9	13.6	14.6	14.3
6 Calder St	14.1	13.9	15.1	14.8
14 Calder St	13.8	13.5	14.3	14.1
34 Calder St	13.6	13.3	14.0	13.7
55 Calder St	13.6	13.3	14.1	13.7
62 Calder St	13.5	13.2	13.8	13.6
67 Calder St	13.6	13.3	14.0	13.7
81 Calder St	13.6	13.3	14.1	13.7
80 Calder St	13.4	13.2	13.7	13.5
10 Nithsdale St	14.0	13.6	14.8	14.4
26 Calder St	13.8	13.4	14.4	14.0
40 Calder St	13.6	13.3	14.0	13.7

Figure 3.40 Pollokshaws Rd at Calder St Rd PM_{10} contours



3.2.17 Pollokshaws Rd at Nithsdale St

Figure 3.41 Pollokshaws Rd at Nithsdale St modelled streets and receptors

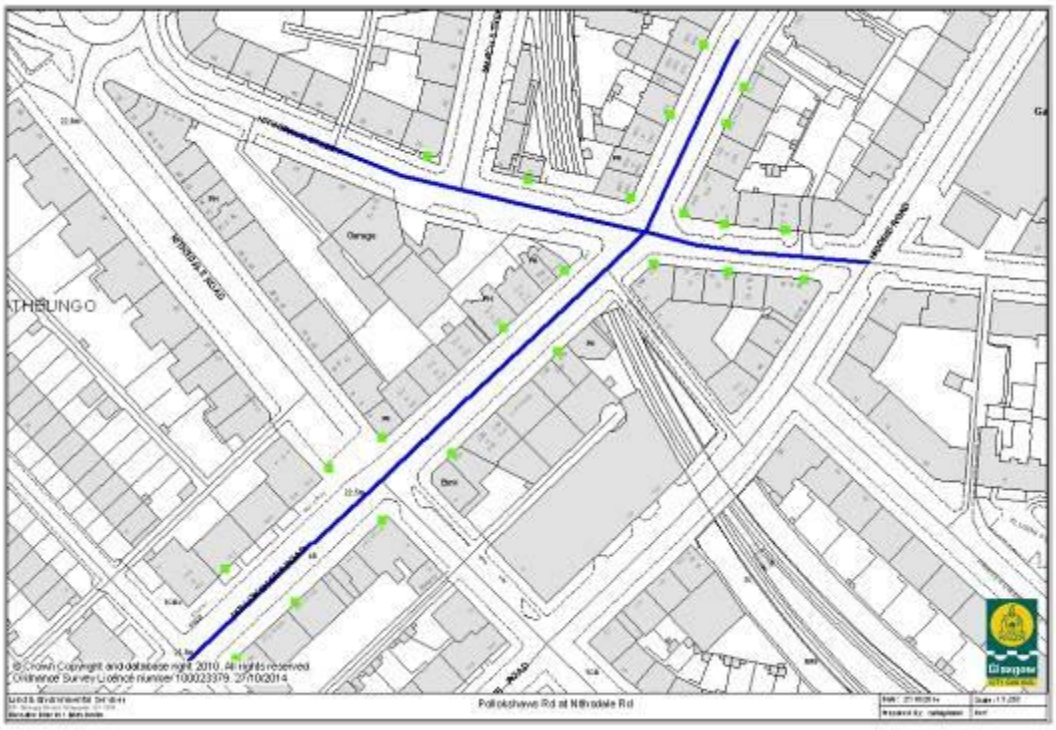
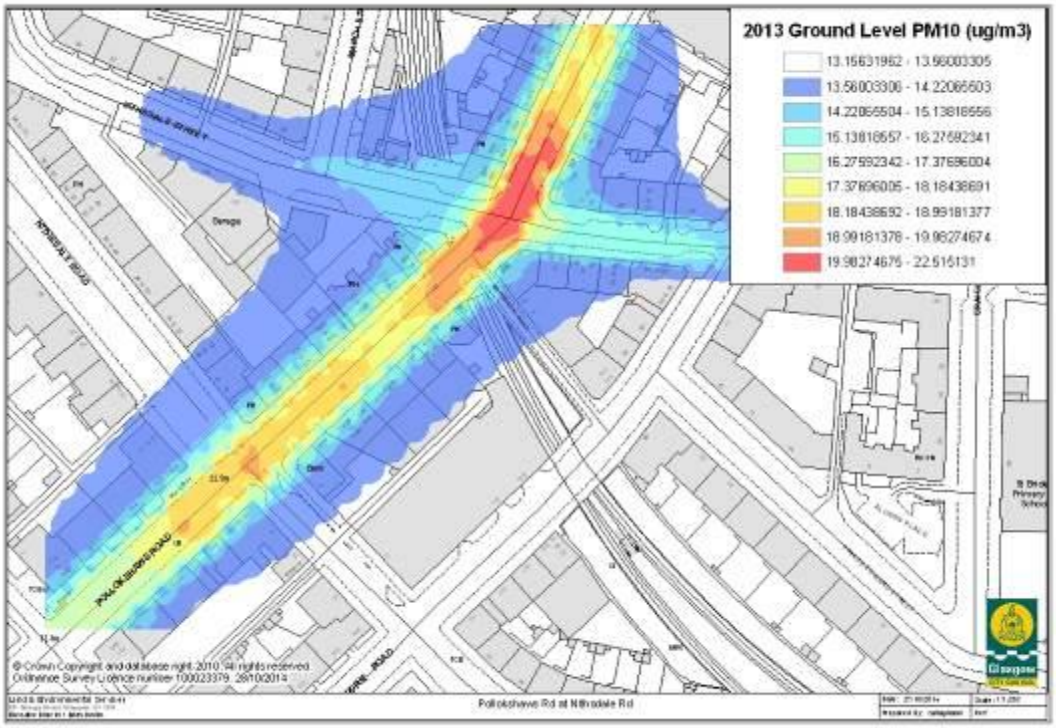


Table 3.20 Pollokshaws Rd at Nithsdale St modelling results

Receptor Location	Modelled Annual Mean PM_{10} Concentration (µg/m^3)			
	Raw Modelled Output		Adjusted Model Output	
	2013	2015	2013	2015
AQ Station	14.2	13.8	15.1	14.6
772 Pollokshaws Rd	14.0	13.7	14.8	14.4
750 Pollokshaws Rd	13.9	13.5	14.5	14.1
722 Pollokshaws Rd	13.9	13.5	14.6	14.2
704 Pollokshaws Rd	14.0	13.6	14.7	14.3
745 Pollokshaws Rd	13.4	13.1	13.7	13.4
727 Pollokshaws Rd	14.1	13.8	14.9	14.7
701 Pollokshaws Rd	13.7	13.4	14.2	13.9
689 Pollokshaws Rd	13.7	13.4	14.3	14.0
659 Pollokshaws Rd	13.7	13.4	14.3	14.0
643 Pollokshaws Rd	13.9	13.6	14.5	14.3
692 Pollokshaws Rd	14.1	13.7	14.9	14.4
676 Pollokshaws Rd	14.6	14.2	15.8	15.4
664 Pollokshaws Rd	14.2	13.9	15.1	14.8
613 Pollokshaws Rd	13.7	13.4	14.2	13.9
623 Pollokshaws Rd	13.8	13.5	14.4	14.1
639 Pollokshaws Rd	14.0	13.6	14.7	14.4
9 Allison St	13.8	13.4	14.4	14.0
21 Allison St	13.9	13.5	14.5	14.2
28 Allison St	13.4	13.1	13.7	13.5
18 Allison St	13.6	13.3	14.0	13.8
15 Nithsdale St	13.7	13.3	14.2	13.8
22 Nithsdale St	13.8	13.4	14.3	13.9

Figure 3.42 Pollokshaws Rd at Nithsdale St PM_{10} contours



3.2.18 Paisley Road West at Berryknowes Rd

Figure 3.43 Paisley Road West at Berryknowes Rd modelled streets and receptors

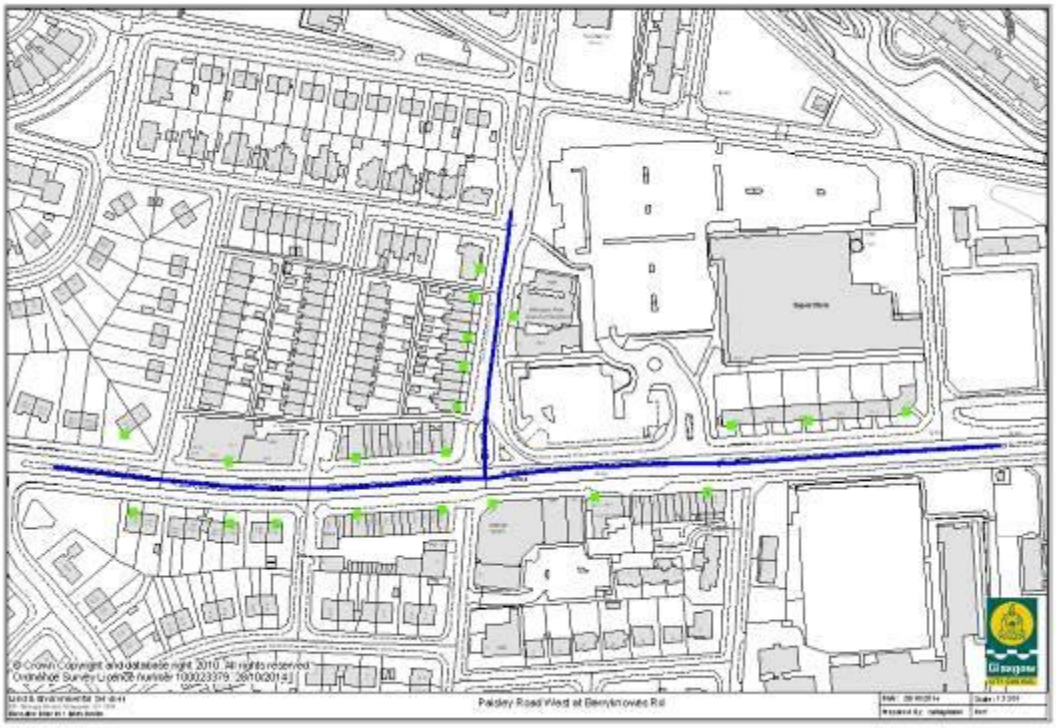
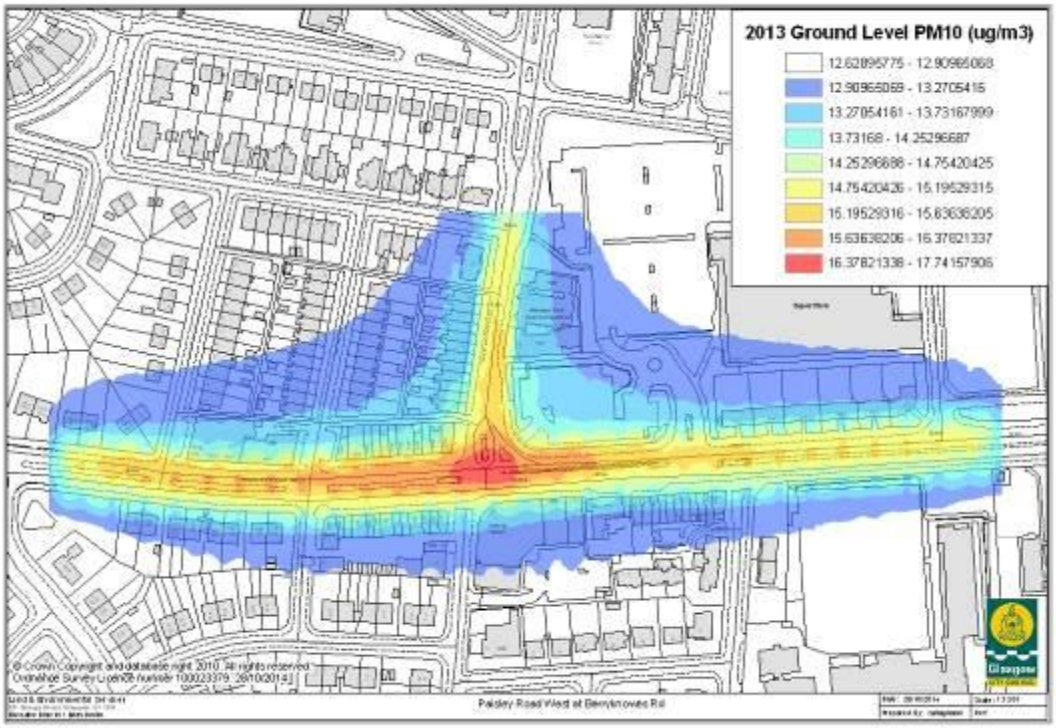


Table 3.21 Paisley Road West at Berryknowes Rd modelling results

Receptor Location	Modelled Annual Mean PM_{10} Concentration (µg/m^3)			
	Raw Modelled Output		Adjusted Model Output	
	2013	2015	2013	2015
1882 PRW	13.5	13.1	14.2	13.8
1919 PRW	13.2	13.0	13.8	13.7
1886 PRW	13.3	13.1	13.9	13.8
1877 PRW	13.3	13.1	14.0	13.9
1874 PRW	14.2	13.8	15.7	15.2
1852 PRW	14.3	13.9	15.8	15.2
1828 PRW	14.7	14.2	16.5	15.9
1861 PRW	13.7	13.5	14.7	14.6
1835 PRW	13.8	13.6	14.8	14.7
1831 PRW	13.9	13.7	15.0	15.0
1801 PRW	13.5	13.3	14.4	14.3
1779 PRW	13.5	13.3	14.3	14.2
1744 PRW	13.6	13.3	14.6	14.1
1730 PRW	13.6	13.2	14.5	14.1
1704 PRW	13.4	13.1	14.2	13.8
1 Berryknowes Rd	13.9	13.5	15.1	14.6
9 Berryknowes Rd	13.6	13.3	14.6	14.2
15 Berryknowes Rd	13.6	13.2	14.4	14.1
23 Berryknowes Rd	13.5	13.2	14.3	14.0
Hillington Church	13.9	13.6	15.1	14.8
27 Berryknowes Rd	13.5	13.2	14.3	14.0

Figure 3.44 Paisley Road West at Berryknowes Rd PM_{10} contours



3.2.19 Paisley Road West at Govan Rd

Figure 3.45 Paisley Road West at Govan Rd modelled streets and receptors

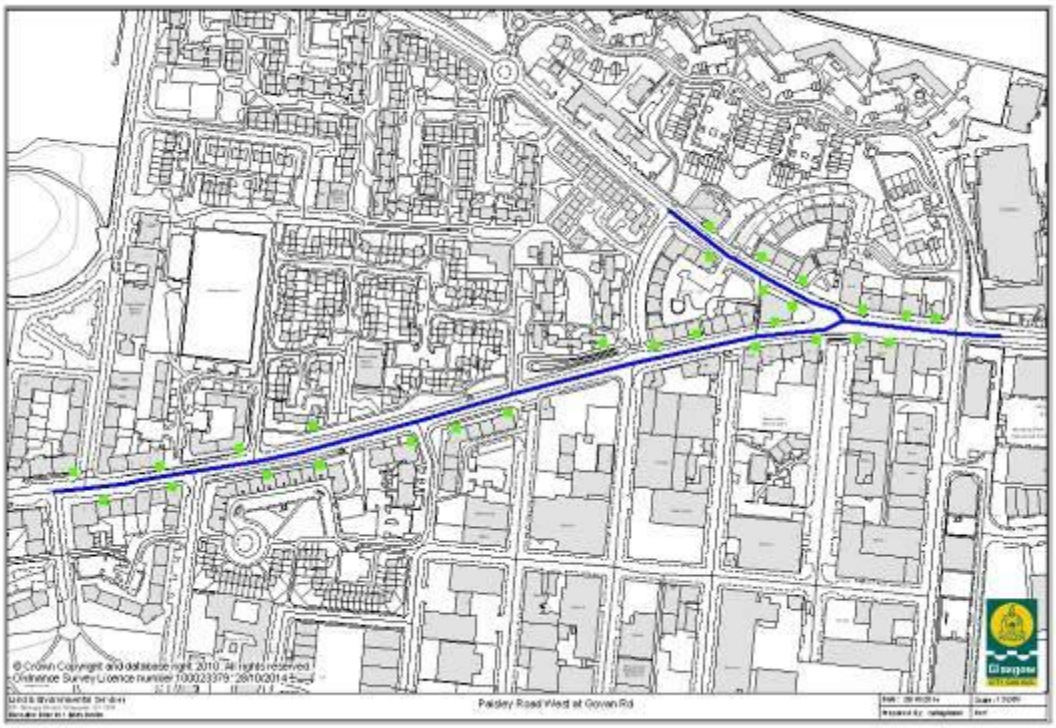
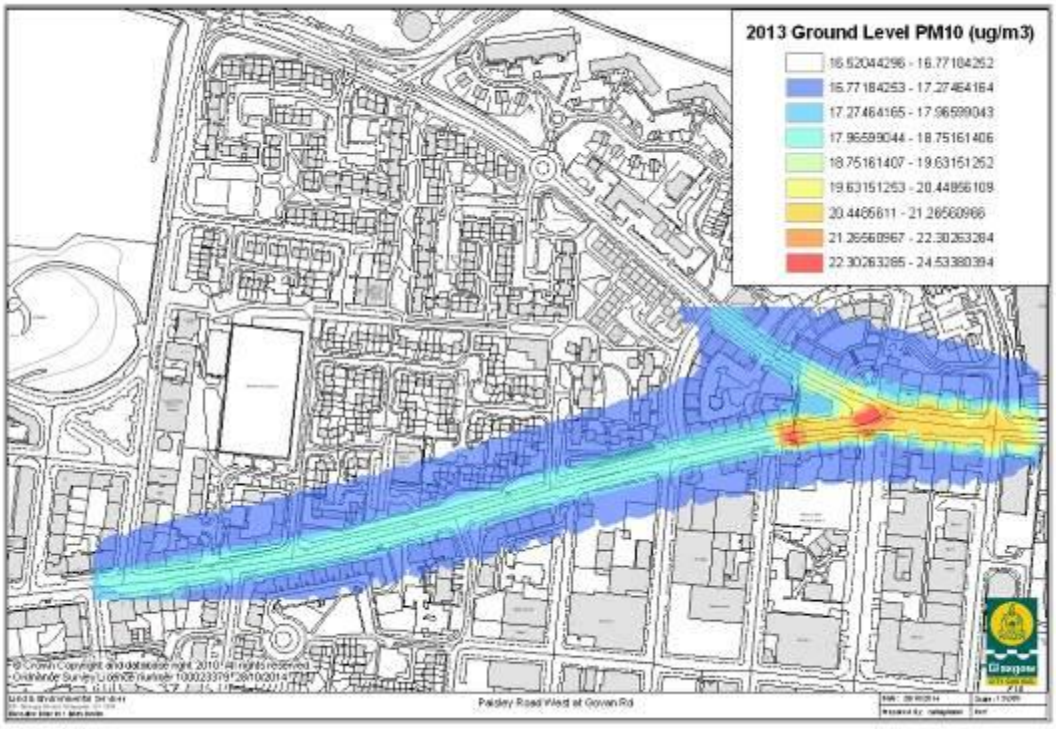


Table 3.22 Paisley Road West at Govan Rd modelling results

Receptor Location	Modelled Annual Mean PM_{10} Concentration (µg/m^3)			
	Raw Modelled Output		Adjusted Model Output	
	2013	2015	2013	2015
Rutland Surgery	17.1	16.5	17.6	17.0
2 Govan Rd	17.0	16.5	17.5	17.0
20 Govan Rd	17.1	16.6	17.7	17.1
12 Govan Rd	17.3	16.7	18.1	17.4
19 Govan Rd (a)	17.0	16.5	17.5	16.9
19 Govan Rd (b)	17.2	16.7	17.8	17.2
488 PRW	17.4	16.8	18.2	17.6
470 PRW	17.4	16.8	18.1	17.5
462 PRW	17.3	16.8	18.1	17.4
465 PRW	17.1	16.6	17.6	17.1
473 PRW	17.1	16.6	17.7	17.2
1 PRW	17.1	16.6	17.7	17.2
25 PRW	17.1	16.6	17.6	17.1
20 PRW	17.3	16.7	17.9	17.3
22 PRW	17.5	16.9	18.3	17.6
26 PRW	17.6	17.0	18.5	17.8
78 Mair St	17.1	16.5	17.6	17.0
2 Middlesex St	17.1	16.6	17.6	17.1
8 Middlesex St	17.1	16.6	17.5	17.1
149 PRW	17.0	16.6	17.5	17.1
52 Milnpark St	17.0	16.6	17.5	17.1
170 PRW	17.2	16.6	17.7	17.1
60 Milnpark St	17.1	16.6	17.6	17.2
200 PRW	17.4	16.8	18.1	17.5

Receptor Location	Modelled Annual Mean PM_{10} Concentration ($\mu g/m^3$)			
	Raw Modelled Output		Adjusted Model Output	
	2013	2015	2013	2015
218 PRW	17.1	16.5	17.5	17.0
203 PRW	17.2	16.8	17.9	17.5
231 PRW	16.8	16.3	17.1	16.6
248 PRW	17.1	16.5	17.6	17.0

Figure 3.46 Paisley Road West at Govan Rd PM_{10} contours



3.2.20 Paisley Road West at Mosspark Boulevard

Figure 3.47 Paisley Road West at Mosspark Boulevard modelled streets and receptors

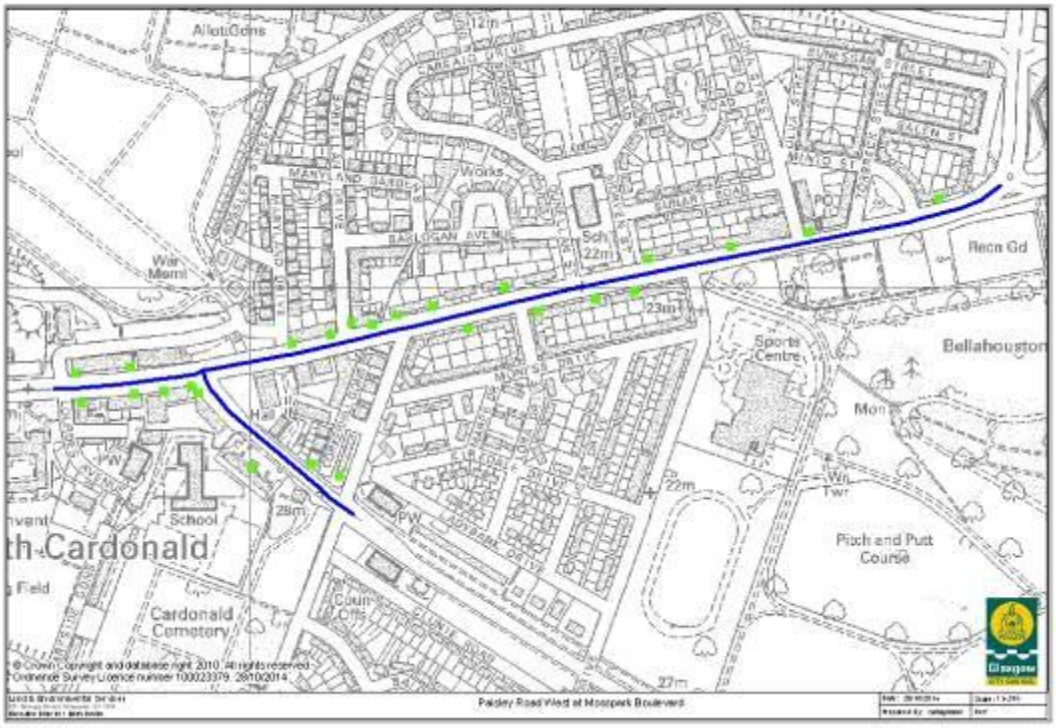
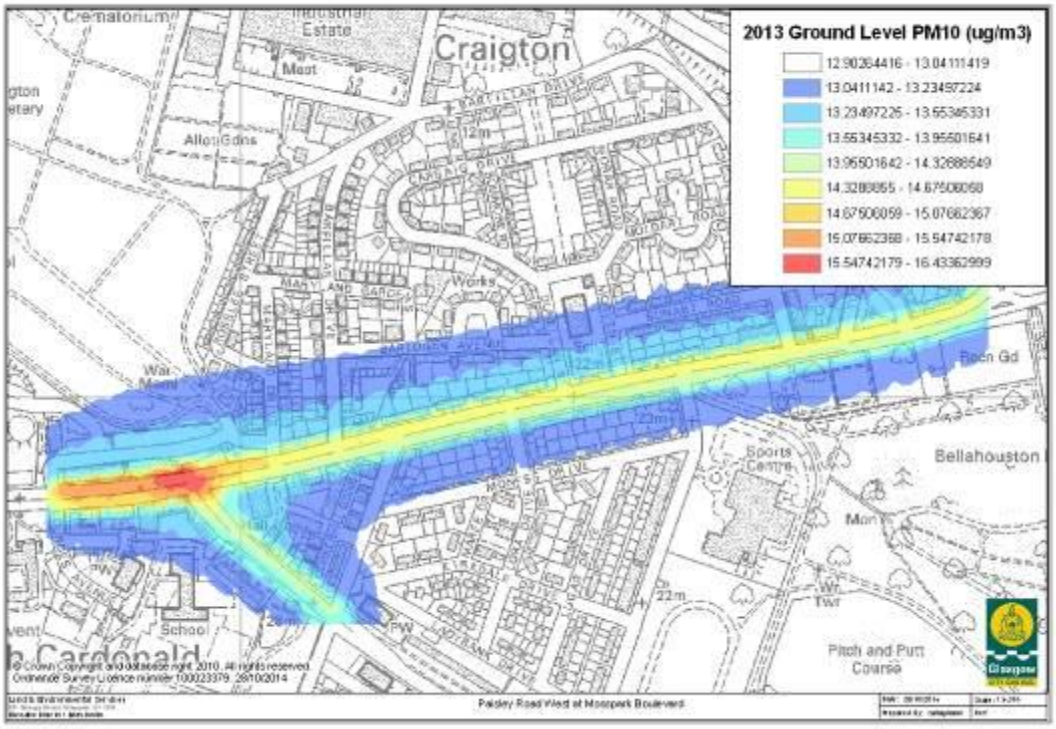


Table 3.23 Paisley Road West at Mosspark Boulevard modelling results

Receptor Location	Modelled Annual Mean PM_{10} Concentration ($\mu g/m^3$)			
	Raw Modelled Output		Adjusted Model Output	
	2013	2015	2013	2015
38 Corkerhill Rd	13.2	12.9	13.5	13.2
550 Mosspark Blld	13.4	13.1	13.9	13.6
563 Mosspark Blld	13.1	12.8	13.3	13.1
597 Mosspark Blld	13.8	13.5	14.5	14.3
1575 PRW	13.6	13.4	14.3	14.0
1591 PRW	13.5	13.3	14.1	13.9
1601 PRW	13.5	13.2	14.0	13.8
5 Lourdes Ct	13.5	13.3	14.0	13.8
1622 PRW	13.5	13.2	14.0	13.7
1600 PRW	13.6	13.3	14.2	13.9
1506 PRW	13.5	13.2	14.1	13.7
1480 PRW	13.5	13.2	14.0	13.7
4 Barfillan Dr	13.6	13.2	14.1	13.7
1462 PRW	13.5	13.1	14.0	13.6
1448 PRW	13.6	13.3	14.3	13.9
1428 PRW	13.6	13.3	14.3	13.9
1382 PRW	13.6	13.2	14.1	13.7
1336 PRW	13.6	13.3	14.2	13.9
1310 PRW	13.9	13.6	14.8	14.4
1278 PRW	13.4	13.1	13.9	13.6
1220 PRW	13.6	13.2	14.1	13.7
1403 PRW	13.4	13.1	13.8	13.6
1413 PRW	13.4	13.1	13.8	13.6

Receptor Location	Modelled Annual Mean PM_{10} Concentration ($\mu g/m^3$)			
	Raw Modelled Output		Adjusted Model Output	
	2013	2015	2013	2015
1429 PRW	13.4	13.1	13.8	13.6
1447 PRW	13.4	13.1	13.8	13.6

Figure 3.48 Paisley Road West at Mosspark Boulevard PM_{10} contours



3.2.21 Sauchiehall St at Claremont St

Figure 3.49 Sauchiehall St at Claremont St modelled streets and receptors

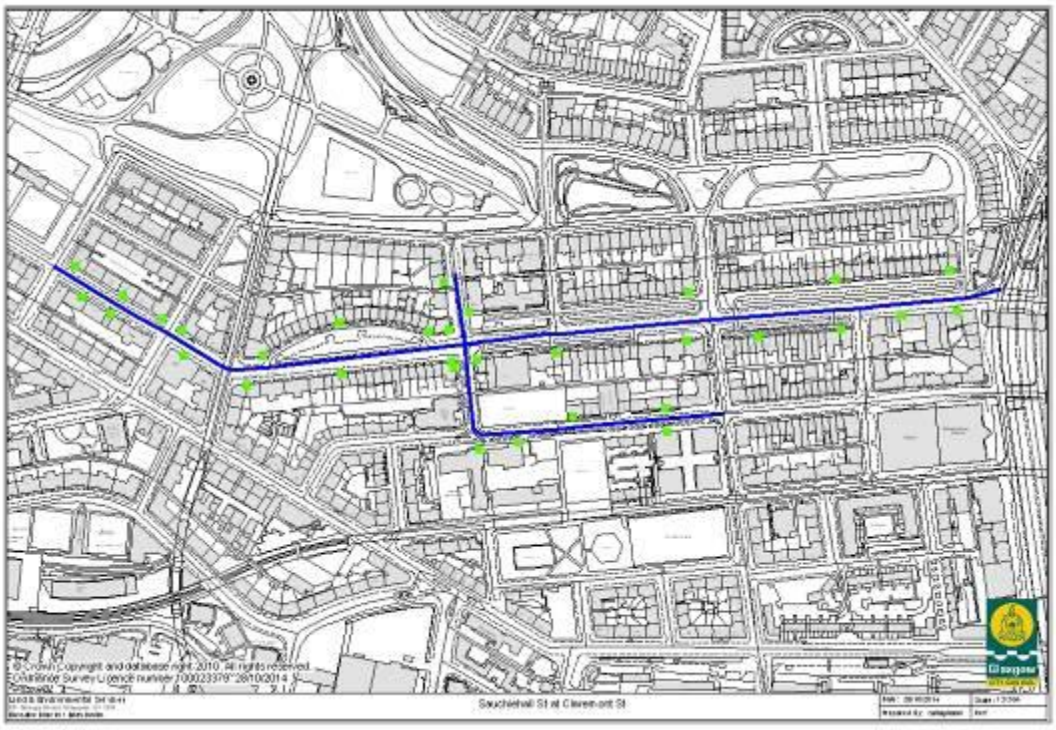
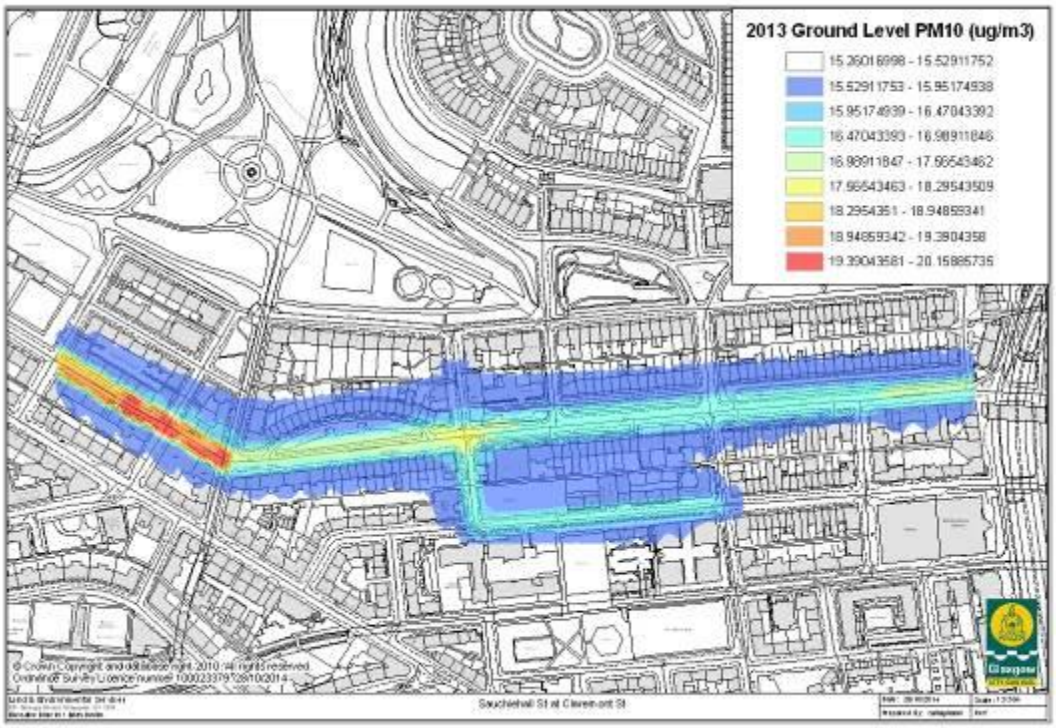


Table 3.24 Sauchiehall St at Claremont St modelling results

Receptor Location	Modelled Annual Mean PM_{10} Concentration (µg/m^3)			
	Raw Modelled Output		Adjusted Model Output	
	2013	2015	2013	2015
970 Sauchiehall St	16.1	15.6	16.8	16.3
969 Sauchiehall St	15.9	15.5	16.4	16.1
964 Sauchiehall St	16.2	15.7	17.1	16.5
Surgery	15.9	15.6	16.6	16.2
31 Derby St	16.3	15.9	17.3	16.7
920 Sauchiehall St	15.9	15.4	16.4	16.0
923 Sauchiehall St	16.0	15.6	16.7	16.4
24 Royal Cr	16.3	15.8	17.1	16.6
25 Westminster Tr	15.7	15.4	16.2	15.9
13 Royal Cr	15.7	15.2	16.0	15.6
13 Westminster Tr	15.8	15.5	16.3	16.0
2 Royal Cr	16.1	15.6	16.9	16.4
1 Fitzroy Pl	16.2	15.8	17.0	16.7
1 Sandyford Pl	16.3	15.9	17.2	16.8
9 Clifton Pl	15.8	15.3	16.3	15.8
10 Sandyford Pl	15.7	15.3	16.2	15.8
26 Sandyford Pl	15.7	15.3	16.1	15.7
1 Somerset Pl	15.6	15.2	16.0	15.5
13 Newton Tr	15.6	15.2	15.9	15.6
1 Newton Tr	15.6	15.2	15.9	15.5
14 Newton Tr	15.6	15.1	15.9	15.4
557 Sauchiehall St	15.6	15.2	15.9	15.5
527 Sauchiehall St	15.5	15.1	15.8	15.4
27 Newton Tr	15.6	15.1	15.9	15.4

Receptor Location	Modelled Annual Mean PM_{10} Concentration ($\mu g/m^3$)			
	Raw Modelled Output		Adjusted Model Output	
	2013	2015	2013	2015
1 Nrth Claremont	16.3	15.7	17.1	16.5
11b Nrth Claremont	15.5	15.1	15.8	15.3
83 Claremont St	16.1	15.7	16.8	16.5
Gaelic School 1	15.5	15.1	15.8	15.4
Gaelic School 2	15.7	15.4	16.2	15.9
152 Claremont St	15.9	15.5	16.6	16.1
104 Claremont St	15.9	15.5	16.5	16.0
113 Claremont St	15.6	15.3	16.0	15.7

Figure 3.50 Sauchiehall St at Claremont St PM_{10} contours



3.2.21 Shettleston Rd

Figure 3.51 Shettleston Rd modelled streets and receptors

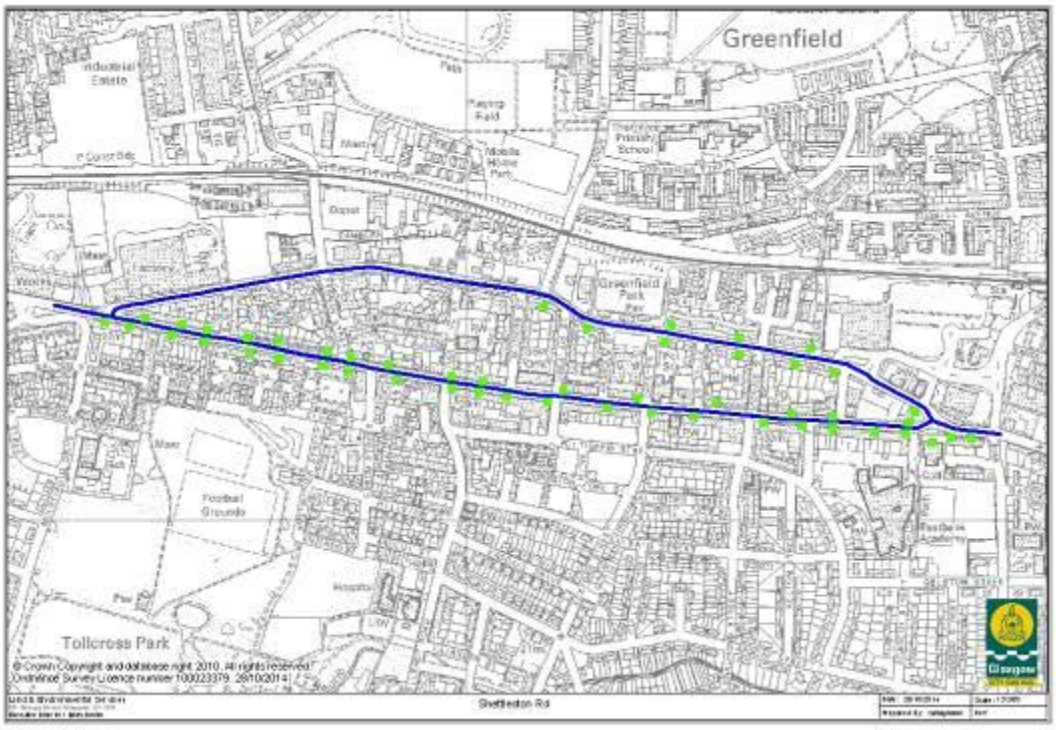
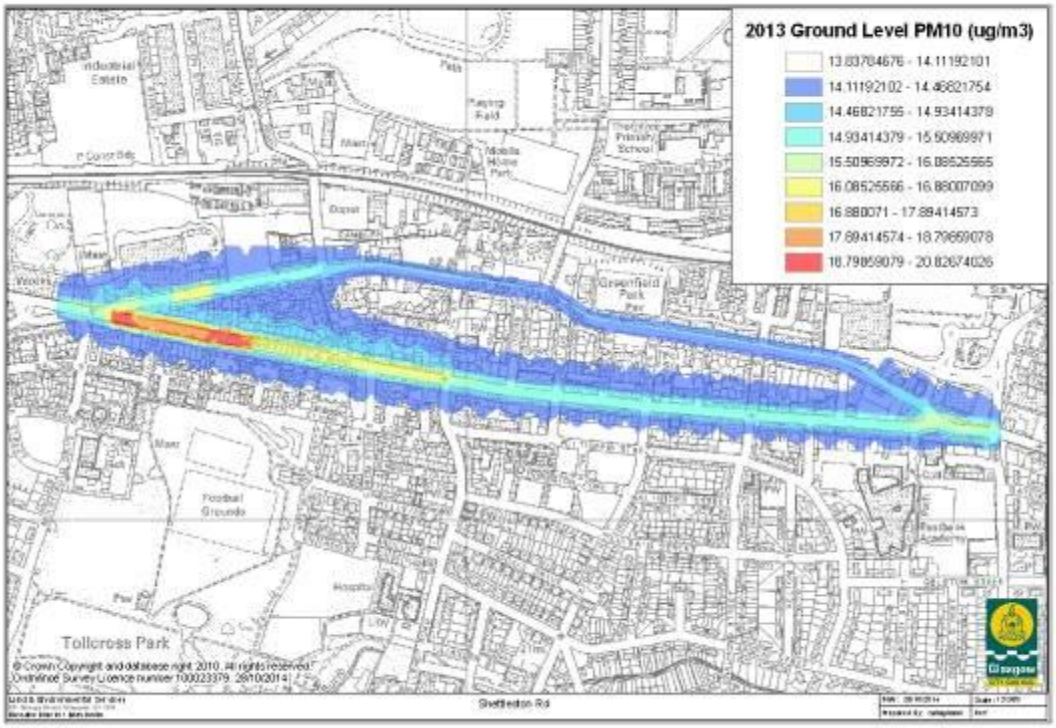


Table 3.25 Shettleston Rd modelling results

Receptor Location	Modelled Annual Mean PM_{10} Concentration (µg/m^3)			
	Raw Modelled Output		Adjusted Model Output	
	2013	2015	2013	2015
584 Shettleston Rd	14.7	14.3	15.5	15.2
610 Shettleston Rd	14.9	14.6	15.9	15.6
577 Shettleston Rd	15.6	15.1	17.1	16.5
640 Shettleston Rd	14.9	14.5	15.8	15.5
613 Shettleston Rd	15.5	14.9	16.9	16.3
637 Shettleston Rd	15.4	14.9	16.7	16.2
666 Shettleston Rd	14.9	14.6	15.8	15.6
65 Kilmany Dr	14.6	14.3	15.3	15.0
663 Shettleston Rd	15.5	15.0	17.0	16.4
713 Shettleston Rd	15.0	14.5	16.0	15.4
83 Kilmany Dr	14.6	14.2	15.3	15.0
737 Shettleston Rd	15.1	14.6	16.2	15.7
784 Shettleston Rd	14.7	14.3	15.4	15.2
790 Shettleston Rd	14.7	14.3	15.4	15.1
765 Shettleston Rd	14.6	14.2	15.4	14.9
807 Shettleston Rd	15.4	14.9	16.7	16.2
9 Edrom Path	14.8	14.4	15.6	15.3
881 Shettleston Rd	14.5	14.0	15.0	14.6
874 Shettleston Rd	14.3	13.9	14.7	14.4
911 Shettleston Rd	14.4	13.9	14.9	14.4
904 Shettleston Rd	14.2	13.8	14.6	14.2
936 Shettleston Rd	14.2	13.8	14.6	14.2
984 Shettleston Rd	14.2	13.8	14.5	14.2
977 Shettleston Rd	14.8	14.3	15.6	15.0

Receptor Location	Modelled Annual Mean PM_{10} Concentration ($\mu g/m^3$)			
	Raw Modelled Output		Adjusted Model Output	
	2013	2015	2013	2015
1044 Shettleston Rd	14.2	13.8	14.5	14.2
1041 Shettleston Rd	14.7	14.3	15.5	15.0
1086 Shettleston Rd	14.2	13.8	14.5	14.2
1130 Shettleston Rd	14.2	13.8	14.5	14.1
1097 Shettleston Rd	14.5	14.0	15.0	14.5
1186 Shettleston Rd	14.2	13.8	14.5	14.2
1159 Shettleston Rd	15.0	14.5	16.0	15.4
1232 Shettleston Rd	14.5	14.2	15.1	14.8
2 Fenella St	14.9	14.4	15.7	15.2
1262 Shettleston Rd	14.4	14.0	14.9	14.6
1312 Shettleston Rd	14.2	13.8	14.5	14.1
1342 Shettleston Rd	14.2	13.8	14.5	14.2
1271 Shettleston Rd	14.4	14.0	14.9	14.5
Wheatley Coll	14.1	13.7	14.4	14.0
1370 Shettleston Rd	14.4	14.0	14.9	14.5
1386 Shettleston Rd	14.5	14.1	15.0	14.7
9 Old Shettleston Rd	14.5	14.0	15.0	14.5
580 Old Shettleston Rd	14.1	13.6	14.3	13.9
540 Old Shettleston Rd	14.1	13.7	14.3	13.9
571 Old Shettleston Rd	14.1	13.7	14.4	13.9
500 Old Shettleston Rd	14.1	13.6	14.3	13.9
535 Old Shettleston Rd	14.1	13.7	14.4	14.0
450 Old Shettleston Rd	14.1	13.6	14.3	13.9
445 Old Shettleston Rd	14.1	13.7	14.4	13.9
372 Old Shettleston Rd	14.1	13.6	14.3	13.9
336 Old Shettleston Rd	14.0	13.6	14.3	13.8

Figure 3.52 Shettleston Rd PM_{10} contours



4.0 Conclusions

4.1 Monitoring Results

Since 2010, where exceedences of the annual mean PM_{10} objective were recorded at the majority of monitoring locations, there have been only two subsequent exceedences within the Citywide AQMA. Byres Rd recorded an exceedence in 2011 but the following two years has seen a fall in the observed levels to well within the objective. The monitoring station at Dumbarton Rd was established in 2012 and recorded a slight exceedence of the objective in 2013 when the annual mean was 19 $\mu g/m^3$.

Similarly, since 2010 there have been two recorded exceedences of the PM_{10} 24 hour objective. In 2011 Abercromby St exceeded the objective but has complied with the objective since. In 2012 the objective was exceeded at Nithsdale Rd but this appears to have been due to nearby building work and is not considered representative of normal conditions.

4.2 Modelling Results

Modelling undertaken as part of this Detailed Assessment has shown that, in the majority of locations, the annual mean PM_{10} objective is being met at relevant receptors. The modelling for 2013 predicted exceedences at the following locations:

<u>Crow Rd at Southbrae Dr</u>
136 Whittinghame Dr – a marginal exceedence of 18.1 $\mu g/m^3$ was predicted for this receptor in 2013 but it was expected to comply with the objective according to the modelling for 2015.

<u>Dumbarton Rd at Rosevale St</u>
Air Quality Monitoring Station – the model predicted an annual mean PM_{10} of 18.1 $\mu g/m^3$ in 2013 with compliance with the objective predicted in 2015. The monitoring station was the only receptor not to meet the objective in 2013 and all of the receptors with relevant exposure were predicted to be within the objective in this modelled area.

Maryhill Rd at Queen Margaret Dr

1008 Maryhill Rd - a marginal exceedence of 18.1 µg/m^3 was predicted for this receptor in 2013 but it was expected to comply with the objective according to the modelling for 2015.

Paisley Road West at Govan Rd

There were a total of seven residential receptors in this modelled area where marginal exceedences of the objective were predicted from the 2013 modelling. The maximum predicted annual mean PM_{10} level was 18.5 µg/m^3 and all of these receptors were predicted to comply with the objective in the 2015 modelling.

5.0 Proposals

Given the widespread compliance with the objective levels through both monitoring and modelling and the predicted total compliance evidenced by the 2015 modelling, Glasgow City Council proposes to revoke the current Citywide AQMA in respect of PM_{10} since it is evident that the objective is being met in the majority of this AQMA.

However, due to recent monitored exceedences, Glasgow City Council proposes to amend the existing Byres Rd /Dumbarton Rd AQMA to include the PM_{10} objectives.

Glasgow City Council further proposes to continue monitoring in those areas where it is indicated that levels are close to the objective level and to initiate monitoring to confirm the results of the modelling exercise where no monitoring is currently undertaken.

6.0 References

- Department of the Environment, Food and Rural Affairs (2000). Part IV The Environment Act 1995, Local Air Quality Management, Technical Guidance, LAQM.TG(09);
- The Scottish Executive (2002). Air Quality (Scotland) Amended Regulations
- Glasgow City Council (1998). Local Air Quality Management, Review and Assessment of Air Quality in Glasgow Stage 1;
- Glasgow City Council (2000). Local Air Quality Management, Review and Assessment of Air Quality in Glasgow Stage 2;
- Glasgow City Council (2001). Local Air Quality Management, Review and Assessment of Air Quality in Glasgow Stage 3;
- Glasgow City Council (2003). Local Air Quality Management, Review and Assessment of Air Quality in Glasgow Stage 4;
- Glasgow City Council (2003). LAQM Updating and Screening Assessment;
- Glasgow City Council (2004). Local Air Quality Action Plan;
- Glasgow City Council (2005). LAQM Detailed Assessment;
- Glasgow City Council (2005). LAQM Progress Report;
- Glasgow City Council (2006). LAQM Updating and Screening Assessment;
- Glasgow City Council (2007). LAQM Detailed Assessment;
- Glasgow City Council (2008). LAQM Further Assessment;
- Glasgow City Council (2008). LAQM Progress Report;
- Glasgow City Council (2009). LAQM Updating and Screening Assessment;
- Glasgow City Council (2010). LAQM Detailed Assessment;
- Glasgow City Council (2010). LAQM Progress Report;

- Glasgow City Council (2011). LAQM Progress Report;
- Glasgow City Council (2012). LAQM Updating and Screening Assessment;
- Glasgow City Council (2013). LAQM Further Assessment;
- Glasgow City Council (2013). LAQM Progress Report;
- Glasgow City Council (2013). LAQM Detailed Assessment;