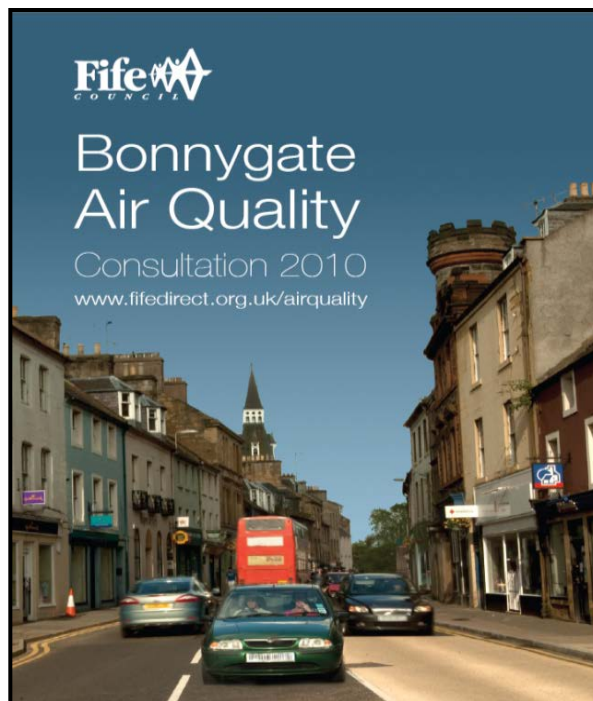


Bonnygate Air Quality Action Plan:

"Building a Template for Action"



Kenny Bisset, Lead Officer, Environmental Strategy
Scottish Government Air Quality Seminar
Monday 18th March 2013 Edinburgh

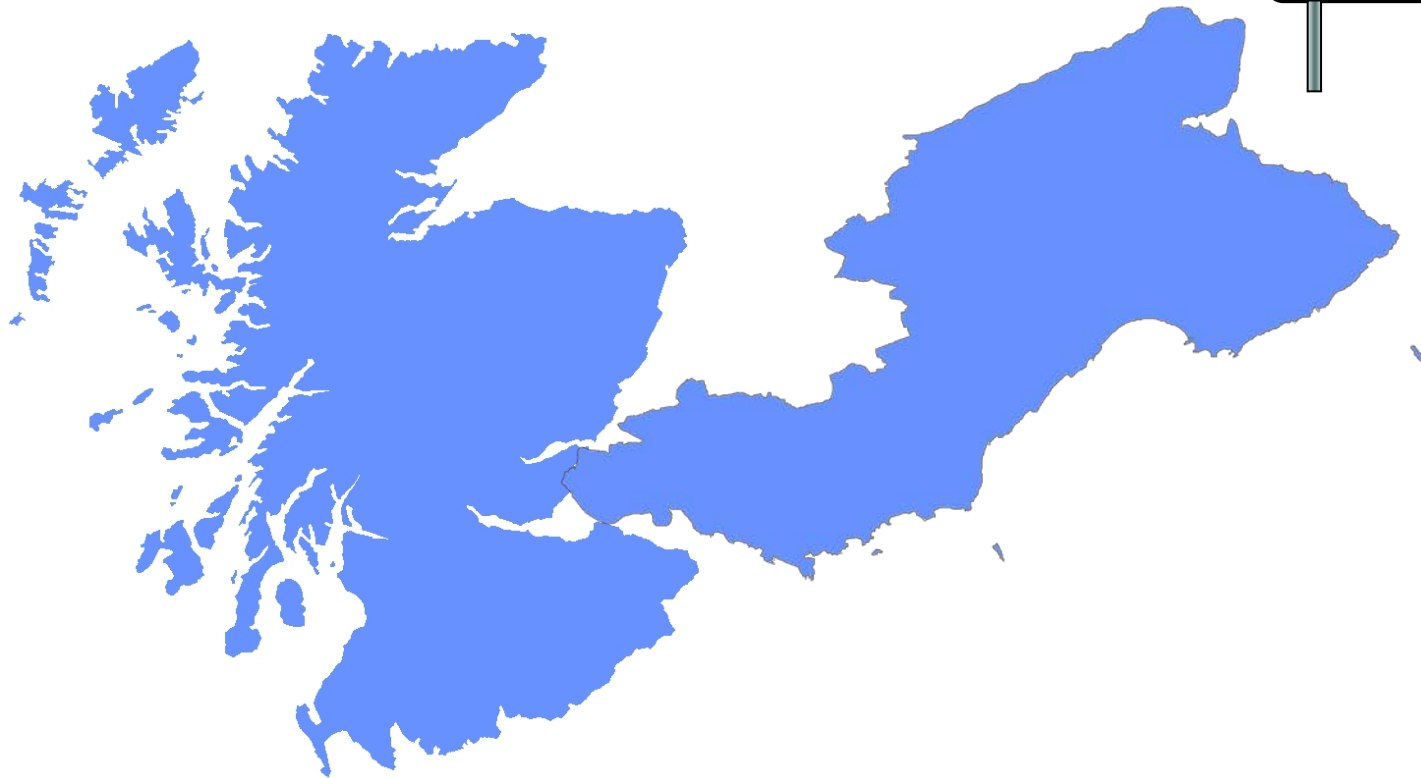
Content

- Background
- Bonnygate AQMA
- Bonnygate AQAP
- Future Outputs
- Challenges & Opportunities



Fife Council
Bonnygate Air Quality Action Plan

Kingdom of Fife



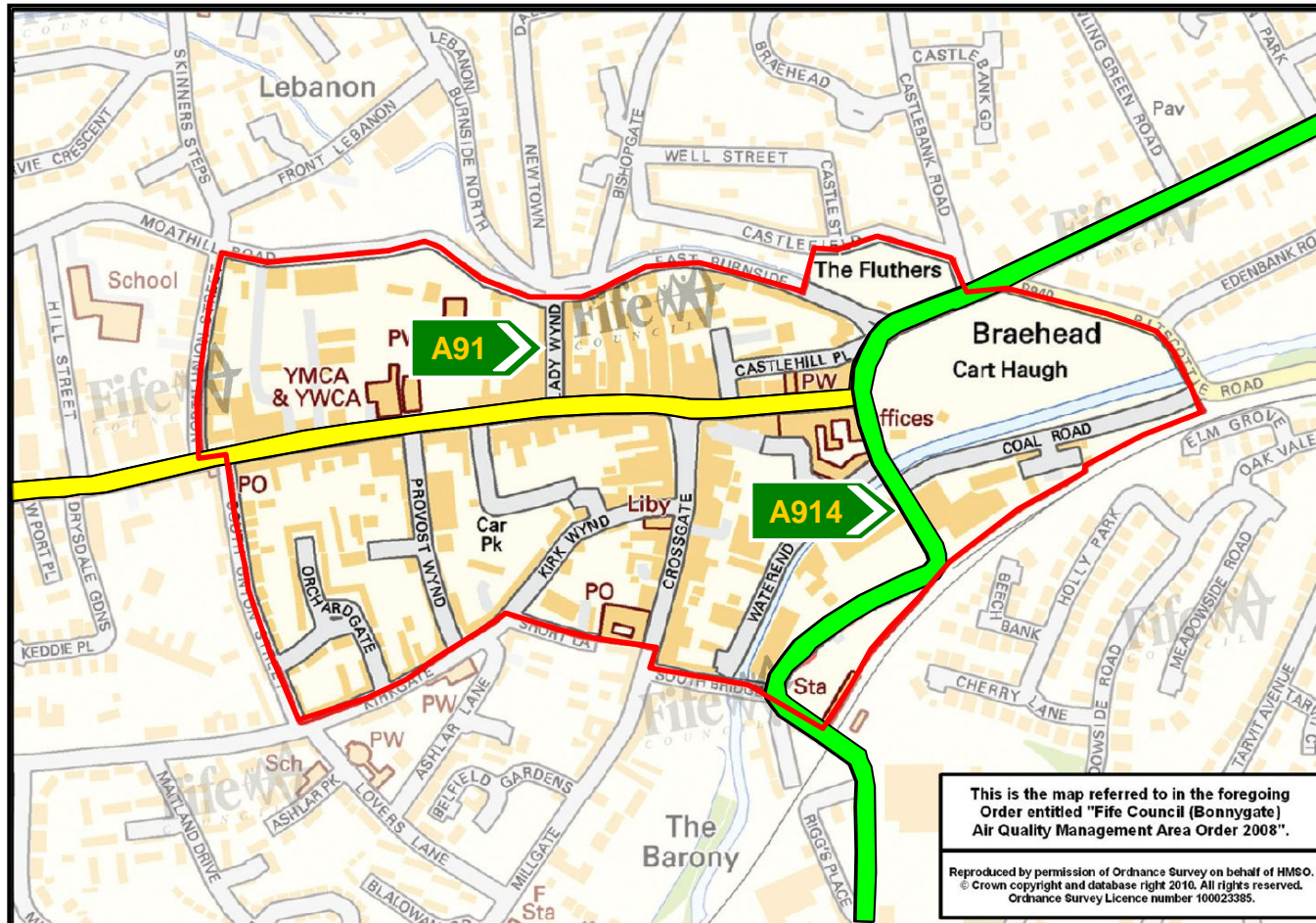
Fife is Scotland's third largest local authority area by population at 365,000

Description of Cupar

- Market town
- Population almost 8,500
- Ninth largest settlement in Fife
- Serves a wide agricultural catchment
- Non-bypassed
- On primary road network
- Fife Council Travel Diary Survey 2004:
 - *“Road transport issues in Cupar are principally associated with **local travel**, within the town itself or between other towns in Fife”*

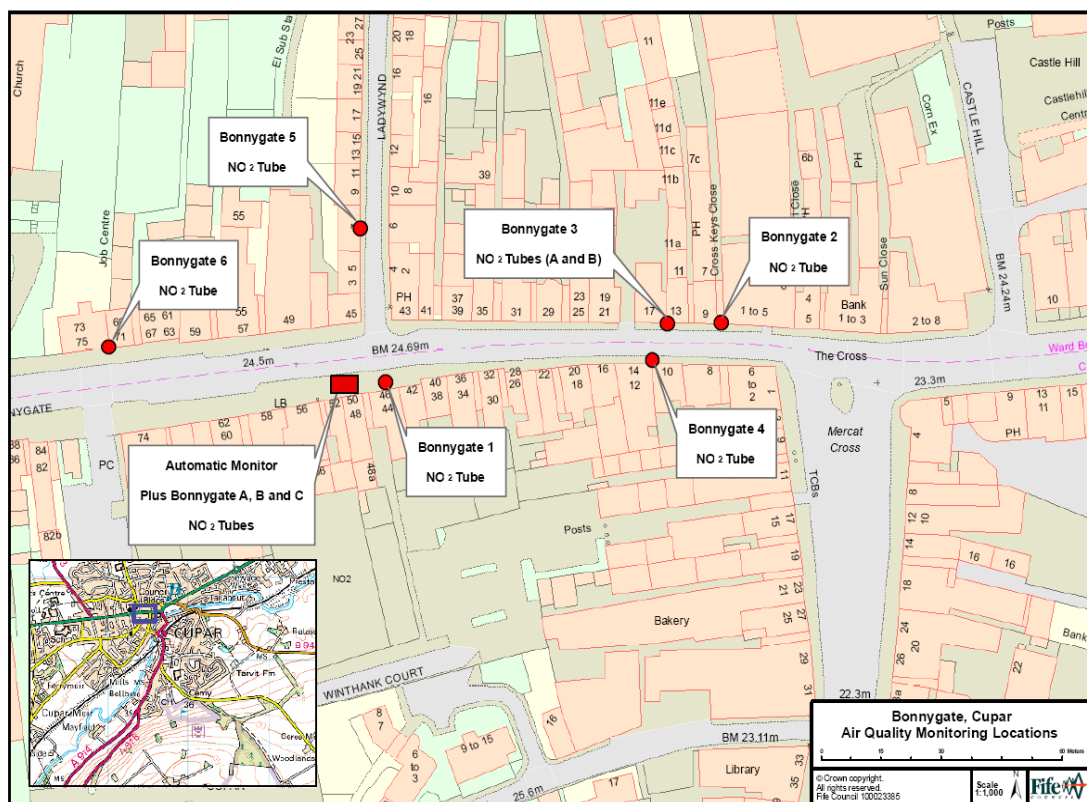


Bonnygate Road Network



- A91 from Stirling to St Andrews (**AADT 10, 500 vehicles**)
- A914 from Central/West Fife areas (**AADT 4,700 vehicles**)

Bonnygate Diffusion Tubes



- Seven sites – includes triple set co-located with automatic monitor

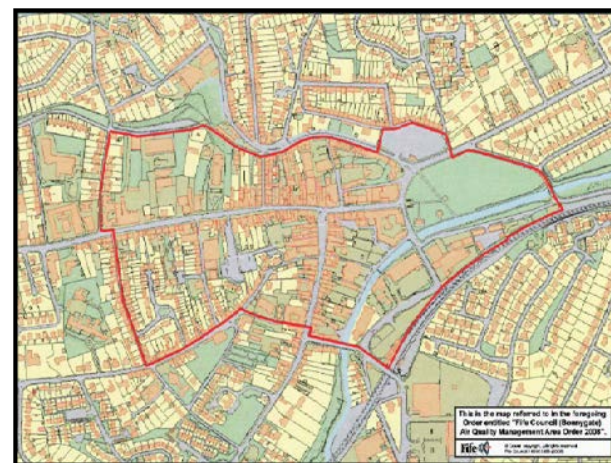
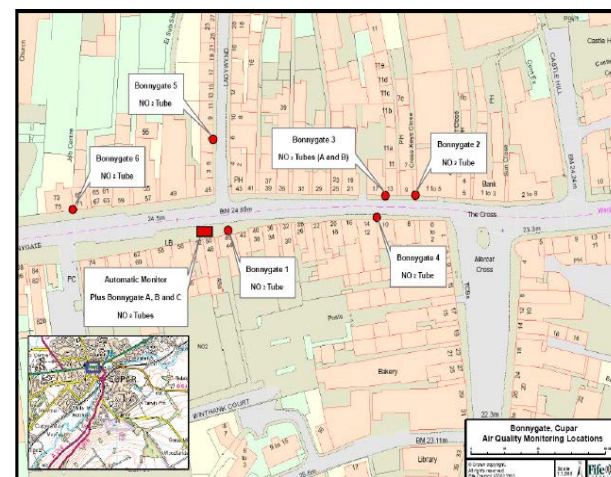
Bonnygate Automatic Monitor



- Monitors NO_2 and PM_{10} – note high buildings on other side – “street canyon”

Bonnygate AQMA

- Monitoring and modelling in 2008
- NO₂ & PM₁₀ objectives unlikely to be met
- Bonnygate AQMA declared 2008
- Boundaries – administrative
- Based on town centre plan
- Further assessment in 2009
- Additional NO₂ tubes at South Road
- Confirmed AQMA & its boundaries



The Challenge.....

- *“Bonnygate has the dubious distinction of being one of the most polluted streets in the UK”*

Fife Today Press Article (2009)

- *“What matters is that **appropriate measures** are taken to improve air quality, and that progress of these measures can be reported on quantitatively”*

Scottish Government Local Air Quality Management Policy Guidance (2009)

- *“Effective Action Plans require **consensus and co-operation** of a large number of stakeholders, businesses, organisations and communities, as well as those bodies responsible for implementing solutions”*

NSCA. Air Quality : Planning for Action (2001)

Bonnygate Steering Group

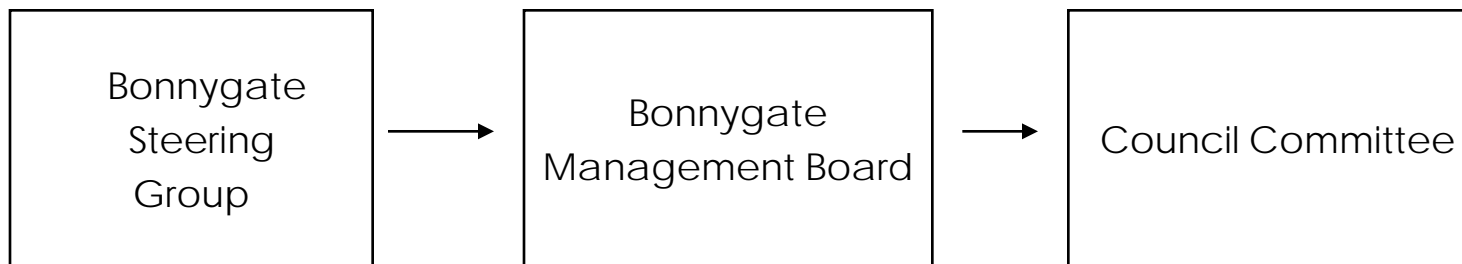
- Fife Council Enterprise, Planning and Protective Services
- Fife Council Transportation and Environmental Services
- Fife Council Local and Community Services
- SEPA
- NHS Fife (CPHM)
- Contracted Air Quality Consultants

Remit to produce and implement action plan



Bonnygate Management Board

- Management Board administers the Bonnygate Action Plan process
- Consists of local elected members and representatives of Steering Group
- The Board is an important link with the local community
- Ensures integration of Action Plan with other Council policies/strategies
- Reporting arrangements are shown below:



Measure Development

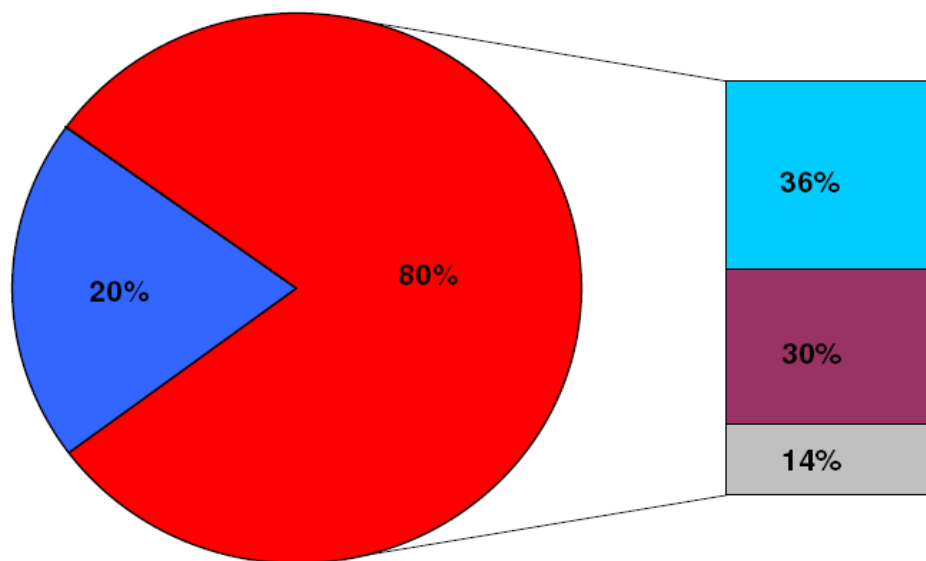
Three main aims:

- (1) Detailed consideration of options aimed at reducing emissions
- (2) More detailed consideration and assessment of short-listed options
- (3) Determination of how these will be prioritised and implemented



No	Measure	Timescale ¹
Strategic Measures		
1	Liaise with Scottish Government to encourage the consideration of national measures	
2	Feasibility study	
3	Improving links with Local Transport Strategy/ Area Transport Plan	
4	Improving Air Quality links with Local Planning and Development Framework	
5	Integrate AQ with other Council strategies	
Direct measures		
6	Traffic management optimisation (dependent upon feasibility study)	Short-term/ Acceptable
7	Travel Plans for Large Institutions and Businesses	Short-term/ Acceptable
8	Provision of Information and Promotion of Travel options	Short- Medium-term/ Acceptable
9	Provision of Information relating to Air Quality	Short-term/ Acceptable
10	Target reductions in emissions from the Council fleet and contract vehicles (including driver training)	Short-Medium term/ Acceptable
11	Investigate the potential for establishing voluntary bus agreements	Medium Term/ Acceptable
12	Consideration of development of Appin Crescent bypass (dependent upon feasibility study)	Unknown at present

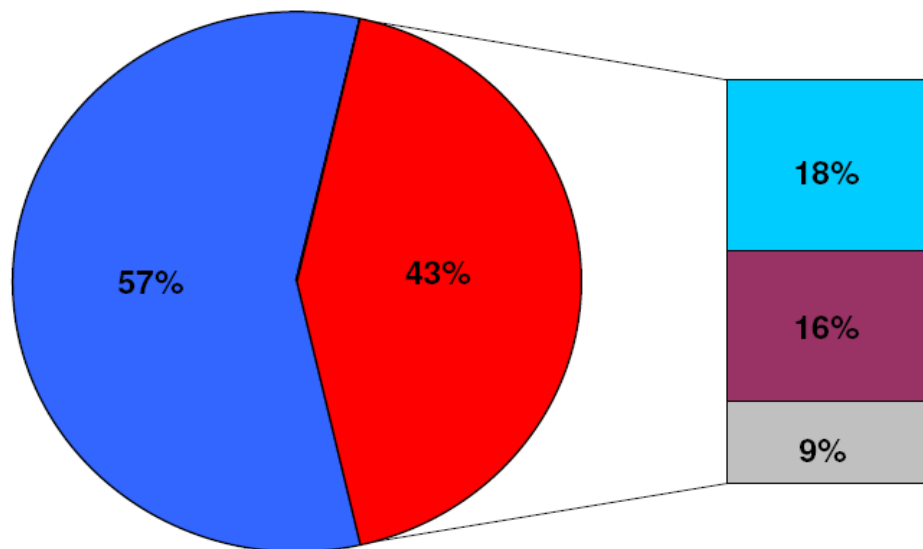
Sources of NOx in Bonnygate



- Estimated background contribution to annual mean NOx (%)
- Estimated contribution to annual mean NOx from LDV (%)
- Estimated contribution to annual mean NOx from HGV (%)
- Estimated contribution to annual mean NOx from Buses (%)

- Road transport sources are predominant source of NOx emissions at **80%**
- LGVS **36%**; HGVs **30%** and Buses **14%**

Sources of PM₁₀ in Bonnygate



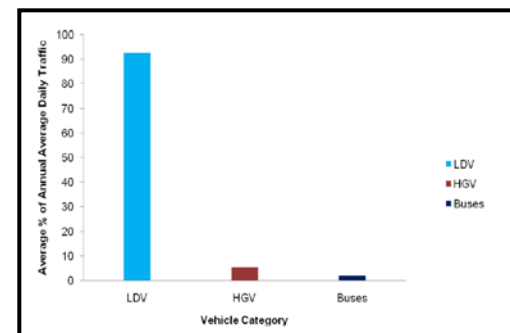
- Estimated background contribution to annual mean PM10 (%)
- Estimated contribution to annual mean PM10 from LDV (%)
- Estimated contribution to annual mean PM10 from HGV (%)
- Estimated contribution to annual mean PM10 from Buses (%)

- Background concentrations contribute about 57% to ambient concentrations
- LGVS **18%**; HGVs **16%** and Buses **9%** - total road transport **43%**

Traffic Composition & Flow

- Traffic Composition (average % of AADT):

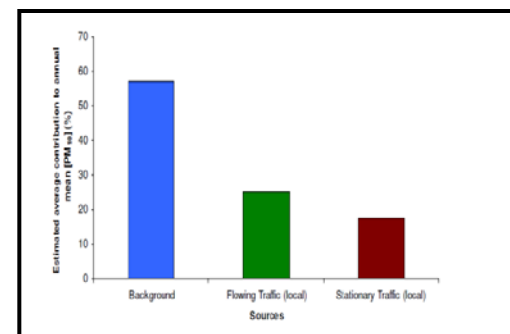
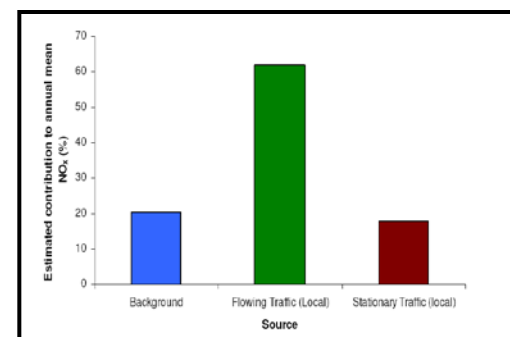
- LDVs **93%**
- HGVs **5%**
- Buses **2%**



But HGVs and Buses contribute more to NO_x & PM₁₀ levels on a **per vehicle basis**

- Traffic Flow:

- **Moving** traffic **62%** of NO_x emissions & for **stationary** approximately **18%**
- **Moving** traffic **25%** of PM₁₀ emissions & **18%** from **stationary** traffic



Scenario Analyses

The scenarios assessed were:

1. *All Euro II buses replaced with Euro III*
2. *20% of Euro II and 20% of Euro III buses replaced with Euro IV*
3. *40% of Euro II and 40% of Euro III buses replaced with Euro IV*
4. *60% of Euro II and 60% of Euro III buses replaced with Euro IV*
5. *20% reduction in HGV*
6. *Traffic queue relocation and traffic light coordination scheme*

Dispersion modelling of traffic queue relocation – significant air quality improvements

Objectives

GENERAL:

- Reducing the impacts of cars and heavy goods vehicles (HGVs) within the Bonnygate;
- Minimising the impacts of congestion within the Bonnygate street canyon;
- Encouraging a reduction in traffic volumes;
- Reducing the background concentration of PM₁₀ through encouragement of efforts at the national level

SPECIFIC:

- Reduce transport emissions of NO_x by **53%** - includes HGVs and Buses
- Reduce transport emissions of PM₁₀ by **33%** - includes HGVs and Buses

Measure Categories

- Measures broadly categorised as follows:
 - Strategic** – e.g. integration with local transport and development plans/strategies
 - Infrastructural** - e.g. bypasses, relief roads, queue relocation schemes etc.
 - Behavioural** – e.g. walking, cycling, decreased reliance on car etc.
- Infrastructural & behavioural measures - categorised as “**Direct Measures**”

Measure	Title
5	Implementation of new Urban Traffic Management and Control system and changes to pedestrian crossings
Definition	Key Intervention
This measure incorporates options 2d and 2e from the provisional assessment. Sub-measures include: <ul style="list-style-type: none"> a. Installation of new pedestrian crossing in Bonnygate linked to new traffic management system. b. Implementation of new UTMC in Cupar Town Centre with synchronised fixed time signals. 	Improve efficiency of transit through Cupar Town Centre and reduce emissions from road traffic sources within the Bonnygate street canyon.
Responsible authority and other partners	Powers to be used
Fife Council (Transportation Services)	Voluntary

Measure	Title
12	Promotion of Cycling and Walking
Definition	Key Intervention
To encourage members of the community to adopt cycling and walking as alternatives to using private vehicles. <ul style="list-style-type: none"> a. Ensure cycle networks and facilities are provided, as a matter of course, within existing and new networks and developments. b. To improve integration between cycling, walking and public transport. c. Increase cycling trips to employment, education and leisure facilities. d. Improve pedestrian facilities such as new footpaths and crossings. 	To encourage a shift away from the use of private motor vehicles for travelling to more sustainable forms of transport, or reducing the need for travel.
Responsible authority and other partners	Powers to be used
Fife Council (Transportation Services) and SEStran	Statutory

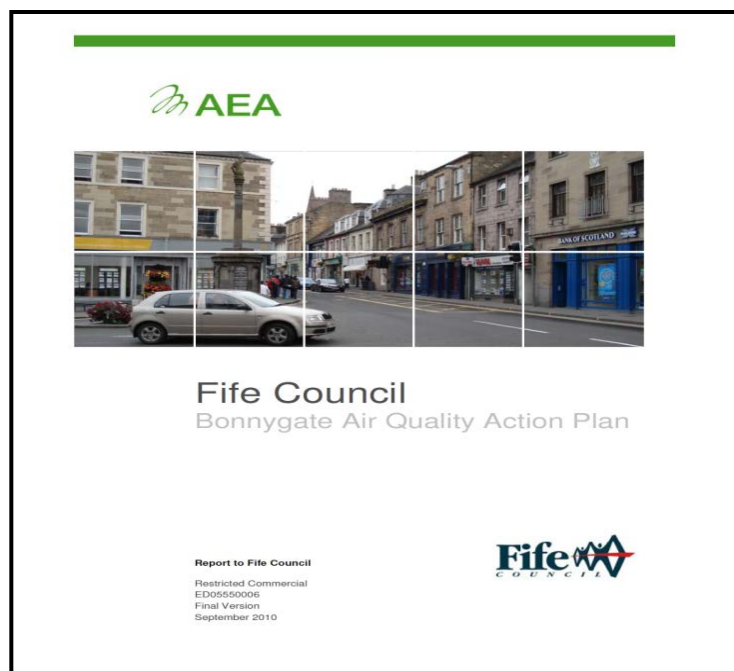
Analysis of Measures

- Comprehensive evaluation of all proposed measures
- Potential air quality impact
- Implementation costs
- Cost-effectiveness
- Potential co-environmental benefits, risk factors, social and economic impacts
- Feasibility and acceptability

AQ benefit \ Cost	Score	Zero	Small	Medium	Large
Score		0	1	2	3
Neutral	5	0	5	10	15
Low	4	0	4	8	12
Medium	3	0	3	6	9
High	2	0	2	4	6
Very High	1	0	1	2	3

Bonnygate Air Quality Action Plan

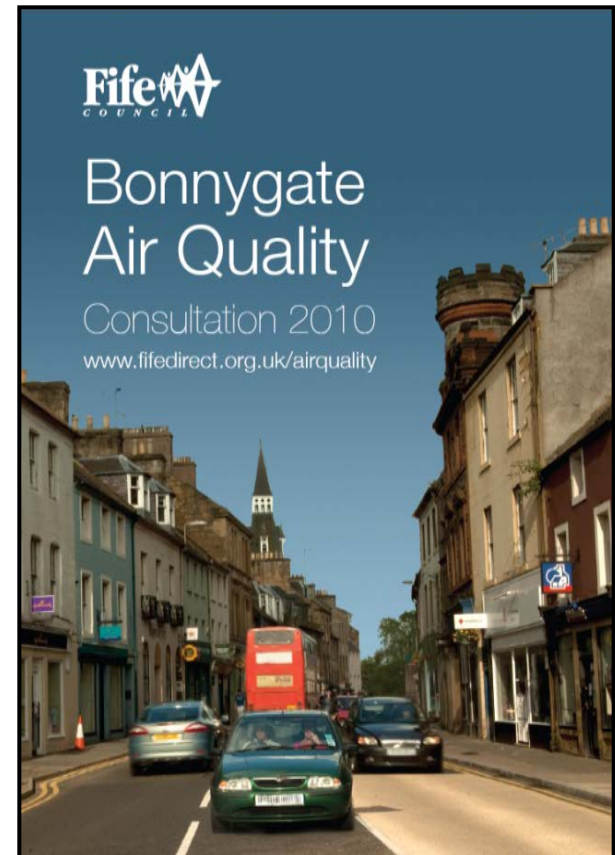
- Bonnygate Air Quality Action Plan 2010
- Set of 14 prioritised measures for working towards meeting air quality objectives
- Includes traffic & development management and behavioural measures



No	Measure	Timescale ¹
Strategic Measures		
1	Improving links with Local Transport Strategy/ Area Transport Plan	Ongoing
2	Improving Air Quality links with Local Planning and Development Framework	Ongoing
3	Integrate AQ with other Council Strategies	Ongoing
Direct measures		
4	Implementation of new Urban Traffic Management and Control system and changes to pedestrian crossings	Short-Term
5	Travel Plans for Large Institutions and Businesses	Short-Medium Term
6	Promotion of Travel Choices	Short-Medium Term
7	Target reduced localised emissions from freight operations.	Medium-Term
8	AQMA Awareness Signs	Short-Term
9	Provision of Information relating to Air Quality	Short-Term
10	Parking Management and Control	Short-Term
11	Promotion of Cycling and Walking	Short-Term
12	Review and support proposed infrastructure changes that will contribute to delivering improvements in local air quality	Medium-Long Term
13	Target reductions in emissions from the Council fleet and contract vehicles (including driver training)	Short-Term
14	Target reductions in emissions from buses	Short-Term

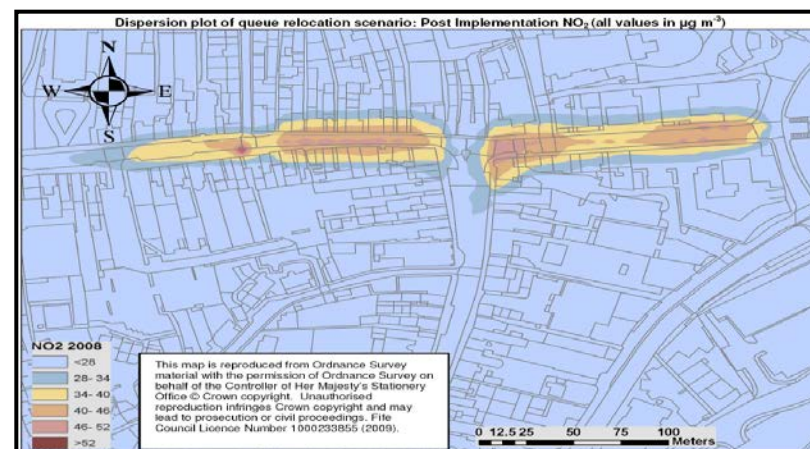
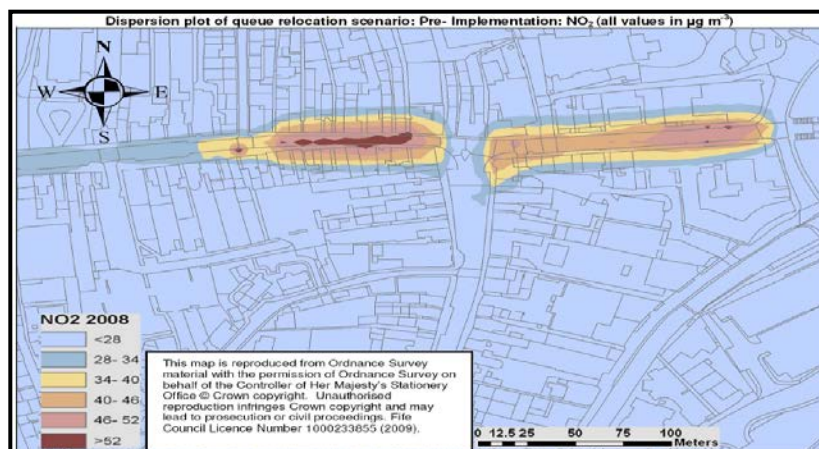
Consultation

- Community engagement
- Consulted public and business
- From **10th May to 2nd July 2010**
- Questionnaire survey & workshops
- Everyone allowed a say
- Survey responses described in action plan
- General support for the majority of proposed action plan measures
- Action plan finalised in **September 2010**



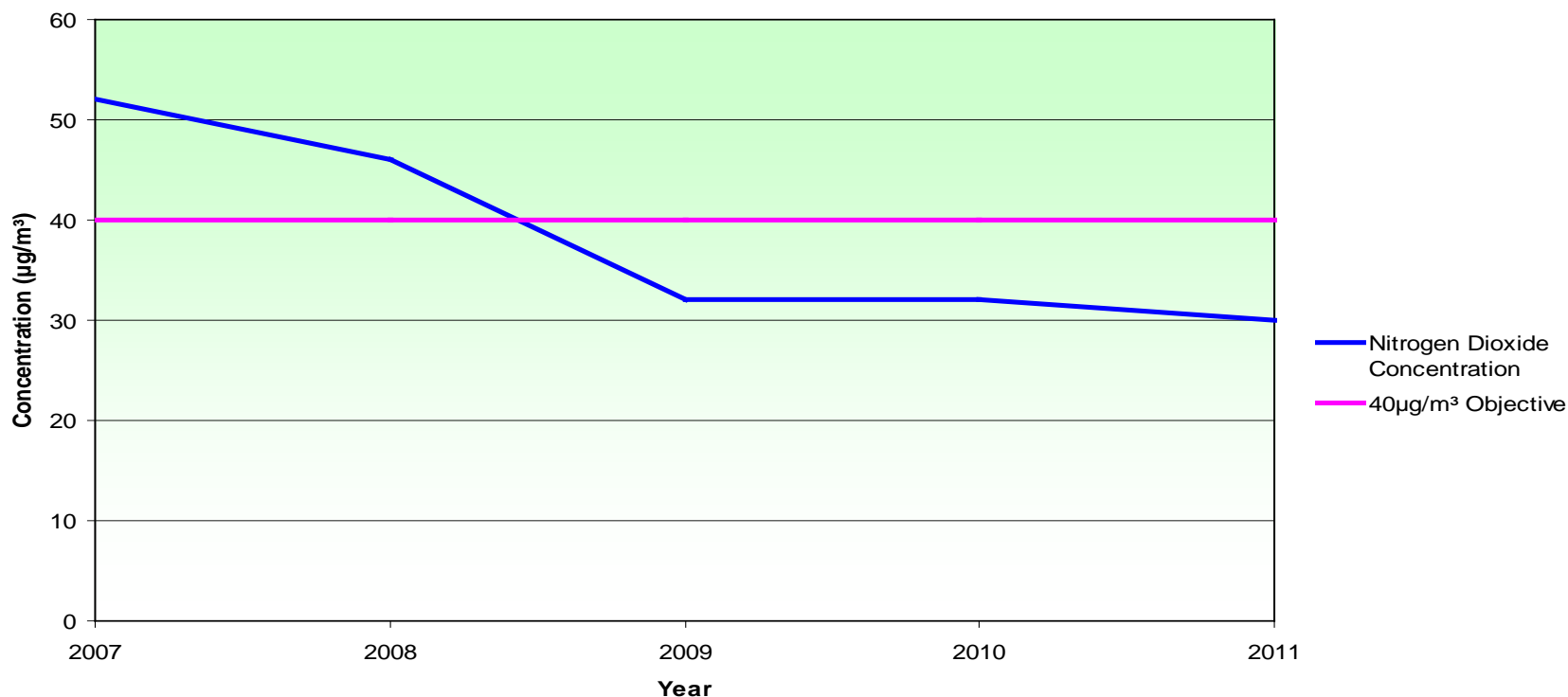
Traffic Management Measures

- Bypasses or relief roads not necessarily the only solution!
- Innovative " traffic queue relocation" system introduced in Bonnygate in 2009
- Co-ordinated system of traffic lights & pedestrian crossings
- Relocates traffic queue outside street canyon and improves traffic flow
- Before and after dispersion plots show decrease in pollutant concentrations



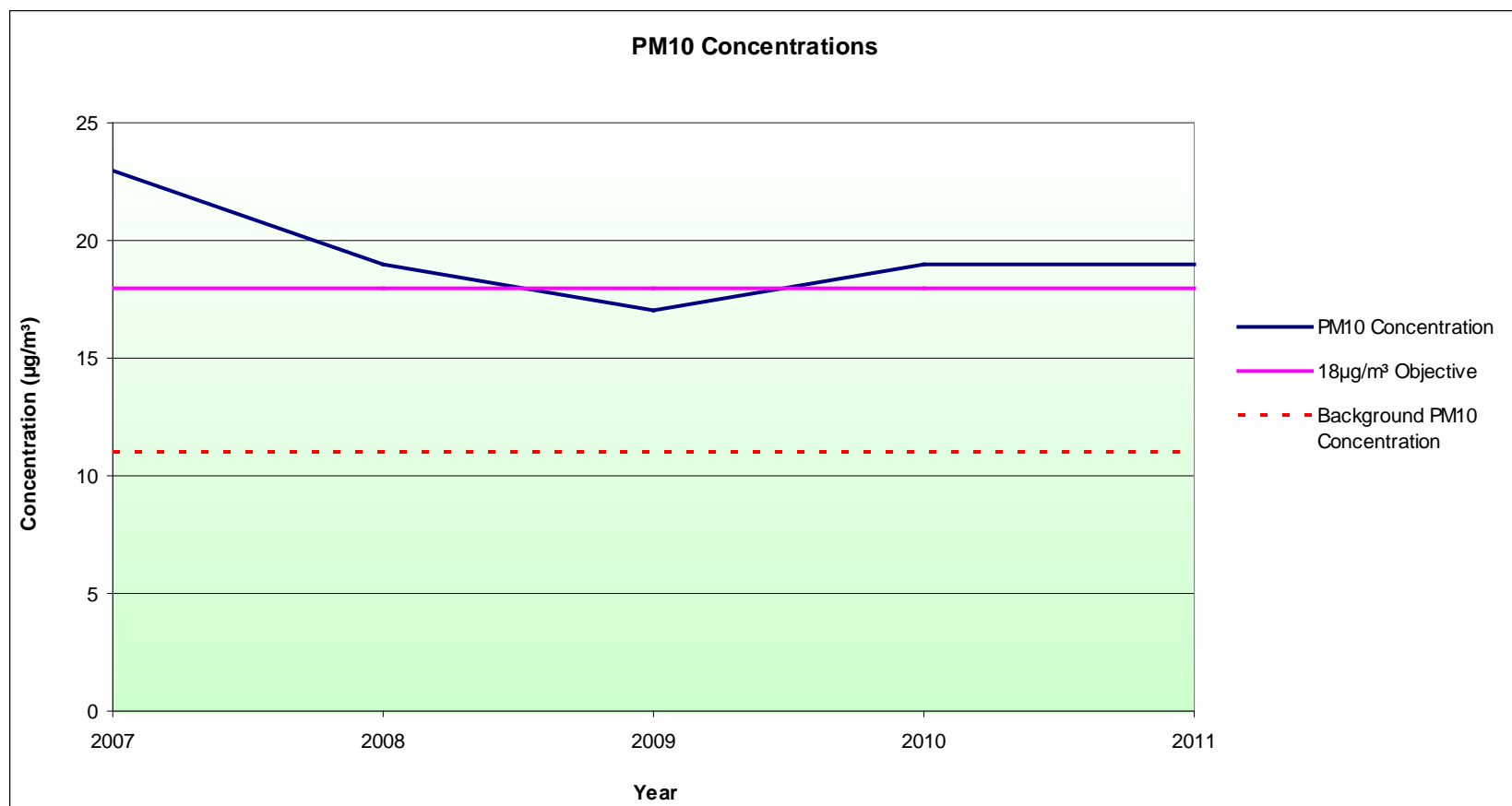
NO₂ Concentrations Bonnygate Automatic Monitor

Nitrogen Dioxide Concentrations



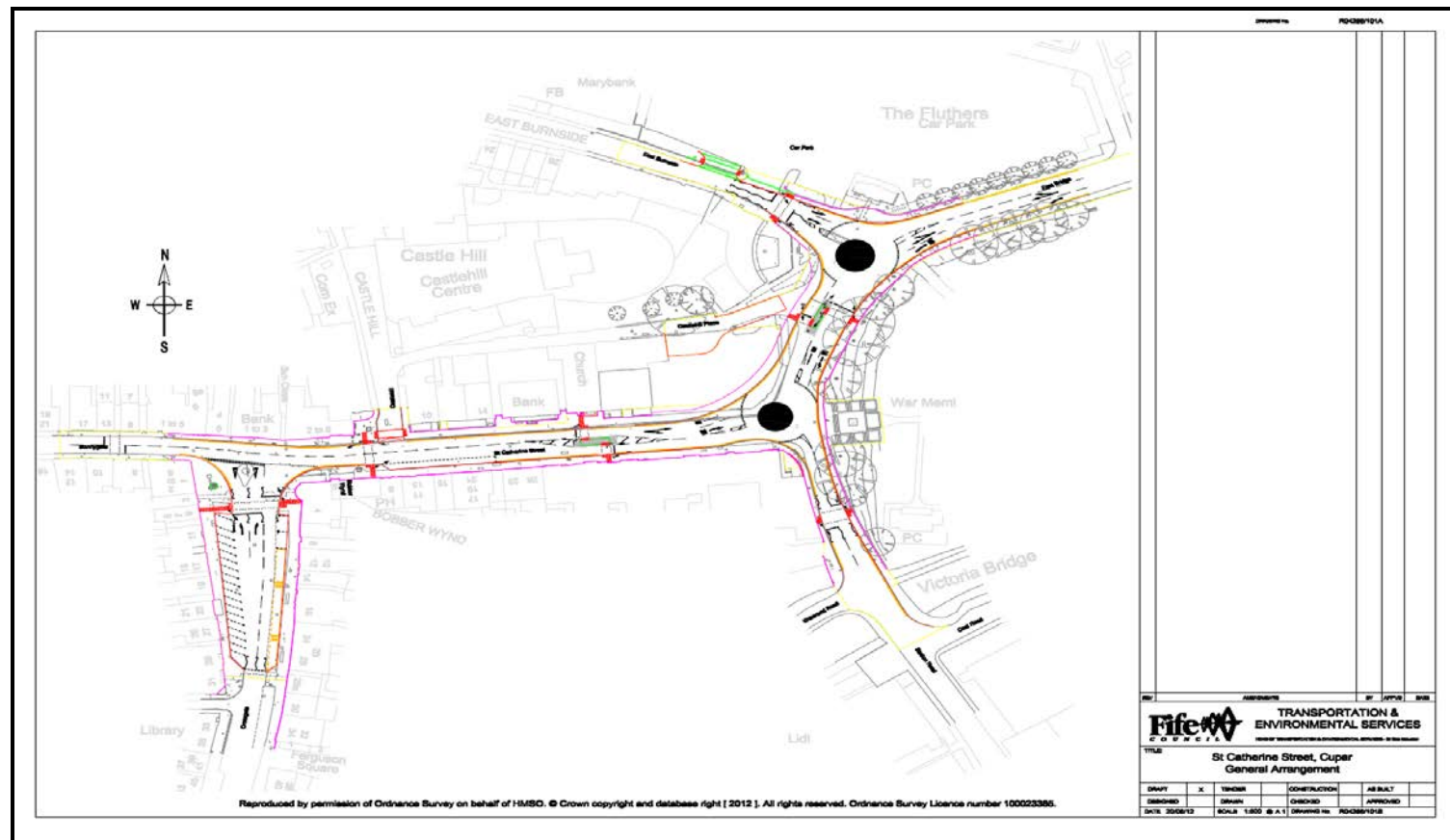
- Traffic queue relocation system introduced 2009 –decline in NO₂ concentrations
- Similar improvements observed for NO₂ diffusion tube concentrations

PM₁₀ Concentrations Bonnygate Automatic Monitor



- Decline from 23 $\mu\text{g m}^{-3}$ to marginal exceedance of 19 $\mu\text{g m}^{-3}$ for PM10 in 2011
- Relatively small difference between background (11) & statutory objective (18)

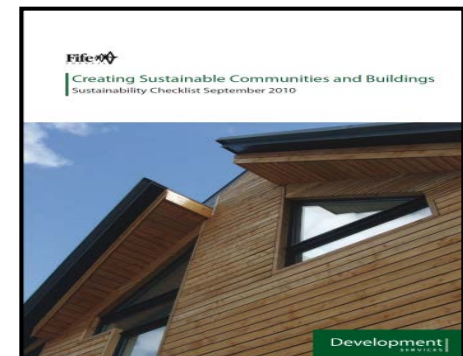
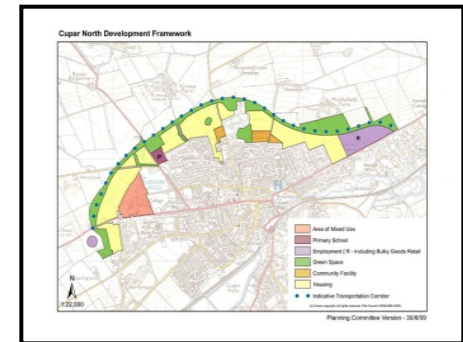
Bonnygate Street Scene Project



- Improve traffic flow – air quality impacts to be considered in dispersion modelling

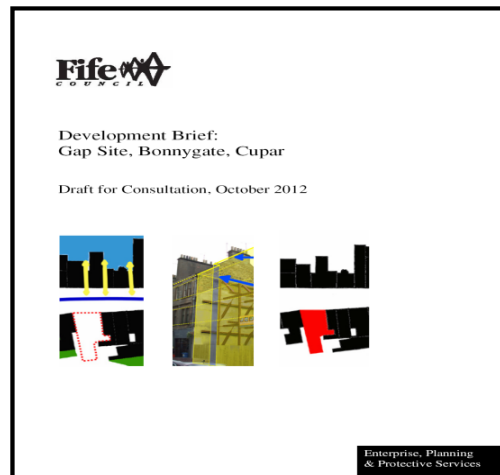
Development Management

- Air quality is a material planning consideration
- Fife Air Quality Development Guidelines
- Produced by Steering Group in 2010
- St Andrews & East Fife Local Plan 2009
- Proposed Cupar Relief Road
- Fife Council Sustainability Checklist 2010
- Includes reducing NOx emissions from buildings



Bonnygate Gap Site

- Buildings in 26/32 Bonnygate demolished in 2010
- Air quality modelling study in 2012 - impacts of proposed design options
- Unlikely to be significant air quality impacts from proposed development



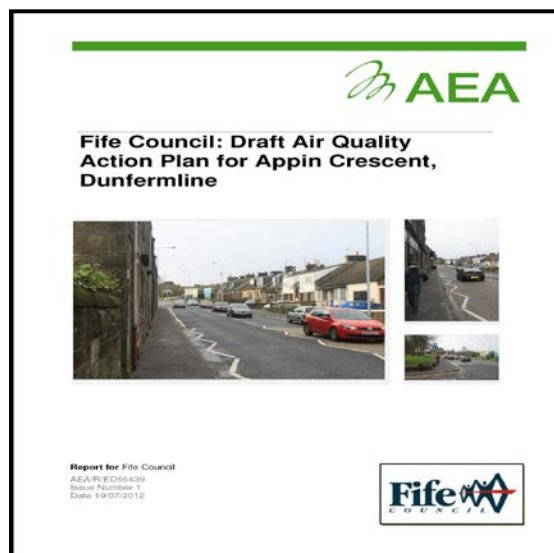
Behavioural Measures

- Encourage cycling and walking in preference to car –TRY IT Campaign
- Made possible through Scottish Air Quality Grant funding
- Survey of travel related behaviour in Cupar (February to April 2011)
- Over 300 households participated in the project
- Included providing travel advice/resources
- Improvements to cycling infrastructure in Cupar area

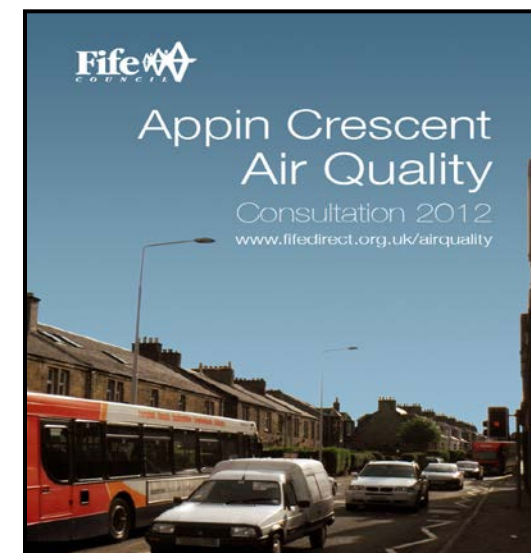


Replicating Success

- “Bonnygate Template” to be integrated into other action plans
- Integrated into production of Appin Crescent, Dunfermline Action Plan
- Demonstrating Council’s role as health protection and improvement organisation



No	Measure	Timescale ¹
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Future Outputs

- Bonnygate Steering Group continues meeting quarterly to ensure progress
- Annual Progress Reports to Scottish Government and SEPA
- Specific projects such as traffic management measures and electric vehicles
- Development of behavioural methods – “TRY IT” initiative
- Potential survey of biomass boiler usage?
- PM_{2.5} monitoring in the Bonnygate?



Challenges

- Road traffic pollution emerging as a major public health issue in the UK
- Growing population and increased car usage
- Improving stakeholder involvement in action planning process
- Securing funding for road infrastructure and traffic management options
- Media communications....

From:

“Bonnygate being one of the most polluted streets in the UK”

(Fife Today 2009) to.....

“Bonnygate enters a fresh era. Council measures effective in cleaning up pollution”

(Fife Herald 2013)





Opportunities

- *“Local authorities have a crucial role to play in delivering cleaner air.” SG 2009*
- Important role of Council as both a health protection & improvement organisation
- We need to work towards embedding the scientifically and ethically correct principles of LAQM into both our strategic and operational framework
- This will include:
 - Account for latest research base on pollutants and monitoring/assessment
 - Enhance closer working with both internal departments and external organisations (RHA, Transport Scotland, SEStrans etc.)
 - Developing innovative means by which to involve public in air quality issues
 - Greening of our fleet – includes electric vehicles

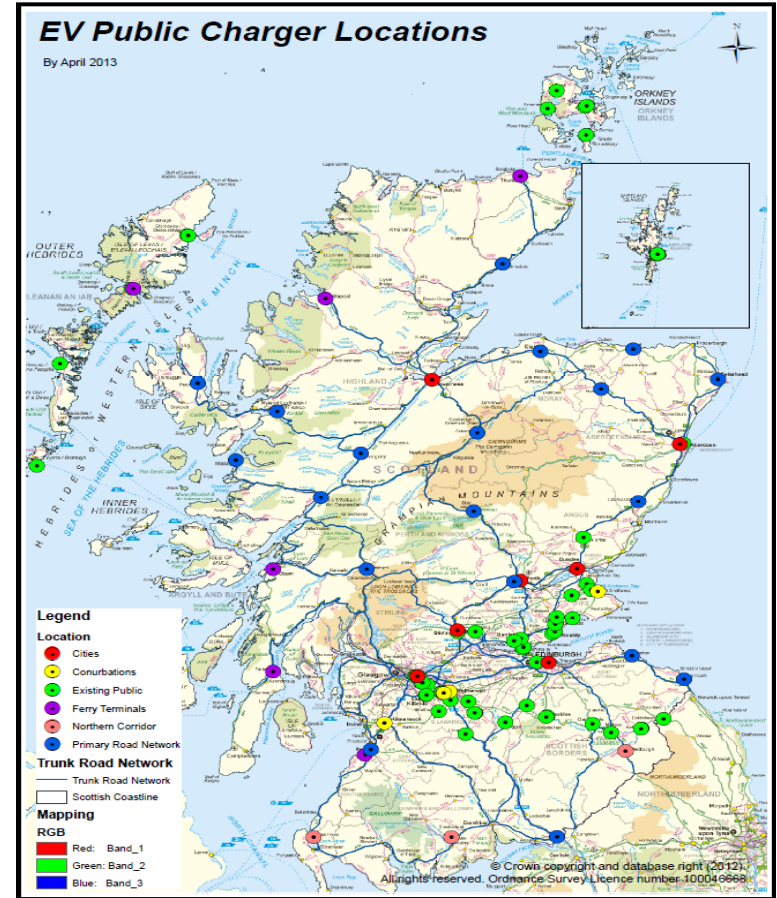
Overlaps...

- “*Scottish Government: Low Carbon Scotland* ” (2013)
- Ten key behaviour areas
- Two of these are road transport related....
 - Becoming less reliant on the car
 - Driving more efficiently
- Recognise links to climate change/GHG strategies
- Fife Council Carbon Emission Reduction Plan
- Exploring synergies with our Sustainability Team

Ten Key Behaviour Areas

1. Keeping the heat in (insulation, draught proofing, double glazing) 
2. Better heating management (turning down heating thermostat to between 18° and 21°, reducing the hours the heating is on, and turning down hot water thermostat to a maximum of 60°)
3. Saving electricity (buying energy efficient appliances, lightbulbs, TVs and other products when they need to be replaced, washing clothes at low temperatures)
4. Installing a more energy-efficient heating system or generating your own heat by replacing inefficient boilers with condensing boilers and/or microgeneration (e.g. solar water heating, biomass boiler, heat pump)
5. Becoming less reliant on the car (walking, cycling, using public transport and/or car-sharing instead of driving) 
6. Driving more efficiently (using a low carbon vehicle (fuel efficient, hybrid, alternative fuel or electric), and/or following fuel-efficient driving principles)
7. Using alternatives to flying where practical (e.g. train or teleconferencing for business)
8. Avoiding food waste 
9. Eating a healthy diet high in fruit and vegetables, in season where we live
10. Reducing and reusing in addition to the efforts we already make on recycling 

The Future...



Conclusion

- *“A good example of a thorough approach in developing an action plan which includes comprehensive links to transport policy and sustainable travel”*
DEFRA Best Practice Website – Bonnygate Cupar Air Quality Action Plan 2010
- *“A thorough analysis of the problem”*
LAQM Appraisal Team (TTR) – Scottish Air Quality Seminar, Glasgow 2012

Fife's action plan – why is it best practice?

- Thorough analysis of the problem:
 - Source apportionment
 - Scenario analysis
- Measure development
 - Action plan Steering Group
- Comprehensive measure analysis
 - Assessed against a range of criteria



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Fife
COUNCIL

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Services

Bonnygate Air Quality Action Plan
“Inspiration, Innovation and Integration in Environmental Health”



Annual Scottish Public Health Conference - November 2012
Kenny Bisset – Lead Officer – Fife Council Environmental Strategy Team

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Fife Direct Air Quality Web Pages www.fifedirect.org.uk/airquality and;

Air Quality Queries can also be directed to air.quality@fife.gov.uk

- Thank you for listening!