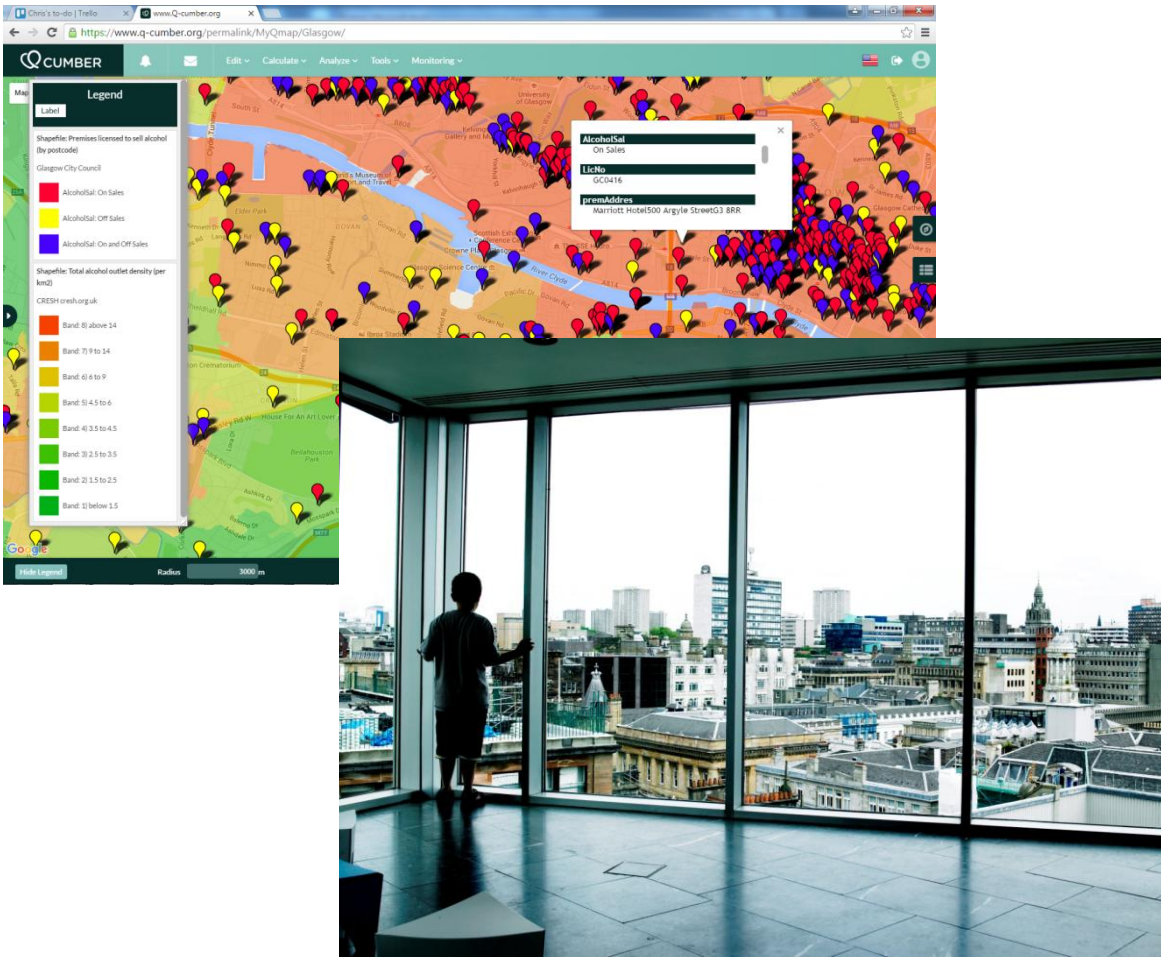
QCumber-EnvHealth Stakeholder Workshop

Report of the workshop held Wednesday 27th September 2017
The Lighthouse, Glasgow



Project co-funded by
Innovate UK
Technology Strategy Board

QCumber-EnvHealth

QCumber-EnvHealth is a new software platform to quantify urban environmental exposure and health risks under different policy scenarios. It has been developed under an Innovate UK project by Cambridge Environmental Research Consultants (CERC) and the Universities of Edinburgh, Glasgow and Strathclyde with guidance from Glasgow City Council and Transport Scotland.

Decision-making and planning in urban areas requires consideration of impacts on environmental exposure, health and inequalities. Policy assessment has been hampered by a lack of data due to limitations in monitoring technology, by restricted access to confidential health data, by a lack of practical risk models, and by the absence of a platform to integrate these into a single tool. This project has addressed all these issues.

Stakeholder workshop

Our workshop on 27th September 2017 at the Lighthouse, Glasgow brought together the project team and a full range of stakeholders (see the list of attendees in the appendix). The team presented the project, the platform and the four policy scenarios assessed with QCumber-EnvHealth. Stakeholders provided feedback and discussed the policy context. The presentations are available online here.

The policy scenarios assessed with QCumber-EnvHealth are as follows:

- *Air quality and transport scenarios*:
    - A hypothetical Low Emissions Zone in Glasgow, using illustrative output from the National Modelling Framework being developed by Transport Scotland and SEPA to assess LEZs in Scotland. This output was used to test QCumber-EnvHealth by predicting health impacts from the hypothetical LEZ.
    - A zero emissions city centre in Glasgow, showing what can be achieved once the need for petrol and diesel vehicles is phased out, with predicted health impacts and comparisons with National Air Quality Objectives.
- *Greenspace scenario*: the conversion of all the vacant and derelict land in Glasgow to high quality greenspace, with predicted health impacts and comparisons with the Greenspace National Indicator.
- *Tobacco and smoking*: a 'minimum distance' restriction on tobacco retailers, similar to that in Spain, showing impact on smoking prevalence and the Smoking National Indicator.

The following stakeholder presentations described their perspectives:

- Zeba Aziz of Glasgow City Council presented the Council's innovative Stalled Spaces programme, now in its sixth year, which supports community groups and local organisations to develop temporary projects on stalled or underutilised open spaces across Glasgow.
- Drew Hill of Transport Scotland presented the Transport Scotland's role in National Low Emission Framework assessment process being developed to assess air quality intervention options such as Low Emissions Zones, in the context of the Scottish Government commitment to identify and put in place the first Low Emission Zone by 2018.

- Ruaraidh Dobson, of ASH Scotland, presented the action taken by this independent charity to reduce the harm caused by tobacco

Workshop feedback

The following issues were raised during the workshop.

The platform

- Stakeholders said it was “exciting” and “interesting” to be able to quantify wellbeing with a platform like QCumber-EnvHealth.
- A stakeholder said it was useful that the tool could identify geographical areas to prioritise for action within the city, for instance for ‘Stalled Spaces’ projects.
- It was felt that it is important to be clear about the policy question that you are trying to answer or assess in the tool.
- The platform could be developed for use in schools, with material relevant to the school curriculum using sensors, mobile phone trajectory tracking, and the transport routing tool.
- It was suggested that we should analyze the postcodes of platform users to determine whether there is a bias towards higher engagement from less deprived areas.
- It was suggested that the transport routing tool could be extended so that the user could specify a time of day for the journey and view ‘typical’ exposures or view a ‘current’ exposure based on near-real-time forecasts of air quality.
- Features to create reports in the platform could be useful. There are existing features for creating PDF reports with maps, tables and graphs. These could be extended to include output from the new health tools that have been added to the platform for this project.

Synthetic data

- The synthetic data can be reused for other projects. It is updated annually as new health data becomes available. It would be possible to extend the synthetic data further back in time, as the administrative health data extends to the early 1980s. The groundwork has been done on this project.

Greenspace

- A ‘stalled space’ in general can be land owned by developers or local authorities where development has not yet started or is delayed, for instance due to the economic climate; or an area that is unused or has no clear function; or a vacant or derelict piece of land that has been abandoned.
- A stakeholder commented that the public engagement technique used for the ‘Stalled Spaces’ projects could be an example of best practise to be applied for other domains, for instance for Low Emissions Zones. The lessons from experience on these ‘Stalled Spaces’ projects were that it was vital to take a community-led approach, with close engagement with local organisations and good local support.
- There was discussion of what happens at the end of a ‘Stalled Space’ project. The consensus was that it was important to have a clear agreement with the landowners with a limited time frame for the project and a clear exit strategy. It was often possible to move projects to another site at the end of the time frame.
- There was discussion of the ‘Place Standard’ tool, which scores places along 14 dimensions using a 1-7 score. This is available as an app and a questionnaire. The ‘Place Standard’ tool has been used by stakeholders to collect data on a number of sites, which could potentially be mined as a dataset for future research. It could be useful to compare the map results from our

project to the data from the Place Standard tool; i.e. compare calculations of whether people live within 300m of greenspace to their personal assessments of the quality of their place. There are social media features within the QCumber platform which could be relevant to the 'Place Standard' tool.

- A useful topic for future research would be the impact of greenspace projects such as 'Stalled Spaces' on social isolation.
- The impact of greenspace projects such as 'Stalled Spaces' on air quality or biodiversity has not been assessed as far as stakeholders were aware. Some work has been done on adapting the Place Standard for an air quality context, for instance for Low Emission Zones or Air Quality Management Areas.

Transport and air quality

- A stakeholder commented that health assessment of a Low Emission Zone could be broadened. Assessments typically look at health impacts from air quality, but could also look at health impacts from changes in the level of active travel; for instance whether there are shifts in the transport mode between car use, public transport and walking or cycling.
- It was asked whether the health risk modelling research approach could be used for other health impacts besides low birth weight; the team replied that it can be applied to anything with a causal model.
- A stakeholder observed that the impact of air quality on low birth weight was of interest but that it was complex as there were many confounding factors. There was a good body of research work on the impacts of air quality on mortality and morbidity through cardiovascular and respiratory illness.
- Stakeholders were aware of some research into acute effects of air quality using data on GP admissions for children and of an ongoing project on asthma admissions; there were challenges in the availability of primary care data.

Tobacco and smoking

- The availability of tobacco through illegal channels was discussed. A stakeholder said UK government data indicated that roughly 10% of cigarettes and 30% of hand-rolling tobacco were illicit; however this was not a reason to reject control measures on tobacco.
- Stakeholders were aware of research on the impact of the ban on smoking in public places. The findings were that positive impacts were observed in smoking prevalence and in health data, and no increase was observed in exposure to second-hand smoke from increased smoking at home.
- A stakeholder suggested it would be interesting to extend the policy case study on tobacco and smoking to assess the impact of a ban on tobacco retail within a certain distance of schools.
- The smoking prevalence results in the tobacco policy case study were based on a single academic study. Stakeholders commented that while it made the study results more accessible to the public to present them as smoking prevalence maps and numbers for Glasgow, these should be presented with appropriate caveats since only a single study had been used.
- Currently local councils have no power to control the establishment of tobacco retail outlets. It is mandatory for retailers to register with the Scottish Government; however this is not a licensing scheme and retailers do not need permission to operate. A policy change would be needed to create 'levers' through which tobacco retail density could be controlled.
- A stakeholder commented that social impacts of alcohol retail are often obvious and immediate in the local neighbourhood, whereas health impacts of tobacco retail are much less directly visible.

- There was discussion of electronic cigarettes or 'vaping'. The regulatory regime is different in England and Scotland, which provides scope for a 'natural experiment' research project.
- Effects of second hand smoke on non-smokers could be modelled under our project, inferring the changes in exposure from our predictions on primary smokers.

Learn more

- Read the presentations from the workshop here.
- Access the public QCumber-EnvHealth platform for Glasgow here.
- Learn more about the QCumber-EnvHealth project.

For further information please contact Mark Jackson mark.jackson@cerc.co.uk.

Appendix 1: workshop programme

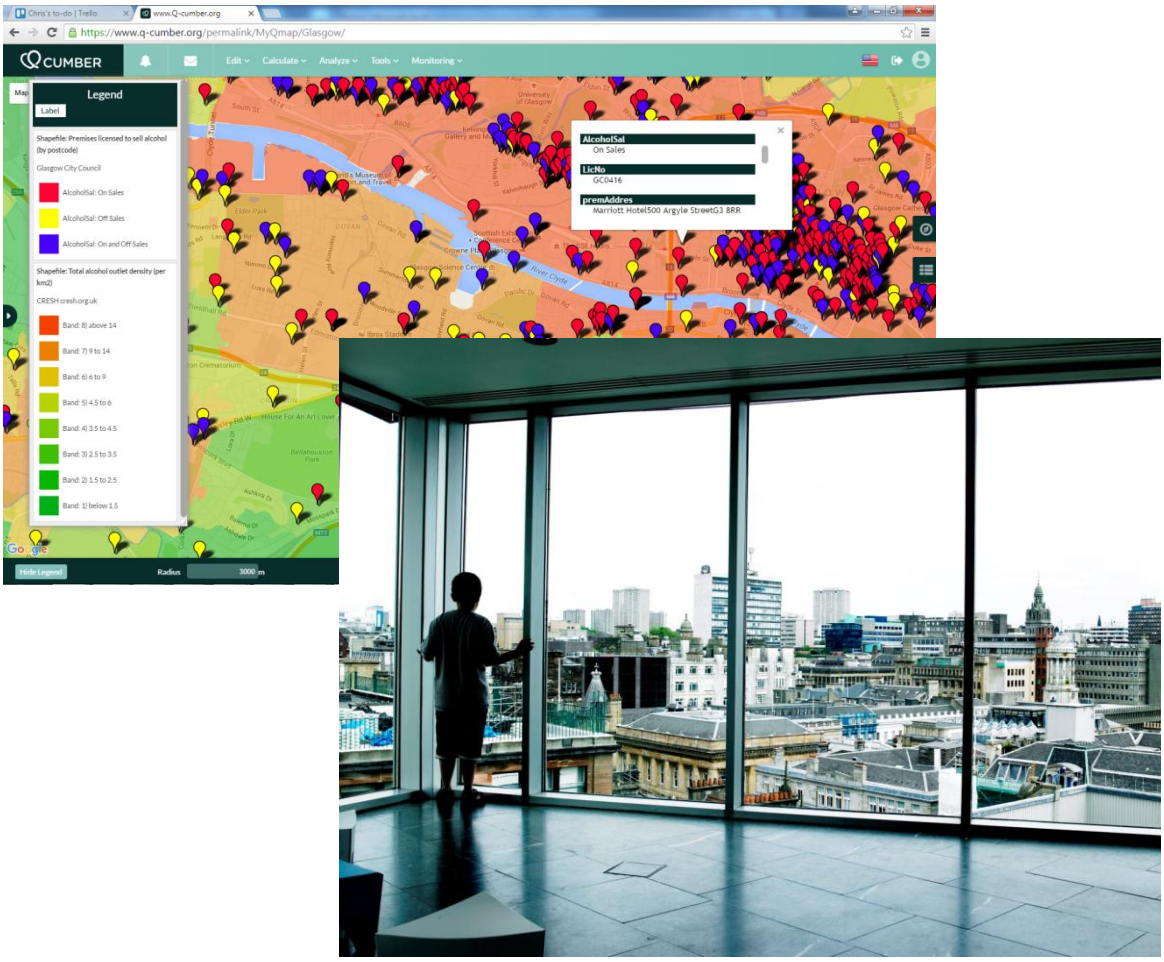
Session	Start	Item	Topics discussed	Speaker	Time (min)
	10:30	Registration, Tea, Coffee			30
	11:00	Welcome			5
Session 1: QCumber Project	11:05	Overview	Goal, partners, innovations, outcomes, policy scenarios	David Carruthers *CERC*	15
	11:20	QCumber platform	Platform, datasets and tools	Mark Jackson Chris Johnson *CERC*	15
	11:35	Environmental health modelling	Linking exposure to health	Tom Clemens Duncan Lee *Uni of Edinburgh Uni of Glasgow*	15
	11:50	**Tea & coffee**			15
Session 2: Greenspace	12:05	Glasgow 'Stalled Spaces'	Developing temporary projects on stalled or underutilised open spaces	Zeba Aziz *Glasgow City Council*	15
	12:20	Policy scenario	QCumber-EnvHealth greenspace policy scenario assessment	Mark Jackson Chris Johnson *CERC*	20
	12:40	Chaired discussion	Greenspace	Ruth Doherty *Uni of Edinburgh*	20
	13:00	**Lunch**			50
Session 3: Transport & air quality	13:50	Transport policy context	Policy context, decision making, requirements	Drew Hill *Transport Scotland*	15
	14:05	Smart exposure monitoring	Real-time high-density air quality monitoring with portable sensors	Chun Lin *Uni of Edinburgh*	15
	14:20	Policy scenario	QCumber-EnvHealth transport & air quality policy scenario assessment	Mark Jackson Chris Johnson *CERC*	20
	14:40	Chaired discussion	Transport & air quality	David Carruthers *CERC*	20
	15:00	**Tea & coffee**			15
Session 4: Tobacco & smoking	15:15	ASH Scotland	ASH Scotland's work to reduce the harm caused by tobacco	Ruaraidh Dobson *ASH*	15
	15:30	Policy scenario	QCumber-EnvHealth tobacco & smoking policy scenario assessment	Mark Jackson Chris Johnson *CERC*	20
	15:50	Chaired discussion	Tobacco & smoking	Chris Dibben *Uni of Edinburgh*	20
	16:10	**Close**			

Appendix 2: workshop attendees

David Carruthers	CERC
Tom Clemens	University of Edinburgh
Chris Dibben	University of Edinburgh
Ruth Doherty	University of Edinburgh
Mat Heal	University of Edinburgh
Drew Hill	Transport Scotland
Mark Jackson	CERC
Chris Johnson	CERC
Duncan Lee	University of Glasgow
Chun Lin	University of Edinburgh
Stuart Simmons	University of Edinburgh
Zeba Aziz	Glasgow City Council
Dom Callaghan	Glasgow City Council
Ruaraidh Dobson	ASH Scotland
Margaret Douglas	NHS Lothian
Anne Ellaway	MRC and University of Glasgow
Colin Gillespie	SEPA
Vera He	The University of Edinburgh
Tomas Liska	University of Edinburgh
Miranda Loh	IOM
Andrew Malby	SEPA
Alan McDonald	SEPA
Will Mueller	Institute of Occupational Medicine
Colin Ramsay	Health Protection Scotland
Lesley Riddell Robertson	Architecture and Design Scotland
Helen Sandison	CENSIS
Mark Williams	SEPA

QCumber-EnvHealth Stakeholder Workshop

Report of the workshop held Monday 13th June 2016, The Lighthouse, Glasgow



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QCumber-EnvHealth

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Decision-making and planning in rapidly growing urban centres require integrated assessment tools to determine impacts on environmental exposure, health and inequalities. However, there is a lack of integrated tools with which to determine current and future health risks and to evaluate policy options. Furthermore, despite the increasing availability of data, key datasets for such tools often have limited spatial detail since environmental monitoring is limited to a few urban sites and health microdata (such as confidential NHS records) has restricted access, and methods for linking exposure to health have not been exploited. This project is addressing all these issues in the context of Glasgow with its wealth of data, building on the successful QCumber system with state-of-the-art research and end-user participation, to create a unique data platform for health policy and inequality related decision-making: "QCumber-EnvHealth".

Stakeholder workshop

Our workshop on 13th June 2016 at the Lighthouse, Glasgow brought together the project team and a full range of stakeholders (see the list of attendees in the appendix). The team presented the project and the platform. Stakeholders described the policy context and complementary projects. The stakeholders and the team discussed how the platform could be used to assess policy.

Workshop feedback: policy case studies

David Carruthers of CERC presented the plan to demonstrate the usefulness of the platform by carrying out several policy assessment case studies in the second phase of the project. This will involve using the platform for risk modelling to quantify health and inequality impacts in Glasgow from policy scenarios. The case study policy scenarios could be driven by a desire to find actions that can improve health or reduce inequality, or to assess impacts on health or inequality of actions driven by other policy goals. Case studies which involve trade-offs would be valuable; i.e. changes which have both positive and negative impacts.

The following stakeholder presentations described their perspectives:

- Drew Hill of Transport Scotland presented the National Low Emission Framework assessment process being developed to assess air quality intervention options such as Low Emissions Zones, Clean Air Zones, other access regulation schemes, traffic management and vehicle licensing regulations.
- Ian Henton from Health Protection Scotland presented examples of assessments of historical incidents of elevated air pollution (bonfires, firework displays, a waste site fire) using NHS24 data to seek evidence of increased health complaints caused by the incidents.

- Dr Stan Murray, Consultant in Public Health Medicine, Greater Glasgow and Clyde Health Board, presented examples of risk assessments for air quality (air quality in vicinity of a school, release of particulates at time of demolition of high-rise flats).
- Alan McDonald of SEPA presented air quality modelling work for Glasgow being carried out within the Clean Air for Scotland National Modelling Framework.

David Carruthers chaired a discussion in which the following possible components of case studies were suggested.

- Transport case studies: reducing traffic flow, extending 20mph speed limit zones, whether the M74 completion project could be combined with provision of walkways or cycleways, the Clyde Gateway project.
- Restrictions on alcohol and tobacco retail, building on the work by Jamie Pearce and other project team members from CRESH.
- Changes in green space provision, again building on previous work by project team members from CRESH using the Scotland's Greenspace dataset.

Workshop feedback: issues raised

The following issues were raised during the workshop.

- Stakeholders asked whether the platform would be transferable to other cities. The team were confident that it will be fully transferable, since it has been used for a number of Italian cities and was successfully demonstrated for Belfast, Birmingham, Cambridge, Ipswich and London under an earlier Innovate UK feasibility study.
- Stakeholders felt that when designing the decision making tools it will be important to understand who will be using the platform - what decisions they will be assessing, what other systems they are using, how long they have and what skills they have - in order to design user-friendly workflows for the tools.
- A stakeholder asked whether it will be possible to deal with exposure during people's travel or at their workplace rather than focus on their place of residence, for instance using Census information. The team explained that in general the project will focus on the place of residence.
- Stakeholders asked whether the tool would provide cost-benefit analysis of policy options. The team explained that this was out of scope for this project, although predicted health outcomes from the tools could be used to calculate benefits.
- Stakeholders asked whether the decision-making tools would provide information on health inequality. The team replied that this was possible.
- A stakeholder suggested the tools could focus on health improvement as well as health impact.
- A stakeholder suggested that the integration of health and social care introduced in April was relevant and that a demonstration project could show how these partnerships could work in practise.
- A stakeholder suggested that the approach used by the "Good Places, Better Health" strategy for the Scottish Government on health and the environment provided a good example: begin by canvassing medical professionals to assess what health outcomes they would seek.
- A valuable contribution would be to inform the public about their role in reducing their own environmental impact and reducing their exposure. Previous examples to build on include the "Learn about air" campaign, which developed educational material to be used in schools in Scotland, the airTEXT air quality and health alerting system for London, and the "Know and respond" air quality alerts for Scotland. Alert messages could be targeted for recipients who

know they are vulnerable in particular ways, for instance through COPD or heart disease. Air quality educational material could link into the school geography or science curriculum.

- It might be possible to use historical incidents in the last few years to validate the tools – a natural experiment such as bonfire night.
- More traffic information may be available for exploitation in the platform: Bluetooth traffic data, mobile sensors, induction loop traffic data, the traffic counts recently completed in Glasgow City Centre for the National Modelling Framework pilot study. The team are already working to explore these possibilities with the relevant stakeholders including Transport Scotland and Glasgow City Council.
- The project will look at estimating indoor air pollution levels based on ambient outdoor levels. A stakeholder asked whether the project will be accounting for indoor sources of air pollution. The team explained that it might be possible to look at dampness but other indoor sources of air pollution will not be studied in this project.
- There was discussion of the fact that negative health impacts from air pollution are likely in Glasgow although its air quality does meet national air quality standards. Much higher impacts are presumably experienced in cities in other countries with comparatively much worse air quality. The team agreed and explained that health impacts of air pollution are possibly not linear, and for some pollutants and some health impacts it is known that there is no "safe threshold" beneath which negative health impacts are entirely avoided.

Learn more

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- Learn more about the QCumber-EnvHealth project.

For further information please contact Mark Jackson mark.jackson@cerc.co.uk.

Appendix 1: workshop programme

Session	Start	Item	Topics discussed	Speaker	Time (min)
	10:15	Registration, Tea, Coffee			30
	10:45	Welcome			10
1: The project	10:55	Project overview	Goal, partners, innovations, timeline and outcomes	David Carruthers Ruth Doherty *CERC* *Uni of Edinburgh*	20
	11:15	Platform for Glasgow	Platform, datasets, tools, exposure modelling	Mark Jackson Chris Johnson *CERC*	30
	11:45	Environmental health modelling	Linking exposure to health	Chris Dibben Jamie Pearce Duncan Lee *Uni of Edinburgh* *Uni of Glasgow*	30
	12:15	Smart exposure monitoring	Real-time high-density air quality monitoring with portable sensors	Chun Lin *Uni of Edinburgh*	15
	12:30	**Lunch**			60
2: Policy context and stakeholder perspective	13:30	Transport	Policy context, decision-making, requirements	Drew Hill *Transport Scotland*	15
	13:45	Health (1)	Policy context, decision-making, requirements	Ian Henton *Health Protection Scotland*	15
	14:00	Health (2)	Policy context, decision-making, requirements	Stan Murray *NHS Greater Glasgow & Clyde*	20
	14:20	Discussion	Case studies to be appraised during the project	Chaired discussion	25
	14:45	Tea and coffee			15
3: Related projects	15:00	Air quality modelling in Glasgow	City 2 of 4 in the National Modelling Framework	Alan Hills *SEPA*	15
	15:15	Open Glasgow	Innovate UK Future City	Colin Birchenall *Open Glasgow*	15
	15:30	The Glasgow City Observatory	Collecting, managing and interpreting data	Janette Hughes *Institute for Future Cities*	15
Conclusion	15:45	Conclusion	Summary of the day, findings, next steps	David Carruthers	15
	16:00	**Close**			

Appendix 2: workshop attendees

Tanith Allinson	Falkirk Council	Alan Hills	SEPA
Iain Beverland	University of Strathclyde	Janette Hughes	University of Strathclyde
Colin Birchenall	Open Glasgow	Mark Jackson	CERC
Gavin Burrows	CENSIS	Chris Johnson	CERC
Dom Callaghan	Glasgow City Council	Duncan Lee	University of Glasgow
David Carruthers	CERC	Chun Lin	University of Edinburgh
Kirsty Ciclitira	Scottish Government	Alan McDonald	SEPA
Tom Clemens	University of Edinburgh	Diana Morgan	CENSIS
Andrew Cross	University of Edinburgh	Stan Murray	NHS Greater Glasgow and Clyde
Maddalena de Lorenzo	University of Bologna	Jamie Pearce	University of Edinburgh
Chris Dibben	University of Edinburgh	John Redshaw	SEPA
Ruth Doherty	University of Edinburgh	Ken Reid	Glasgow City Council
Margaret Douglas	NHS Lothian	Amy Sharpe	Renfrewshire Council
Mat Heal	University of Edinburgh	Stuart Simmons	University of Edinburgh
Ian Henton	Health Protection Scotland	Linda Story	Scottish government
Drew Hill	Transport Scotland		