



Department  
for Environment  
Food & Rural Affairs

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## **Atmosphere and Local Environment (ALE) Programme Evidence Plan**

**Policy portfolio: Climate, Waste and Atmosphere  
(CWA)**

**Policy area: Atmosphere and Local Environment  
(ALE)**

**Timeframe covered by Evidence Plan: 2013/14-2017/18**

**Date of Evidence Plan: March 2013**

This evidence plan was correct at the time of publication (March 2013). However, Defra is currently undertaking a review of its policy priorities and in some areas the policy, and therefore evidence needs, will continue to develop and may change quite rapidly. If you have any queries about the evidence priorities covered in this plan, please contact [StrategicEvidence@defra.gsi.gov.uk](mailto:StrategicEvidence@defra.gsi.gov.uk).

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# 1. Policy context

**What are the key policy outcomes for the policy programme/area?**

## Introduction

The **Atmosphere & Local Environment (ALE) Programme** brings together a number of workstreams, projects and ongoing activities. The programme is in place to address various atmospheric and local environment quality issues that affect the UK and to influence and lead on UK interests in Europe and internationally.

The policies supported by the ALE programme evidence plan are intended to improve the natural environment and thereby support economic growth. There are a number of direct and indirect links between these areas with the primary link being through an impact on human capital. Air pollution is seen to have a significant impact on public health – both mortality and morbidity - which is likely to impose a notable economic cost through reduced activity days and direct health costs, in addition to the assessed human health effects. While noise also imposes a health cost that will be reflected in economic performance, the more significant link is likely to be through sleep disturbance causing fatigue, reducing workplace performance and increasing accidents. Furthermore the quality of the local environment may have an important role in attracting the elite workers to the UK and foreign direct investment.

Ministerial priorities make clear the need for action on the environment to support economic growth. The evidence programme will therefore need to put increasing weight on these areas especially in the short term. In addition air pollution and noise indicators are included as part of the Department of Health's Public Health Outcomes Framework. The evidence programme will need to support this.

The great majority of the ALE evidence budget, those sections covering air quality, noise, industrial emissions and stratospheric ozone and fluorinated gases (SOFG), are held and managed by Defra but are used to support the evidence needs of Defra and the Devolved Administrations in Scotland, Wales and Northern Ireland. This arrangement was agreed at the time of devolution and offers a more efficient way of gathering evidence to support policy development.

**Air pollution** continues to damage human health, well-being and the environment – key sources are from transport, industry and agriculture. Current levels of fine particulate air pollution in the UK have recently been estimated to result in social costs of £8-17 billion per annum and to reduce average life expectancy by 6 months; we are not achieving all of our legally binding targets for air quality arising from EU legislation with the main challenges in urban areas where traffic pollution is the dominant local source. Critical loads for the deposition of pollutants on sensitive ecosystems are still exceeded in large areas of the UK and the impact of ozone on crop productivity has an estimated value of £180-350 million per annum. There are important links with climate change mitigation and adaptation

policies. Climate change and air pollutants share many common sources; linkages are complex and some 'traditional' air pollutants also act as greenhouse gases, or are involved in their formation.

**Industrial activity** remains a key source of air pollution and noise, as well as of emissions to land and water. Successive regulatory controls have resulted in a huge reduction in such emissions, notably through the system of integrated pollution prevention and control (IPPC) applied to larger installations. Emissions from these larger installations (some 4,000 in the UK) have been reported annually from 2007 and held on a Pollutant Release and Transfer Register (PRTR) set up under an EU Regulation<sup>1</sup>. Attention is also needed to the estimation and reporting of emissions to air from some 19,000 smaller installations regulated by local councils in England and Wales.

**Noise and other sources of potential nuisance** address environmental noise, neighbour and neighbourhood noise and other sources of potential nuisance such as odour and artificial light. Understanding the impacts of noise on human health, quality of life and well being is still developing but it has been estimated that exposure to transportation noise in England is responsible for around 250,000 disability adjusted life years lost each year and costs the economy £7bn - £10bn per annum. 43% of the population feel that noise spoils their home life to some extent. Around 1,100 complaints about noise are made to Local Authorities in England every day. The Government's policy on noise promotes good health and a good quality of life through the effective management of noise in the context of Government policy on sustainable development. In particular, the main policy activities are aimed at:

- Avoiding significant adverse impacts;
- Mitigating and minimising adverse impacts; and
- Where possible, contributing to improvement in health and quality of life.

**Local Environment Quality** concerns the cleanliness of neighbourhoods including litter, dog fouling, graffiti, and fly-posting. Neighbourhood appearance features highly in opinion poll surveys of what matters to people, and there is a link between the local environment quality and quality of life. Working to reduce littering is a priority in the Coalition's Programme for Government. Policy work in this area aims to better understand the causes of, and solutions to poor local environment quality; to support Local Authorities in their statutory duties on these issues; and to understand and raise awareness of the role of local environment quality issues in relation to economic growth and well-being.

**Stratospheric Ozone and Fluorinated Gases (SOFG)** has a global focus, delivering commitments under the UN Montreal Protocol, the UN Framework Convention on Climate Change and associated EU legislation. These instruments have the related aims of:

- limiting and then reversing further damage to the stratospheric ozone layer, through the phase out of ozone depleting substances such as Chlorofluorocarbons (CFCs), Hydrochlorofluorocarbons (HCFCs) and halons,

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<sup>1</sup> Regulation No. (EC) 166/2006.

- avoiding contributions to anthropogenic climate change through the control of emissions of fluorinated greenhouse gases such as Hydrofluorocarbons (HFCs), Perfluorocarbons (PFCs) and sulphur hexafluoride (SF<sub>6</sub>) (fluorinated greenhouse gases, in particular HFCs, used as replacements for ozone depleting substances).

## Policy activities

The work of the programme primarily aims to deliver the Ministerial priority **to improve the environment**. The work of the programme is focused on the following policy activities:

### Improved Air Quality, as a result of reductions in emissions of air pollutants

1. Management and delivery of EU and UNECE air quality obligations for the UK through:
  - Delivery of existing policy commitments including management of infraction risks in relation to air quality limits for nitrogen dioxide (NO<sub>2</sub>) and particulate matter (PM<sub>10</sub>) through development and updating of air quality plans;
  - Meeting reporting commitments for the assessment of compliance with EU and international commitments and national statistic releases.
2. Actions to reduce emissions including:
  - Investigation of emission reduction measures, from all sources including transport, industry, domestic and agriculture, for implementation in both the short and longer term with the aim of improving health and ecosystem outcomes (including at EU/UNECE levels) and accelerating progress towards full compliance with EU limit values.
  - Influencing others including input into policy proposals from other parts of Defra and other Government Departments to protect/improve air quality; raising public and business awareness of air pollution damage.
3. Input into the European Commission's Review of air quality legislation, due to conclude in 2013 with a revised Thematic Strategy on Air Pollution and expected to lead to revision of the Ambient Air Quality and National Emission Ceiling Directives and proposals for source based controls.
4. Consulting on a new approach to local air quality management: with options on how best to refocus local action on delivery of air quality improvements.
5. Management of the Local Air Quality Management system: ongoing work to assist Local Authorities in England, Wales, Scotland and Northern Ireland in carrying out their duties under the Environment Act 1995. This includes liaison with the Greater London Authority in relation to the duties of the Mayor of London in relation to air quality.

### Controlled and reduced levels of industrial and agricultural<sup>2</sup> pollution

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<sup>2</sup> Mainly intensive pig and poultry units controlled under Chapter II of the industrial emissions Directive (2010/75/EU)

1. Oversee the implementation of the Industrial Emissions Directive according to its deadlines.
2. Maintain and develop the Local Authority Pollution Control regime.

### **Cleaner streets and neighbourhoods**

1. Implement results of a strategic review of Defra's approach to litter policy, including:
  - a. improving the usability and methodology of the Local Environment Quality Survey England; and
  - b. filling some substantial data gaps around the costs to the economy of poor local environment quality, encompassing better understanding of the local environment quality elements of Local Authorities' street cleansing costs, the costs borne by other litter authorities such as Network Rail and the Highways Agency, and the 'hidden' costs of the impact of poor local environment quality on growth.

### **Effective management of noise and other sources of potential nuisance.**

1. Working with other Government Departments and wider stakeholders so that the potential impacts of policies and initiatives on the noise environment and on other potential nuisances are understood and fully considered alongside other outcomes;
2. Continue to implement the Environmental Noise Directive including publication of the results of noise mapping, production of noise maps and facilitating the investigation on Important Areas ('hot spots'); and
3. Continue to implement Natural Environment White Paper commitment 69 (implementing the Government's policy on noise, working with Local Authorities to establish mechanisms for formally identifying and protecting urban Quiet Areas ) and 70 (reducing the negative impacts of artificial light and protect existing dark areas).

### **Improved Stratospheric Ozone through the Montreal Protocol**

1. Ongoing maintenance and implementation of the UK Ozone Depleting Substances regulatory - including regulatory/enforcement activities to ensure EU compliance and support to key industrial sectors.
2. Fulfil the UK's obligations as a signatory of the Montreal Protocol - ongoing active role in international negotiations to consider further actions to ensure ozone layer recovery and funding phase out of CFC and HCFC use by developing countries.

### **Reduced fluorinated greenhouse gas emissions**

1. Ongoing maintenance and implementation of the Fluorinated Greenhouse Gases regulatory regime - including regulatory/enforcement activities to ensure EU compliance and support to key industrial sectors.
2. Review the need for further action to limit production and use of fluorinated greenhouse gases.

## 2. Current and near-term evidence objectives

### What are the current and near-term objectives for evidence and how do they align to policy outcomes?

All evidence aligns directly with one of more of the policy objectives for the ALE Programme as outlined in Section 1 or forms part of broader research and strategic activities that contribute more widely to the programme. Evidence activities have been grouped to form broad evidence objectives and set out below, where objectives link to more than one policy activity; they have been placed under the main policy driver. Evidence activities supporting ALE policy activities that are not directly funded by Defra are outlined in Section 4. In addition, ALE evidence activities are used to support policy objectives in other parts of the Department.

### Improved Air Quality, as a result of reductions in emissions of air pollutants

All air quality evidence activities in this evidence plan are considered important for the delivery of a balanced evidence programme, capable of supporting current and future air quality policy development and maintenance. The highest priority activities for Defra itself to support are those relating directly to support for the development of new policy initiatives and delivery of existing commitments, most significantly statutory reporting requirements. Other work to support the development of the evidence itself such as the development of new tools and work to reduce uncertainties are seen as activities that, where possible, are carried out in partnership with other research organisations and interested parties.

#### Manage and deliver EU and UNECE Air Quality obligations (77% of air quality evidence funding)

This is a major area of evidence activity and spend and fulfils the following evidence objectives:

1. Provision of monitoring information on ambient concentrations of a range of air quality pollutants<sup>3</sup> to monitor trends including data for national statistics, meet the legal requirements of EU Directives, meet the requirements under the Convention on Long Range Transboundary Air Pollution and provide data for public information, emergency response and research purposes.
2. Provision of daily forecasts of UK air pollution concentrations.
3. Generation of data for annual submission to the Commission to assess compliance with ambient air quality legislation including collation of monitoring information, supplementary assessment with air quality models; investigations into breaches of

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<sup>3</sup> Particulate Matter (PM<sub>10</sub> and PM<sub>2.5</sub>), nitrogen dioxide (NO<sub>2</sub>), nitrogen oxides (NO<sub>x</sub>), sulphur dioxide (SO<sub>2</sub>), ozone (O<sub>3</sub>), hydrocarbons, heavy metals and Polycyclic Aromatic Hydrocarbons



EU limit and target values and development of Air Quality Plans through collation of information on measures and generation of ambient air quality projections.

Additional work on data management to prepare for the introduction of electronic reporting (E-Reporting) in 2014.

4. Operation and management of non statutory monitoring networks to provide data on concentrations and depositions of a range of pollutants and the calculation of resultant health and ecosystem indicators to monitor trends including data for national statistics, monitor emerging air pollution threats and sources and provide data for public information and research purposes.
5. Provision of data on national emissions of pollutants for past, current and future years and disaggregation by Devolved Administration area and down to 1 km<sup>2</sup> to monitor trends, meet EU and international reporting commitments, provide a high quality input into air quality modelling activities and provide data for public information and research purposes.
6. Development and maintenance of air pollution information services to meet public information and data availability requirements and communicate key air quality messages.
7. Input into EU Working groups and evidence activities under the Convention on Long Range Transboundary Air Pollution to influence the development of robust evidence for policy making and application.
8. Provision of data to support the assessment of programmes, policies or projects which might impact on delivery of national or international obligations. If a risk is identified this will then feed into the impact assessment by quantifying and valuing any such risks.

#### Actions to reduce emissions (2%)

##### Evidence objectives:

1. Understanding of emission sources and their historic and projected trends for key pollutants (oxides of nitrogen, sulphur dioxide, particulate matter, volatile organic compounds, ammonia, heavy metals and Polycyclic Aromatic Hydrocarbons).
2. Understanding of contribution of different emission sources to ambient concentrations and deposition at different locations in the UK and over different timescales (includes contribution from outside the UK).
3. Understanding of different abatement measures, their abatement efficiencies for a range of pollutants (including greenhouse gases where relevant) and abatement potential as well as potential non-technical barriers to uptake.
4. Estimation of the costs and benefits of emission reduction measures and national policy proposals including on national emissions, ambient concentrations, health and ecosystem impacts, food security and compliance assessments, monetised as far as possible.
5. Maintenance and development of analysis tools and economic guidance to support Defra, the Devolved Administrations and other Government Department's policy development and impact assessment.
6. Review of existing social science evidence base and commissioning of new research to provide information on issues including: awareness and attitudes

towards air pollution amongst different groups; factors that influence behavioural change and evaluation of different types of intervention.

#### Input into the European Commission's Review of air quality legislation (5%)

Evidence objectives:

1. Understanding of current and future emissions and concentrations of key pollutants under baseline conditions and key uncertainties and sensitivities in projections including information on emissions outside the UK and their impacts.
2. Understanding the costs and benefits of different measures and packages of measures (see evidence objective above).
3. Defining the scope for further ambition: establishment of updated UK baseline projections (emissions and ambient concentrations) out to 2025/30, and understanding the costs and benefits of additional actions in terms of impacts on ambient concentrations, compliance with EU Limit Values, national emissions and health and ecosystem impacts.
4. Provide information to optimise how to achieve a chosen level of ambition including targeting of policy interventions to achieve specific environmental goal and co-benefits and trade-offs between air pollution policies and other areas.
5. Input into and evaluation of EU-scale evidence activities for the review to influence the development of robust evidence for policy making. Evaluation of EU-scale assessments with UK-specific data.
6. Review valuation approaches including assessing the differences between UK, EU and US appraisal methodologies and developing abatement cost tools.
7. Supporting the development of UK inputs to the review process and UK negotiating positions. Including review of valuation approaches and consideration of options to simplify the EU ambient air pollution control regime without compromising health and environmental outcomes.

#### Consulting on a new approach to local air quality management (<1%)

Evidence objectives:

1. Provision of information on potential costs and benefits and implications for national assessment of different consultation options.
2. Provision of evidence on the effectiveness of local measures and action planning and on tools to improve delivery of local air quality action planning.

#### Management of the Local Air Quality Management system (2%)

Evidence objectives:

1. Development and maintenance of analysis tools and guidance to assess local air quality.
2. Appraisal of Local Authority reports and grant applications.

#### Cross cutting and strategic evidence activities (11%)

1. Research on particulate matter to reduce uncertainties in the most effective way to reduce concentrations/exposure to particulate matter (PM<sub>10</sub> and PM<sub>2.5</sub>) and associated health impacts through furthering our understanding of:
  - a. The strength and role of sources of primary and secondary particulate matter in UK concentrations of PM<sub>10</sub> and PM<sub>2.5</sub> at urban, urban background and rural sites in different parts of the UK under average and episode conditions.
  - b. The impact on PM<sub>10</sub> and PM<sub>2.5</sub> concentrations at UK sites of changes in emissions of primary PM and precursor gases at UK, EU and wider scale.
  - c. Poorly quantified emission sources including non-exhaust road transport emissions and cooking aerosols and processes such as re-suspension from roads.
  - d. The chemical processes that lead to the transport and formation of particulate matter and our ability to model this relationships between particle composition and sources, including the development of markers for particular emission sources.
2. Research on the impacts of air pollution on ecosystems to:
  - a. Development of new metrics/concepts to improve the communication of the impacts of air pollution on ecosystem, articulate of the benefits of further emission reductions and define environmental goals.
  - b. Enable the application of the ecosystem services approach to value the environmental cost of change in air quality.
3. Research on the factors controlling ozone concentrations in the UK continues to be required to identify the most cost effective scale and location of measures to reduce impacts on human health, increase agricultural crop productivity and minimise damage to ecosystems and associated loss of biodiversity. This requires improving understanding of hemispheric transport of pollutants, the feasibility of international control strategies and interactions with climate change.
4. Scientific and social research on the impacts of a changing climate on future air quality/air quality impacts and the synergies/trade-offs between air quality and climate change both in terms of pollutants and measures.
5. Development and implementation of a modelling strategy to ensure that air quality models continue to be fit for purpose and meet policy needs. To include the establishment of an independent Modelling Advisory Group to oversee modelling activities including the development and use of new modelling tools and model intercomparison activities.
6. Provision of independent expert advice on a range of air quality evidence issues by the Air Quality Expert Group (AQEG), an expert committee to the Department and Devolved Administrations reporting to the Chief Scientific Advisor (CSA) and Ministers and advising on all aspects of air pollution science. Their key roles are synthesising the state of knowledge on aspect of air pollution in response to requests from the Department and Devolved Administrations, helping to steer the UK air quality programme towards key areas of uncertainty, providing a challenge function for Defra's and devolved administrations programme and providing a link to the wider research community. The Group is chaired by Prof. Paul Monks and

complements the Department of Health's Committee on the Medical Effects of Air Pollution (COMEAP).

7. Organisation and support of the Interdepartmental Group on Costs and Benefits (IGCB) to support Defra in developing, maintaining and disseminating best practice appraisal methodologies.

## **Controlled and reduced levels of industrial and agricultural<sup>4</sup> pollution**

### Oversee the implementation of the Industrial Emissions Directive (<1%)

Evidence objectives:

1. Provision of information to meet the requirements of the European Pollutant Release and Transfer Register<sup>5</sup>.
2. Provision of information on costs and benefits of different options to inform development of UK position on possible Commission legislative proposals on (i) small combustion plants, (ii) changes to intensive livestock Integrated Pollution Prevention and Control thresholds, and (iii) changes to large combustion plant emission limit values for refineries.
3. Provision of information on costs and benefits arising from implementation of Article 14 of the energy efficiency Directive<sup>6</sup> which requires assessment of the viability of combined heat and power at new or substantially changed combustion plants.

### Maintain and develop the Local Authority Pollution Control and Clean Air Act regimes (2%)

Evidence objectives:

1. Provision of data to fulfil reporting requirements under the Sulphur Content of Liquid Fuel Directive.
2. Review of applications for exemptions for use of fuels and appliances in Smoke Control Areas in support of the Clean Air Act<sup>7</sup>.
3. Support to the review of the Clean Air Act.
4. Provision of information on regulatory activities by Local Authorities for Local Authority Pollution Control.

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<sup>4</sup> Mainly intensive pig and poultry units controlled under Chapter II of the Industrial Emissions Directive (2010/75/EU)

<sup>5</sup> As required by Regulation (EC) No. 166/2006.

<sup>6</sup> Directive 2012/27/EU.

<sup>7</sup> Ongoing review of policy requirements likely to lead to changes in evidence requirements

## Cleaner streets and neighbourhoods

This area of policy has recently been reviewed. At the current time, evidence is provided as part of the maintenance grant provided by Defra to Keep Britain Tidy, an NGO specialising in local environmental quality issues. The main product is the annual Local Environment Quality Survey England, a physical survey of selected areas of England to provide data on the levels of litter, graffiti, dog fouling, etc. These data help to support the development of policy by establishing the “state of the environment”, the identification of trends over time, and the provision of evidence of the impact of policy interventions. The Keep Britain Tidy grant also supports market research to support information campaigns such as Love Where You Live, and a growing social research evidence to better understand littering activity.

Work to value the impacts of local environmental quality has been funded through the ALE evidence programme and is continuing to develop.

## Effective management of noise and other sources of potential nuisance.

Working with other Government Departments and wider stakeholders so that the potential impacts of policies and initiatives on the noise environment and on other potential nuisances are understood and fully considered alongside other outcomes; and continue to implement the Environmental Noise Directive

- Data to be obtained to enable the noise indicator in the Public Health Outcomes Framework to be populated (each year); and
- Data to be obtained so that the reporting obligations under the Environmental Noise Directive can be met (every 5 years).

Implement Natural Environment White Paper (NEWP) commitment 69 (implementing the Government’s policy on noise, working with Local Authorities to establish mechanisms for formally identifying and protecting urban Quiet Areas) and 70 (reducing the negative impacts of artificial light and protect existing dark areas)

To make full use of the data generated above to:

- Understand the exposure of the population to transport noise;
- Identify the locations most affected to enable local action to be taken to improve the management of noise;
- Make the information available to the public;
- Quantify the impacts of noise on health, productivity, amenity and the environment;
- Determine the monetised social and health costs of noise.

# Improved Stratospheric Ozone through Montreal Protocol

## Fulfil the UK's obligations as a signatory of the Montreal Protocol

Evidence objectives:

1. Monthly stratospheric ozone and ultraviolet light (UV) measurements at Lerwick (ozone only) and Reading.
2. Quarterly analysis of UK stratospheric ozone and UV measurements.
3. Annual AEA Baseline measurement and analysis of UK stratospheric ozone and UV.

In addition, we are looking at ways in which support for UK experts' involvement in technical groups supporting the Montreal Protocol can be systematised so as to maximise the impact and support provided by the UK scientific community to the protocol.

## 3. Future evidence needs

### **What are the longer-term evidence needs for the policy area/ programme?**

Many of the key policy activities outlined in Section 1 will continue in the medium and longer term and thus the supporting evidence activities are also likely to continue although there may be some changes in the relative priority of different work areas. Horizon scanning is a routine part of evidence activities: the ALE evidence programme is designed to meet both immediate policy requirements and developing issues and as such a number of activities are already planned and identified in Section 2 to provide the evidence to support known future policy priorities.

Key areas where we expect new evidence objectives to be required in the medium term, based on the current policy landscape in ALE, are (note the prioritisation shown is **relative to other issues in the list**):

*Higher Priority:*

- Work on Commission's Review of air quality legislation will finish at the end of 2013 with the publication of an updated Thematic Strategy on Air Pollution. However, it is expected that the Strategy will be accompanied or followed by proposals for revised legislation, the negotiation and implementation of which will require evidence support.
- Establish an automated noise mapping process that enables noise exposure estimates to occur more frequently and cost-effectively. This in turn would enable changes in the social and health costs to be updated more frequently.
- In connection with the automated noise mapping project, undertake the necessary work to enable the anticipated European common noise assessment method to be adopted in order to meet our noise mapping obligations in 2017.

### *Medium Priority:*

- The requirements of the INSPIRE Directive establishing an infrastructure for spatial information will require us to implement changes in our data holdings and data management systems.
- Action is already underway at an international level to try and address a number of short lived climate pollutants which are also air pollutants. Further research is likely to be required to understand the benefits of action and the most effective measures to reduce the climate and air quality impacts of these pollutants.
- Assess and quantify links between air quality and economic performance. Such work will need to review the evidence on the links between air quality and morbidity effects (such as reduced activity days), direct economic costs (such as NHS burden) and damage to other assets.
- Better understand the relationship between local environment quality and well-being, including links to census data, deprivation, environmental nuisance and sustainable development data.
- Agree and publish economic values for marginal changes in the local environment and support the use of this guidance in central and local government.
- To work with the economists and Dept. for Transport to use the current noise mapping results and update the current valuation guidance found in WebTag and used for policy appraisal.
- To work with HM Treasury to publish guidance integrating valuation of noise impacts into the Green Book guidance for use across Whitehall.

### *Lower Priority:*

- Revisions to the Local Air Quality Management system in 2013 may lead to the need to develop new tools, guidance and reporting infrastructure.
- Means of collating emissions information from activities subject to Local Authority Pollution Control need to be considered.
- A short study of the actual impact of Industrial Pollution Prevention and Control and the industrial emissions Directive would be desirable in 2014/2015, with a more detailed study in 2017/18 (the latter to coincide with and complement an EU reporting requirement).
- Establishing an annual attitude study to enable changes in reaction to noise and other potential sources of nuisance to be determined more frequently (currently every 10 years).
- Establish a mechanism to improve the quality of the complaint data received from Local Authorities in a way that minimises the burden on them.
- Quantify the true economic costs of local environment quality factors (including understanding “hidden” costs beyond street cleansing, such as enforcement and disposal; the impact of poor local environment quality on local economic growth; and the economic value of voluntary action on LEQ).
- To understand, in response to EU and international developments and proposals, the most appropriate further actions and the economic and environmental benefits

of those actions, to reduce or accelerate reductions in the emissions of ozone depleting substances and fluorinated greenhouse gases.

## 4. Meeting evidence needs

### **What approach(es) will be taken to meeting evidence needs?**

The air quality and noise evidence programmes are jointly held resources between Defra and the Devolved Administrations. For the most part, Defra funds and administers the programmes (no funds were transferred to the Devolved Administrations at devolution as part of this agreement), in addition to the UK programmes each of the Devolved Administrations either directly funds or supports specific additional work in their country, much of which is applicable across the UK. The existing partnership approaches ensure that, where possible, wider Devolved Administration funded work is closely aligned to ALE Programme priorities. Information from the ALE evidence programme also goes to support policy activities in other policy programmes in Defra including Chemicals and Emerging Technologies; Biodiversity, Soils, Water and Climate Change Adaptation.

Close liaison also occurs with relevant other Government departments (e.g. Departments for Transport; Health; Communities and Local Government; Energy and Climate Change; and Culture, Media and Sport) so that we are aware of the direction of policy initiatives and are able to be sure that we have the necessary evidence to assist in robustly appraising the proposals. There is also an exchange of evidence between the departments.

Some elements of the air quality evidence programme are delivered in partnership with other organisation, reflecting shared evidence priorities and delivering additional value for both parties. These include co-funding of research on the impacts of air pollution on ecosystems with the Centre for Ecology and Hydrology. Partnership opportunities are developed and taken forward in many ways including:

- jointly funding work with the National Centre for Atmospheric Sciences to improve knowledge exchange between the work programmes of the two organisations;
- a part-time secondment to better align Met Office services with Defra air quality evidence requirements;
- a part-time secondment from the Joint Nature Conservancy Council (JNCC) to improve knowledge exchange and identify partnership opportunities;
- a memorandum of understanding between Defra, the Environment Agency and the US Environment Protection Agency (USEPA) to work together on the development of the USEPA air quality model CMAQ;
- collaboration with the Greater London Authority in development of support for Local Air Quality Management.

Links are maintained with universities and professional bodies such as the Institute of Acoustics, so that we are aware of evidence gathering elsewhere, and where possible we can influence what is undertaken. Close links have also been established with the European Network on Noise and Health (ENNAH).



## How are evidence needs identified and prioritised?

Evidence specialists from all evidence disciplines are embedded in the ALE programme and work in mixed policy/specialist work streams to deliver projects and ongoing functions. This arrangement ensures that for new projects evidence requirements in terms of both information requirements and specialist advice are identified at project inception stage and developed and prioritised as part of the ongoing project delivery and assurance systems. Similarly the evidence requirements from ongoing work are fully integrated with that of policy and non evidence specialists leading to co-delivery of work items and an ongoing process of review and realignment of evidence activities to meet changing policy activities and priorities. Any gaps in specialist skills or information are identified within individual work streams and either addressed at this level or escalated up the assurance chain as necessary.

Some longer-term research together with strategic activities such as expert review and advice do not feed directly into the policy work stream and separate processes are developed for these activities to ensure a clear line of sight between evidence activities and policy outcomes. For example the research programme on particulate matter which is currently being developed includes an overview document that articulates the evidence objectives of the work and how they relate to policy objectives and will be overseen by a steering group that will include policy customers.

Prioritisation of evidence activities and resources between different policy activities and between short term delivery and longer term research take place at annual evidence strategy meetings that involve key stakeholders in the evidence programme including the leads for relevant policy activities and representatives from the Devolved Administrations and other Government Departments.

## Ensuring the right specialist skills

The delivery and assurance processes outlined above also ensure that ALE has access to the right specialist skills to meet the evidence objectives that have been developed. Where skills are identified that cannot readily be met from within the Department, alternative approaches are explored. For example specialist advice on air quality modelling issues is currently delivered through a policy placement fellow jointly funded by Defra and the Natural Environment Research Council.

In addition, we occasionally support research in other Government departments both in kind (assisting with the specification, sitting on project boards) and financially through co-funding, particularly in the noise and nuisance area.

## Evidence gathering method

The primary approach to gathering evidence in ALE is to use external contractors, either commercial consultancies or research institutions. These are procured using the prescribed processes within Defra's Evidence Handbook with a preference for open competition to obtain the best value for money. Specifications are developed in

conjunction with policy teams and multidisciplinary evidence teams to ensure line of sight to policy. Consortium approaches are actively encouraged to enable a richer mix of expertise being brought to bear. Increasingly, framework approaches are being used whereby contractors pre-qualify for the framework, decreasing overall administrative burden during procurement.

While contractual outsourcing forms the backbone of the ALE evidence programme, other routes for gathering evidence are used, some of which are mentioned in text elsewhere in this section and which include:

- Direct contact with professional bodies, such as the Institute of Acoustics or the Institute for Air Quality Management, or research networks such as ENNAH.
- Attendance and, where relevant presenting, at international and national conferences and sitting on British Standards Committees and other such expert groups.
- Use of formal expert groups. For example, the Air Quality Expert Group provides synthesis reports setting out the state of knowledge on air quality topics specified by the Department. These reports also describe the key uncertainties in the area and thus help steer the air quality evidence programme. The Group also challenges the current AQ evidence programme, helping to ensure that it is focused on the primary areas of concern.
- The development of partnership approaches with research council funded institutions. For example, the Air Quality programme has a joint programme with the National Centre for Atmospheric Sciences accredited under the Living With Environmental Change initiative, and is part funding a joint post to ensure the links between the two are maximised.
- Synthesis and secondary analysis: this is a theme running through all of ALE's evidence activities but is perhaps most obvious in the economics and statistics fields.
- Liaison with the European Environment Agency and the World Health Organisation.

### Dependence on external capabilities

In addition to the activities identified in Section 2, evidence from a range of Defra and external sources are utilised to support air quality and noise policy objectives. The most significant of these are:

- Provision of monitoring information on ambient concentrations of a range of air quality pollutants from Local Authorities.
- Advice on the health impacts of air pollution and their quantification from the Department of Health, the Health Protection Agency and the expert committee, the Committee on the Medical Effects of Air Pollution.
- Information on energy statistics/projections and projections of greenhouse gases (including fluorinated greenhouse gases) and measurements and modelling to validate historic emission estimates from the Department of Energy and Climate Change.

- Data from Defra on agricultural ammonia emissions statistics/projections of livestock numbers and fertiliser use as well as evidence on control measures for agricultural sources of ammonia and projected penetration of these measures.
- Data on traffic flows and projections from the Department of Transport and other transport authorities.
- Data on emissions from controlled installations including the Pollution Inventory and information to support the Pollutant Release and Transfer Register from the Environment Agency/Scottish Environmental Protection Agency (SEPA) /Dept. of Environment Northern Ireland (DOENI).
- Evidence in support of the industrial pollution activity both for Integrated Pollution Prevention and Control and Local Authority Pollution Control processes and ensuring Integrated Pollution Prevention and Control technical and economic evidence flows are managed to the European Commission and other relevant parties is co-ordinated by the Environment Agency, together with SEPA and DOENI.
- Data about complaints from the Chartered Institute of Environmental Health.

Understanding and mapping all external inputs to the evidence programme, making those organisations aware of the dependencies and maintaining good communications between parties is important for ensuring continued delivery of external evidence to the ALE evidence programme. For some evidence requirements, data supply agreements have been developed to ensure clarity on what needs to be delivered.

## 5. Evaluating value for money and impact

### **What approach(es) will be taken to maximise and evaluate value for money and impact from evidence?**

Maximising value for money is a key theme running through evidence activities and is taken forward through ensuring:

1. A direct line of sight between evidence activities and policy priorities
2. Value for money in all commissioned work
3. Evidence is fit for purpose and robust
4. Effective communication and use of evidence outputs

**A direct line of sight between evidence activities and policy priorities** (including meeting legislative requirements) is ensured through the delivery and assurance processes set out in Section 4. Full integration of policy and evidence specialists in the delivery of programme work streams ensures that evidence activities are developed, managed and delivered in direct support of policy objectives. Annual evidence strategy meetings and periodic reviews of parts of the evidence programme ensure that on a more strategic level evidence activities are also aligned with policy priorities.

**Value for money in all commissioned work** is ensured through rigorous internal processes that have already delivered sizeable savings to the programme and through the

use of the Evidence Handbook. For all new procurements and significant changes to existing contract, the scope of the work is reviewed to ensure that this aligned with policy and evidence priorities. Appropriate use is made of open competition to ensure value for money and all costs are routinely challenged. The programme has recently set up two R&D frameworks to reduce commissioning time and deliver good value through competitive standard rates. Opportunities to work in partnership are actively pursued (see above) and this is aided by setting out and engaging with all evidence providers on future evidence needs.

**Evidence is fit for purpose and robust** is ensured through a range of quality assurance and control activities. For some evidence activities, in particular those related to meeting EU and international reporting commitments, assurance criteria already exist and processes have been developed to ensure they are fully implemented. In addition to the use of formal and informal peer review to assure the robustness of individual pieces of work and proposal, the programme also uses groups of independent experts<sup>8</sup> to review and make recommendations on elements of the evidence programme. All national statistics are published in accordance with the Code of Practice for Official Statistics.

**Effective communication and use of evidence outputs** is ensured through the delivery of evidence directly into policy work streams, the development of knowledge plans for key deliverables and the effective dissemination of outputs outside Defra through publications and encouragement of knowledge exchange. Value for money is also achieved through the use of single evidence outputs for multiple uses, for example the air quality emissions inventory is used to not only meet EU and international reporting requirements but also supports the generation of projections, provides information on key emissions sources and their trends, helps evaluate the impact of measures and forms an integral part of nearly all UK modelling activities.

Where appropriate, contractors are encouraged to disseminate their work at conferences and related events, after first obtaining permission from the contract manager. Such dissemination is usually picked up in the specialist media. This means that the work reaches the widest possible audience.

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<sup>8</sup> The Air Quality Expert Group, the Interdepartmental Group on Costs and Benefits and the Air Quality Modelling Advisory Group