

## **RESEARCH REPORT**

### **PROJECT: CONSULTATION AS SCIENCE COMMUNICATION? THE CASE OF LOCAL AIR QUALITY MANAGEMENT (ESRC AWARD: RES-151-25-0044)**

#### **BACKGROUND**

Precise determination of health risk from environmental pollutants can be problematic for a number of reasons, including the complexity of the processes under investigation; difficulties resulting from information uncertainty; spatial and temporal diffusion of health effects; the dynamic nature of human and environmental systems; and the diagnostic variability of cause-effect relationships. The corollary to this analysis is the questioning of the exclusive use of technologically esoteric, expert scientific risk assessment. Implicit within this critique is the well-rehearsed science and technology studies argument that related risks resulting from accelerating technological progress may be better addressed by broadening and extending the decision-making community to incorporate a wider range of expertise.

An example of this more deliberative approach is UK local authority stakeholder consultation on local air quality management (LAQM) (Appendix 1, Figure 1). This consultation process represents one of the largest locally based science policy and complex science communication initiatives undertaken in the UK. Schedule 11 of the Environment Act 1995 specifies statutory stakeholders who must be consulted (e.g. Defra, Environment Agency and Highways Agency); however the limited guidance given for the current round of LAQM consultation recommends wider involvement through the inclusion of other groups, such as residents and local business, in the policy development process.

To date limited empirical research has been conducted to evaluate whether stakeholder consultation practically affects the LAQM decision-making process. However some related work has interrogated the public perception of air quality information provision. These studies suggest that the public can constructively and critically evaluate air quality data (Bush et al, 2001; Forrester, 2003); are capable of reflecting on, and deconstructing, complex technical data (Bailey et al, 1999); are able to incorporate and integrate a broad range of technical and social factors involved in making viable decisions about local air quality (McDonald et al, 2002); provide useful additional insights by raising issues based on local concerns or situated expertise, and are aware (possibly implicitly) of the shortcomings of data provided by environmental modelling systems (Yearley, 2000). In summary, there is a body of research that suggests that, for environmental risk communication in general and for air quality in particular, the integration of community and expert knowledge seems both practical and theoretically efficient. There are a number of reasons why this may be so: non-expert knowledge provides fresh and situated ways of conceptualising air quality risk, extends ownership of the problem and hence increases local 'buy-in' to proposed solutions, and allows local authorities to benchmark air quality data against 'real-life' experience.

Whilst UK policy and a growing body of research stress the need for greater involvement in LAQM, many fundamental questions remain under-explored. It is in this context that our research set out to investigate empirically whether the rhetorical drive for

engagement in LAQM has been translated into practice. In this context, we reviewed current modes of LAQM consultation (Appendix 1, Figure 2, conceptual model A). On the basis of this review, we make indicative suggestions to enhance good consultation practice (Appendix 1, Figure 3, conceptual model B). In doing so we have attempted to remain reflexively aware of the relative difficulties that adhere to prescribing 'better practice' to a diverse community of LAQM practitioners facing differing air quality and engagement challenges with differing sets of resources on which to draw.

## **OBJECTIVES**

### **1. Aims:**

1. To investigate the nature, scope and effectiveness of local authority air quality management consultation approaches undertaken by English local authorities with respect to statutory and non-statutory stakeholders.
2. To develop and test a conceptual model of the communication process used by local authorities, identifying where the value-added parts of the process arise for statutory and non-statutory stakeholders and for the initiating local authority.
3. To devise a suite of generic methodologies and a generic air quality model suitable for application to other environmental protection consultation exercises.

### **2. Objectives:**

1. To identify, audit and evaluate consultation strategies utilising a triangulation approach involving questionnaire and case study methods. This will include identification of one way (*information*), two way (*consultation*) and active involvement (*participation*) modes of consultation.
2. To categorise communication strategies by local authority administrative type, Government Office Region and Office of National Statistics 'family' type.
3. To develop a suite of recommendations for the development of research and practice in the field of communicating air quality information specifically and for environmental protection more generally.
4. To develop internet and paper-based case study resources for local authorities and their stakeholders to enhance the quality of the consultation and communication processes.
5. To make available a quality assured database of questionnaire and case study data as a resource for secondary research purposes<sup>1</sup>.

## **METHOD**

A draft survey was constructed, primarily based on the knowledge, experience, and research of the Air Quality Management Resource Centre at University of the West of England, and then evaluated by two local authorities. A pilot survey was sent to all local

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<sup>1</sup> Available at: [www.uwe.ac.uk/aqm/esrc](http://www.uwe.ac.uk/aqm/esrc).

authorities in Scotland and Northern Ireland. A final questionnaire survey was sent out by post to the Chief Environmental Health Professionals in all 353 local authorities in England. From the local authorities surveyed, 150 responded to the questionnaire, achieving a response rate of 42%. Data from the survey allowed for the construction of an initial map of approaches used by local authorities on the basis of information, consultation, and participatory communication approaches. Local authority responses to the questionnaire survey were statistically analysed using a variety of uni and multi-variate statistical techniques. The authorities that participated in our questionnaire survey were representative of different administrative type and Government Office Region (Appendix 2, Table 2).

A comprehensive case study selection methodology was established, and 11 case study exemplars were identified and executed. The case studies involved a series of face-to-face semi-structured interviews with environmental health professionals tasked with carrying out LAQM consultation. The justification for this local authority focus was their core status in, and responsibility for, the performance of a number of key consultation duties including: consultation initiation, provision of LAQM source information, choice of consultation mode, reception of responses, and formulation of Air Quality Action Plans. Interviews were tape-recorded and analysed according to a common set of coded categories. Case study analysis was also based on a close reading of secondary literature and material collected on previous and on-going LAQM consultations. The qualitative nature of the case study analysis was employed to contextualise and ground the quantitative element of the research. Multiple case study design was employed to provide replication logic and establish a chain of evidence to infer coherent causal links. Multiple sources of evidence were used in order to facilitate further triangulation. Results derived from this study may be interpreted as informative base-line data concerning local authority practice with regard to LAQM consultation processes.

## RESULTS

With one key exception, questionnaire and case study evidence tended to provide a shared view of current local authority LAQM consultation practice. In other words, our results suggest that although local authorities were supportive of the theoretical underpinning of greater stakeholder inclusion in LAQM processes, the actual process of consulting was generally perceived to be more complex, uncertain and problematic. The research outcomes were tested in a series of workshops largely attended by English local authorities and the participants are in agreement with the outcomes. Whilst the survey and case study components were designed to interrogate and explore a broad range of issues, we have drilled down through this data series in order to distil a set of interlocking concerns allied to the form and function of the consultation process. These concerns include those associated with:

1. Problems of scale in the context of emergent 'joined-up' local governance – the relative limitations of addressing a systemic problem at a local level.
2. Differing levels of stakeholder influence, expertise, and representation within the LAQM consultation process.
3. Choice of consultation mode - the transitive nature of involvement.
4. Integrating consultation outputs in the decision-making processes, and formulating actions.
5. Implementing evaluation and review of the consultation process.

Local authorities are faced with a series of substantive challenges in contacting, engaging with, and incorporating the views of their diverse statutory and non-statutory constituencies within the LAQM decision-making process. Our findings suggest that there is no ‘off the shelf’ resolution to the deliberative dilemma. Although authorities genuinely attempt to engage with all stakeholders, current consultation processes are not working as well as they could. This may imply a re-think on the form and function of LAQM consultation processes. However, one significant ‘outlier’ case study does provide evidence to suggest that a particular integrative form of consultation – which we have called ‘embedded engagement’ – goes some way to resolving the differences between deliberative theory and practical experience by providing for better practice multi-stakeholder involvement in LAQM consultation.

### 1. Problems of Scale in the Context of Emergent ‘Joined-up’ Local Governance

The literature unequivocally identifies emissions from road transport as the major cause of poor air quality in localised pollution ‘hot-spots’ where air quality management areas (AQMAS) are declared (Longhurst et al., 2006). In this context, the effectiveness of intra-organisational working relationships (i.e. between transport, built environment, and land-use planners; Local Agenda 21/community planning, and environmental health professionals) is critical. Thus, a core feature of enhanced LAQM may prove to be that of greater ‘joined-up’ local governance – better communication and inter-play of expertise within local authorities. In practice, our survey results supported this suggestion. The overwhelming majority of environmental health professional respondents consulted land-use planners on LAQM issues. On a descending scale further intra-organisational consultation was carried out with transport planners, Elected Members, Local Agenda 21 officers, and local Cabinet Members.

Whilst better ‘joined-up’ local governance is evidenced by survey results, the picture from case study analysis is less clear. Clear concerns associated with the ubiquitous and trans-boundary nature of poor air quality were generally expressed. Here, local policy and organisational innovation struggled to adapt to complex systems with multiple goals that comprise cross-cutting and multi-level governance. For example an authority, whose duties involved attempting to ameliorate the polluting effects of a major road near a population centre, expressed concern about their ability to actually do anything about the problem, ‘*it’s the motorway, we don’t have control*’. Our findings suggest that local authorities perceive that they are not ‘free actors’ here – they are bound by structural constraints, and are self-aware of the relative limitations of current LAQM consultation practices and processes. This may be because poor local air quality tends to be perceived as a systemic problem with no easy solutions. Taken as a whole, this set of case study responses tends to support the suggestion that systemic problems associated with poor air quality may be difficult to address fully at a local level. This insight is particularly relevant in the context of the generalised move towards multi-agency planning concerning environmental risk issues in general, and LAQM in particular.

### 2. Differing Levels of Stakeholder Expertise, Representation, and Influence within the LAQM Consultation Process

A core requirement of Schedule 11 of the Environment Act 1995 is that of local authority consultation concerning LAQM with a range of interested and affected stakeholders. Perhaps unsurprisingly, most survey respondents (94%) had undertaken such a consultation. However there exists a relative taxonomy concerning the importance of statutory consultees to environmental health professionals carrying out LAQM

consultation processes (see Appendix 2, Table 3). In this context, Defra was viewed as the most significant statutory stakeholder. Further results from the survey demonstrate that formal organisations dominate the LAQM consultation process, whilst informal non-statutory networks are considered less important stakeholders by local authorities.

Subsequent case study work confirmed the questionnaire survey results. Although most authorities attempted to consult both statutory and non-statutory stakeholders on LAQM issues; there exists a distinct emphasis, even bias, towards engagement with formal, institutional, and expert statutory consultees. Evidence from case studies suggest a number of reasons for this: local authorities tended to *'feel at ease with fellow professionals'*, were concerned that *'people don't seem to 'get' the numbers from the monitoring and modelling'*, and struggle to elicit responses from non-statutory consultees, *'they don't show any real interest'*. In other words local authorities may have (albeit unconsciously) tended to limit their engagement with non-experts, and sought to expand dialogue with a range of expert statutory institutions who were perceived to have a better understanding of, and interest in, the underlying science and policy issues.

### 3. Choice of Consultation Mode

A central challenge that local authorities face is how best to, in one canonical formulation, constructively engage with local stakeholders concerning LAQM issues. In practice, this engagement is predominantly characterised by two fundamentally different modes: 'one-way' air quality management information provision, and 'two-way' air quality management communication. In this case, it is clear that the vast majority of local authorities (91%) preferred the former to the latter (see Appendix 2, Table 4).

Subsequent case study investigation suggests that it is possible that the choice of consultation mode was informed by the value local authorities placed on contributions from different stakeholder groups and the relative levels of ease or difficulty that local authorities experienced in consulting those stakeholders. In this context, it could be argued that local authority views on the relative abilities of differing stakeholders to apprehend the underlying air quality science shapes their choice of consultation strategy. This in turn may affect the reception of responses received from particular stakeholder groups to the consultation and thus the extent to which stakeholder responses are incorporated into the LAQM decision-making process.

These insights allow for a range of inter-locking and sequential stages in the LAQM consultation process to be conceived where each stage has the potential to impact on the next stage. Thus the survey data suggest that local authorities' conceptualisation of the role of experts (and hence expertise) in air quality science may pre-condition the formulation of scoping risk communications. In turn, the case study evidence suggests that the means by which local authorities choose to consult may determine the relative ability of both statutory and non-statutory stakeholders to receive, metabolise and respond to that consultation. Finally, the relative utility of that response may depend on both the successful negotiation of the pre-conditioning steps of the risk communication process, and the willingness of authorities to translate non-expert knowledge into the decision-making process. It is important to note that authorities seemed to be reflexively aware that they had not made full use of the range of participatory and communication strategies available.

#### 4. Integrating Consultation Outputs in the Decision-Making Processes, and Formulating Actions

Perhaps the most critical determinant of the relative success of consultation practice is whether, or not, views obtained during the consultation process actually affect decision-making processes. In general, in response to our questionnaire survey, local authorities suggested that the views of those consulted were important to them. Interestingly there exists a clear belief that consultation raises awareness about LAQM issues. However there was an ambivalent response to two core questions concerning whether consultation actually changes LAQM decision-making processes and, once again, the relative importance of differing stakeholders within that process (see Appendix 2, Table 5).

Similarly, case study results confirmed that a broad range of local authorities experienced significant difficulties in integrating non-statutory consultation outcomes in any subsequent LAQM decision-making process - in particular, how to weight, report, and embed responses in Air Quality Action Plans. As before, authorities tended to locate these concerns in the context of a shared perception that non-statutory stakeholders were less able to engage with elements of complex air quality science that underpins LAQM – an uncomfortable re-emergence of the ‘public knowledge deficit model’. Once again, local authorities tended to feel more at ease with statutory stakeholders, and felt more able to include their responses in Action Plans.

The majority of the authorities interviewed shared the view that their local communities didn’t really seem to be interested in communicating their opinions on LAQM, and many experienced considerable difficulties eliciting community responses: *‘it’s a real struggle - response rates are poor’*. However, these difficulties were explained by some authorities in terms of a relative democratic deficit: they expressed the concern that current LAQM consultation practice was perceived as a *‘tick-box exercise’* by local communities, rather than an example of real participatory democracy. This is important in the context of more widely held concerns about whether consultation unfairly levers community expectations about what LAQM can achieve. In this context, some authorities felt subject to a *‘piggy in the middle’* effect, sandwiched between central government and local communities. They expressed the view that whilst consultation *‘can raise (community) hopes’* that the issue of poor air quality is high on the policy agenda; authorities experienced difficulties in drawing down sufficient central funding to formulate Action Plans based on consultation outputs, *‘after the Action Plans, then what?’*.

#### 5. Implementing Evaluation and Review of the Consultation Process

Evaluation and review can help ‘separate out’ areas of success and potential improvement and distinguish between systemic drivers for poor air quality and the capacity for local action to improve air quality. However 85% of authorities surveyed admitted that no evaluation had been carried out on the effectiveness of consultation methods that they used, whilst 7% of them <sup>(n=148)</sup> were not sure whether they carried out an evaluation or not. Those who evaluated effectiveness (8%) were asked to identify the most practically efficient method of consultation. A range of quotes from the responses, provided below, show a wide variation of attitudes to consultation practice; ranging from ‘very positive’ (after carrying out dialogue with the public) to ‘deep frustration’ (due to very limited responses received). Note, although respondents provided a reasonably broad spectrum of views on the relative merits of consultation, the range was biased towards a relative dissatisfaction with the process.

*Workshops where people could participate and contribute were more successful. Citizens panel gave a very good response too.'*

*'The more interactive the better- meetings and answering questions face to face works best.'*

*'We have found that regardless of how extensive we consult, we get very few pertinent responses even when we designated AQMAs in the past.'*

*None [of the methods are effective]. Very poor response rate, except from the Environment Agency and neighbouring local authorities.'*

*None [of the methods are effective]. All seem a waste of time. The general public just do not seem interested, at least not in this area'.*

A lack of expertise on how to do LAQM consultation was also identified, as 82%<sup>(n=146)</sup> of survey participants had never received any formal training. The ones who had training (14%) received it through previous experience or from externally provided workshops. This finding resonated with case study evidence. Local authorities seem to experience a significant lacuna in consultation experience and expertise. This is perhaps unsurprising given the range of roles and duties that environmental health departments (the key unit here) are expected to perform. In the context of this gap in local authority expertise and ramping policy emphasis on further stakeholder consultation, we have developed a practical 'Steps to Better Practice' Guidance document for local authorities based on our research<sup>2</sup>.

#### Embedded Engagement: a 'Better Practice' Case Study Exemplar

Amongst a reasonably large set of LAQM consultation exemplars contained within our case study group, one stood out as a potential emergent example of 'better practice': that of Sheffield City Council. Although the Council provides an information-rich and interactive web-site, the key component of its relative success is the ability to knit together formal (top-down) and informal (bottom-up) LAQM networks. This work was enabled via the development of initial 'options scoping' at ward level. Community 'Area Panels' were formed, and 'Clean Air Partnerships' comprising both statutory (expert) and non-statutory (community) members were set up. External air quality and consultation facilitation consultants were employed to bolster the authority's capabilities. Under the 'Sheffield Development Framework', the 'East End Strategy Group' was formed, comprising local communities, businesses and the local authority. In this context, the 'East End Quality of Life Initiative' was able to directly engage as formal LAQM consultees – this example of 'joint-working' is significant as this body represents an amalgam of constituencies.

Sheffield's 'Diffusion Tube Project', led by an outreach worker, provides a good example of how to empower and engage communities affected by poor air quality. He noted a 'perceived lack of trust' in local authority monitoring by the residents of Tinsley, a Housing Market Renewal Area and Health Action Zone adjacent to the M1 motorway. In tandem with the residents of Tinsley and the local authority, he set up a community-based diffusion tube monitoring experiment. A project steering group was formed comprising local residents, local authority built environment and transport planners, and environmental health officers. The idea was to empower the community to monitor on a

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<sup>2</sup> Available at: [www.uwe.ac.uk/aqm/esrc](http://www.uwe.ac.uk/aqm/esrc)

do-it-yourself basis in order to better own the problem. This process engaged the interest of the local media who reported the progress of the project.

The experiment was funded by formal resource structures (the project was funded by the Primary Care Trust and Defra) and included formal local authority and informal local community components. This allowed for a clear broad-based stakeholder constituency to thrive and impact on LAQM in that area. In other words the experiment facilitated better two-way communication concerning LAQM in Tinsley. Importantly, the project provided real leverage on planning decisions in that area, thereby demonstrating a critical link between consultation and decision-making processes.

In sum, the strategic co-ordination of a range of engagement initiatives contributed to a more effective LAQM process. Embedding engagement practices within the consultation process built local community participation, and allowed for a clearer broad-based stakeholder constituency to thrive and impact on LAQM in that area. Perhaps the most important conclusion to draw from this example concerns the way that the local authority integrated its consultation process in a holistic way within their LAQM process. Thus, rather than engagement producing a dissipative structure convergence between formal and informal stakeholder networks occurred through resourced facilitation. The points of iterative fusion that comprised this form of embedded engagement were precisely constructed and rendered tangible by including material stakeholders into the LAQM consultation frame – this took time and money. Although this example is no panacea, it does represent a productive way forward, and could make a robust claim for consultation efficiency and legitimacy.

The ‘embedded engagement’ case study demonstrates that effective LAQM consultation can be done and results from a holistic set of pre-conditions, and works well when non-statutory stakeholders (informal networks) are empowered to interact with statutory stakeholders (formal networks). This interaction is best enabled by skilled local community, authority and council advocates. This process works well when it is adequately resourced and is carried out over a reasonably extended time-frame. Critical to this is the point at which local authorities consult.

### Conclusions

We conclude that local authorities and their stakeholders’ commitment to involve in the process are best enabled via experienced and effective ‘local champions’ within both the community and the local authority. Local authorities and their communities should, optimally, be able to access adequate resources to engage in the consultation process levered by relevant funding streams. Trust in the process can be built through ‘co-work’ exercises - for example LAQM knowledge can be co-produced via ‘pollution measurement partnerships’ (between the community and the local authority). Perhaps the most critical determinant of ‘better practice’ LAQM consultation is the link between consultation and subsequent decisions. Critically, stakeholder engagement should be timely and have the capacity to effect real change via a clear association with the LAQM decision-making process. In this context, *‘air quality as a material planning consideration’* (ODPM, 2004) may be given greater weight by aligning statutory and non-statutory stakeholder views with local authority environment, transport and land-use strategies to

produce better air quality outcomes (see the ‘Steps to Better Practice’ Guidance for local authorities, UWE 2006)<sup>3</sup>.

Our findings suggest that local authority perceptions of the relative abilities of differing stakeholders to grasp air quality science, the process that translates that science into policy, and the institutional and organisational status of stakeholders (i.e. whether they are statutory or non-statutory stakeholders) may tend to transitively determine the choice of consultation methods used, the communication strategies chosen, and the relative integration of stakeholder feedback into the LAQM decision-making process. Both case study and survey results suggest that judgements are made by local authorities about differing stakeholders’ levels of expertise and ability to interpret scientifically complex air quality information. These judgements may, in turn, impact on (and even determine) the quality and extent of stakeholder engagement in the consultation process<sup>4</sup>.

The empirical evidence derived from a questionnaire survey and case studies have been analysed, resulting in a series of LAQM consultation-specific insights, approaches and methods that may be applicable to other environmental consultation exercises. Our provisional conclusions were subjected to rigorous debate in the four regional LAQM consultation workshops organised by the research team, which allowed us to reflect on and refine our original model of LAQM consultation (Figure 2) into a model of ‘better practice’ (Figure 3)<sup>5</sup>.

The ‘value-added’ parts of the process, for all stakeholders, are located in the negotiation spaces that are opened up through early and embedded engagement leading to a more integrated consultation process<sup>6</sup>. In this context, the goal of involvement may not be to find the single ‘right answer’ to the problem. Constructive engagement may have a broader remit – to bring participants together in order to ensure that better decisions are made in the future. In this context, the research provides both support for, and challenge to, elements of current involvement and communication theory and practice<sup>7</sup>.

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<sup>3</sup> In fulfilment of Aim 3. Although the Guidance was designed in the context of LAQM consultation, its general reflexive approach may prove suitable for interpretation and use in other environmental risk arenas.

<sup>4</sup> In fulfilment of Aim 1

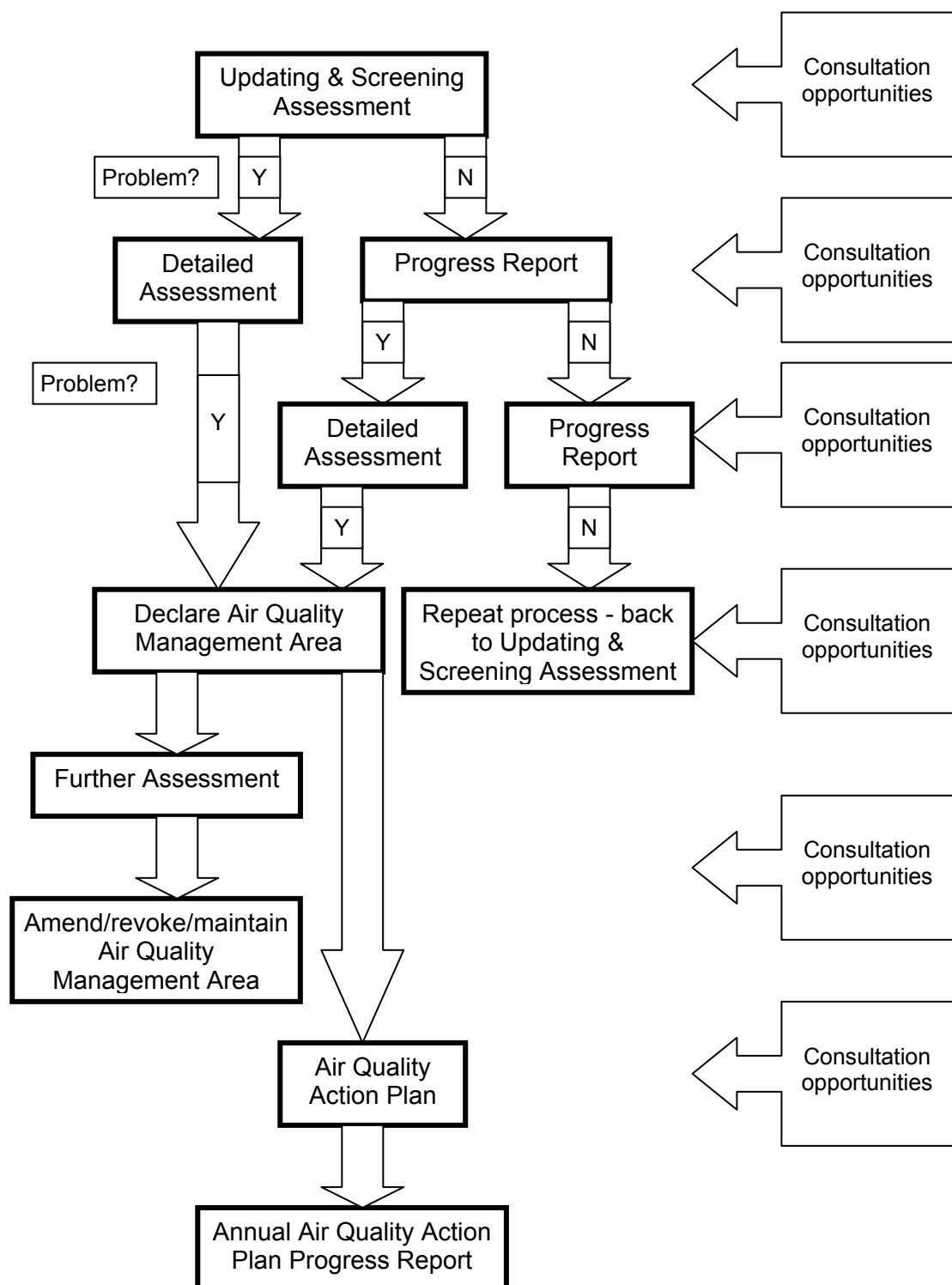
<sup>5</sup> In fulfilment of Aim 2

<sup>6</sup> In fulfilment of Aim 2

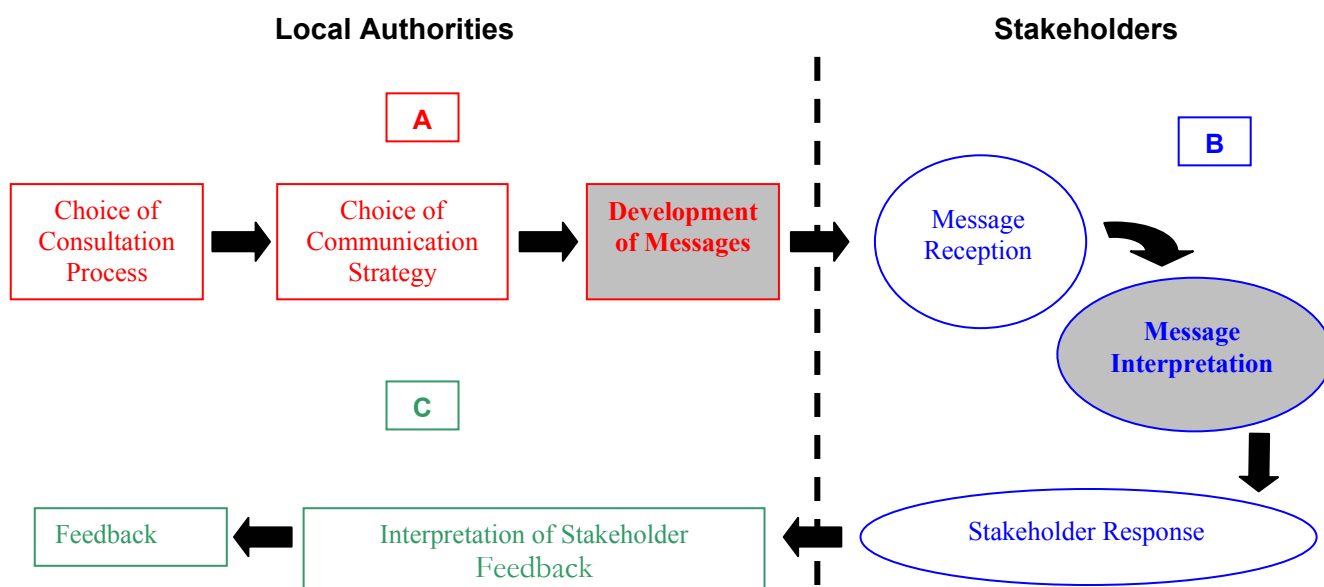
<sup>7</sup> Note, fulfilment of the Objectives has been achieved and embedded within elements of this Research Report, the Guidance, and the UWE website [www.uwe.ac.uk/aqm/esrc](http://www.uwe.ac.uk/aqm/esrc).

**APPENDIX 1**

**Figure 1: Local Air Quality Management - opportunities for consultation**

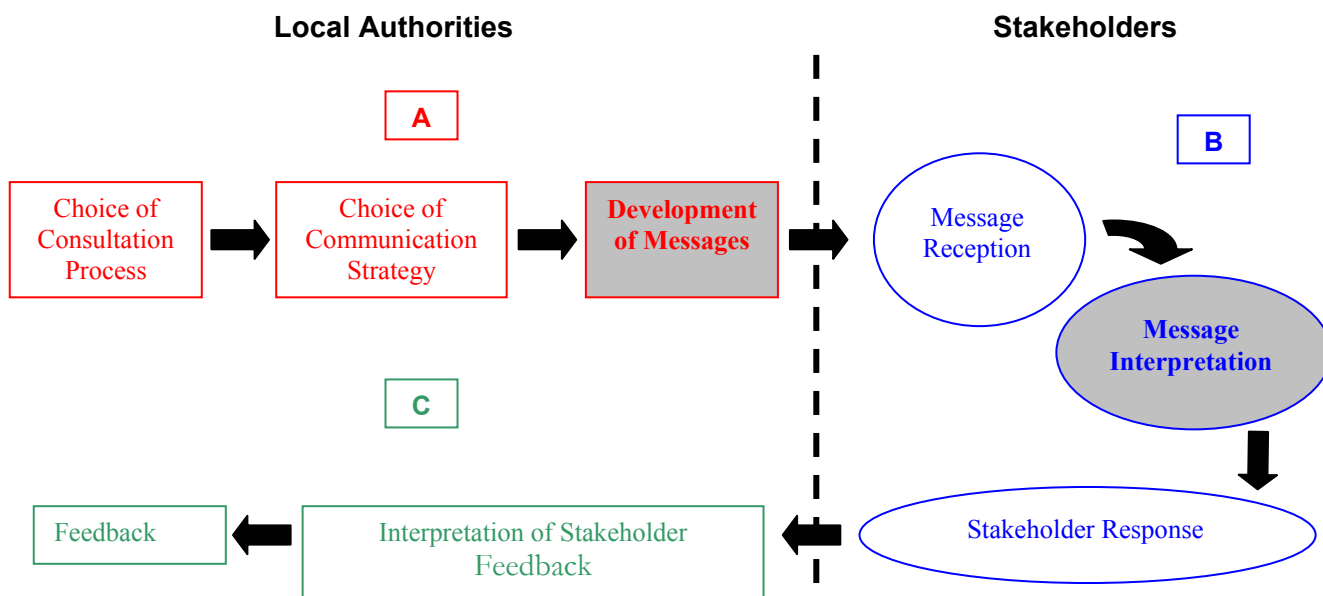


**Figure 2: Current model of LAQM consultation**



- A. Evolution of a ‘joined-up’ working culture within and between local authorities and their statutory consultees. However, the choice of local authority consultation process and communication strategy is based on, and informed by asymmetrical conceptualisation of expert and community knowledge on LAQM. This, in turn, leads to a ‘two-stroke’ development of LAQM messages:
1. The message developed for non-statutory stakeholders tends to be (albeit unconsciously) informed by the ‘public knowledge deficit model’.
  2. The expanded message developed for expert statutory stakeholders allows for enhanced communication flow through B and C.
- B. ‘Two-stroke’ message reception, interpretation and response by statutory and non-statutory stakeholders:
1. As a consequence of A, contracted dialogue with non-statutory stakeholders results in incomplete message reception, interpretation and hence, response.
  2. Whilst the expanded dialogue with statutory stakeholders allows for enhanced message reception, interpretation and response.
- C. ‘Two-stroke’ interpretation of stakeholder feedback and feedback use:
1. As a consequence of B, the relatively disjointed feedback and limited response from non-statutory stakeholders limits its use.
  2. Whilst enhanced responses from statutory stakeholders are more likely to be integrated within the LAQM decision-making process. However, the formulation of feedback is further complicated by on-going structural constraints and systemic drivers.

**Figure 3: Model of 'better practice' in LAQM consultation**



- A. Choice of local authority consultation process and communication strategy informed by more agnostic and symmetrical conceptualisation of expert and community knowledge on LAQM, based on ‘upstream’ and early consultation.
- B. As a consequence of A, improved message reception, interpretation and response by all stakeholders. Improved non-statutory metabolism and response as a result of ‘embedded engagement’ facilitated by authority and community ‘local champions’.
- C. As a consequence of B, enhanced interpretation and incorporation of all stakeholder views into the LAQM decision-making process. This, in turn, allows for greater ‘buy-in’ and iterative replication of the process in subsequent rounds of LAQM consultation.

**APPENDIX 2****Table 1: Questionnaire responses - administrative type**

<i>Administrative type</i>	<i>Σ population</i>	<i>Response</i>	<i>Percentage</i>
District	238	93	39
London	33	17	52
Metropolitan	36	18	50
Unitary	46	22	48

**Table 2: Questionnaire responses - Government Office Region**

<i>Region</i>	<i>Σ population</i>	<i>Response</i>	<i>Percentage</i>
East	45	17	38
London	33	17	52
Yorkshire	21	12	57
East Midlands	40	16	40
West Midlands	34	13	38
North East	23	10	43
North West	43	16	37
South East	70	31	44
South West	44	18	41

**Table 3: Consultation with external statutory stakeholders (n=149)**

<i>External stakeholders</i>	<i>Percentage response</i>	<i>Score*</i>
Defra	90	1.3
County Council	60	2.1
Neighbouring authorities	90	2.2
Environment Agency	80	2.3
Highways Agency	65	2.3
Residents groups	50	2.2
Local businesses	56	2.5
Other	18	2.7
Local Non Governmental Organisations	33	2.8
Local schools	16	2.9
Local universities	16	3.3

\* 1=very important stakeholders, and 5=not important stakeholder

**Table 4: LAQM consultation methods (n=147)**

<i>Methods of consultation</i>	<i>Percentage response</i>
Supply information	91
Workshops/meetings	65
Questionnaire survey	35
Public meetings	30
Focus groups	22
Citizen panels/juries	11

**Table 5: Local authority views on whether consultees affected the LAQM decision-making process**

<i>Statement</i>	<i>Score*</i>
Involving stakeholders in consultation increases awareness of air quality issues	2.0
Involving stakeholders in consultation has influenced decision-making	2.8
Not all stakeholder views are equally important	3.0
Involving stakeholders in consultation affects behaviour change leading to better air quality	3.2
We get nothing out of consultation	3.6
Stakeholders' views are not important	4.2

\* 1= in complete agreement, and 5= do not agree with the statement

**APPENDIX 3****Case study local authorities**

<i>No</i>	<i>Local Authorities</i>	<i>Admin type</i>	<i>AQMA</i>	<i>Region</i>	<i>Communication Strategy</i>
1	Oldham MBC	M	Y	N. West	1
2	Carlisle CC	D	N	N. West	1
3	Sheffield CC	M	Y	N. East	P
4	Middlesbrough	U	N	N. East	2
5	Kirklees MBC	M	N	North	1
6	Birmingham MBC	M	Y	W. Mid	1
7	LB Islington	L	Y	London	2
8	City of Westminster	L	Y	London	1
9	Brentwood BC	D	Y	S. East	1
10	Maidstone BC	D	Y	S. East	1
11	Plymouth CC	U	N*	S. West	1

D= district, M= metropolitan, L=London borough, U=unitary.

1=one-way, 2=two-way, P=participation, based on Questionnaire Survey response.

N\* - no AQMA at date of case study.

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## ACTIVITIES

The research team have attended and presented papers, reporting interim findings of the study, at the following internationally important academic conferences.

1. **8<sup>th</sup> Conference on Public Communication of Science and Technology**, Barcelona, 3-6<sup>th</sup> June 2004.
2. **5<sup>th</sup> International Conference on Urban Air Quality**, Valencia, 29-31<sup>st</sup> March 2005.
3. **13<sup>th</sup> International Conference on Modelling, Monitoring and Management of Air Pollution**, Cordoba, 16-18<sup>th</sup> May 2005.
4. **27<sup>th</sup> Annual Society for Social Studies of Science Conference**, Pasadena, 20-22<sup>nd</sup> October 2005.
5. **14<sup>th</sup> International Conference on Modelling, Monitoring and Management of Air Pollution**, New Forest, 22-24<sup>th</sup> May 2006.
6. **15<sup>th</sup> International Union of Air Pollution Prevention and Environmental Protection Associations Regional Conference**, Lille, 5-8<sup>th</sup> September 2006.

In addition, we will attend the following conferences, where further outcomes of the work will be presented:

7. *'Opportunities and barriers to successful local air quality management consultation'*, abstract submitted to the **15<sup>th</sup> International Conference on Modelling, Monitoring and Management of Air Pollution**, Algarve, 23-25<sup>th</sup> April 2007.
8. *'Analysis of current model of local air quality management in England: opportunities for better practice'*, abstract submitted to the **6<sup>th</sup> International Conference on Urban Air Quality**, Limassol, 27-29<sup>th</sup> March 2007.
9. *'Issues and challenges in consulting stakeholders and the public on local air quality management: some observations from practice in England'*, abstract submitted to the **14<sup>th</sup> International Union of Air Pollution Prevention and Environmental Protection Associations World Congress**, Brisbane, 9-13<sup>th</sup> September 2007.

In conjunction with International Union of Air Pollution Prevention and Environmental Protection Associations, the research team have been invited to co-organise a special session on decision-making in air quality management. The theme of the 14<sup>th</sup> World Congress is 'partnership-community engagement at all levels'.

### Workshops

Four regional research dissemination workshops were held, and all local authorities in England were invited to attend on a regional basis. More than 50% of those invited attended the workshops.

1. South West England – 11th April 2006, UWE, Bristol.
2. North East England - 7 April 2006, Sheffield Hallam University, Sheffield.
3. Midlands - 25th April 2006, Shakespeare Institute (Warwick University), Stratford-upon-Avon.
4. South East England - 4 May 2006, Ashdown House, Defra, London.

We also presented our results and received feedback from the entire Environment Agency science manager community at the 'Environment Agency Science Managers Meeting', at the University of the West of England on 7<sup>th</sup> June 2006.

## OUTPUTS

### Refereed academic journal articles

1. P. Dorfman, C.I. Beattie, F. Burnet, D.C. Gibbs, J.W.S. Longhurst, E.L.C. Weitkamp, N.S. Leksmono (2006): A conceptual model of the role of complex science in local authority consultations about air quality management, *Local Environment* 11 (4): 399-419.
2. N.S. Leksmono, P. Dorfman, C.I. Beattie, F. Burnet, D.C. Gibbs, J.W.S. Longhurst, E.L.C. Weitkamp: Consultation and communication for air quality management in the UK: an analysis of local authority interaction with its stakeholders, submitted and under peer review by *Atmospheric Environment*.
3. Elements of the ESRC work are presented in: Longhurst, J.W.S., Beattie, C.I., Chatterton, T.J., Hayes, E.T., Leksmono, N.S., & Woodfield, N.K. (2006): Local air quality management as a risk management process: assessing, managing and remediating the risk of exceeding an air quality objective in Great Britain, *Environment International*, 32, pp. 934-947.
4. J.W.S. Longhurst, F. Burnet, P. Dorfman, D. C. Gibbs, N. S. Leksmono & E.L.C. Weitkamp (forthcoming): Enhancing consultation practices on challenging environmental issues in local authorities, to be submitted to *Environmental Science and Policy*.
5. E.L.C. Weitkamp, F. Burnet, P. Dorfman, D. C. Gibbs, N.S. Leksmono & J.W.S. Longhurst (forthcoming): Integrating lay knowledges into consultation: a case study, to be submitted to *Science Communication*.

### Book chapters

Papers delivered to six conferences (see activities above) have been published as book chapters or conference proceedings.

1. P. Dorfman, C.I. Beattie, F. Burnet, D. Gibbs, J.W.S. Longhurst (2005) Consultation and communication for local air quality management in the UK: an analysis of local authority interaction with its stakeholders. In *Proceedings of the 5<sup>th</sup> International Conference on Urban Air Quality*, Valencia 29 – 31 March 2005.
2. P. Dorfman, C. I. Beattie, F. Burnet, D.C. Gibbs, J.W.S. Longhurst, E.L.C. Weitkamp, N. S. Leksmono (2005) Consultation for local air quality management in the UK: opportunities for and barriers to successful science communication. In Brebbia. C.A (Ed) *Air Pollution XIII* WIT Press, Southampton and Boston, pp. 139-148
3. P. Dorfman, N.S. Leksmono, F. Burnet, D. C. Gibbs, J.W.S. Longhurst, E.L.C. Weitkamp (2006) A preliminary review of local air quality management consultation practices in England. In Longhurst, J.W.S. & Brebbia C.A. (Eds) *Air Pollution XIV*, WIT Press, Southampton and Boston, pp145 -154.

### Guidance

P. Dorfman, N.S. Leksmono, J.W.S. Longhurst, D.C. Gibbs, F. Burnet & E.L.C. Weitkamp (2006): ‘*Steps to Better Practice*’: *Guidance on local air quality management consultation for local authorities*, UWE, [www.uwe.ac.uk/aqm/esrc](http://www.uwe.ac.uk/aqm/esrc).

This document, specifically designed for a local authority audience providing examples of better practice and guidance and advice on the form and function of LAQM consultation practice for local authorities, has been published and made available on our web-site.

### Conference papers

The following papers, reporting interim findings of the study, have been presented by the research team at the following internationally important academic conferences.

1. *'Science communication at the local level: an evaluation of local authority communication strategies'*, paper presented to the 8<sup>th</sup> Conference on Public Communication of Science and Technology, Barcelona, 3-6<sup>th</sup> June 2004.
2. *'Consultation and communication for local air quality management in the UK: an analysis of local authority interaction with its stakeholders'*, paper presented to the 5<sup>th</sup> International Conference on Urban Air Quality, Valencia, 29-31<sup>st</sup> March 2005.
3. *'Consultation for local air quality management in the UK: barriers to successful science communication'*, paper presented to the 13<sup>th</sup> International Conference on Modelling, Monitoring and Management of Air Pollution, Cordoba, 16-18<sup>th</sup> May 2005.
4. *'Reflexive science communication: LAQM consultation in the UK'*, paper presented to the 27<sup>th</sup> Annual Society for Social Studies of Science Conference, Pasadena, 20-22<sup>nd</sup> October 2005.
5. *'A preliminary review of local air quality management consultation in England'*, paper presented to the 14<sup>th</sup> International Conference on Modelling, Monitoring and Management of Air Pollution, New Forest, 22-24<sup>th</sup> May 2006.
6. *'Science communication and community engagement: local air quality management consultation in England'*, paper presented to the 15<sup>th</sup> International Union of Air Pollution Prevention and Environmental Protection Associations Regional Conference, Lille, 5-8<sup>th</sup> September 2006.

### Workshop presentations

1. *'LAQM consultation research: how we can help you'*, presented at the National Society for Clean Air and Environmental Protection (NSCA) Spring Workshop 2005, Oxfordshire.
2. *'LAQM Consultation Processes: Riding high or sea-sick on the Third Wave' of science communication theory'*, presented at the South West NSCA Regional meeting, September 2005.
3. *'How (not) to consult the public'*, presented at the Air Pollution Training Day, Bristol, 13 September 2006.

### Web based dissemination

A project web-site has been designed and went live in 2005, which can be found at <http://www.uwe.ac.uk/aqm/esrc/>. Data sets which include questionnaire survey data, case studies data, workshops outcomes, and presentations to the Project Steering Group are available on the project web-site. The ESRC End of Award Report and 'Steps to Better Practice in LAQM Consultation' guidance are also available there.

## **IMPACTS**

### Policy recommendations to Defra

The research team has involved and engaged with government and other statutory bodies over the life-span of the project. At the invitation of Defra, we were asked to formulate a set of Recommendations with direct policy implications. The following Recommendations were made, a positive response was received, and we believe the research project has made a significant impact on Defra policy development.

1. Greater emphasis should be placed on consulting both statutory and non-statutory stakeholders early, and ‘upstream’, within the LAQM Review and Assessment process.
2. Consideration should be given to creating sufficient conditions to enable ‘embedded LAQM consultation. This may involve the facilitation of ‘engagement vehicles’ in order to deliver effective partnerships between local authorities and their statutory and non-statutory stakeholders.
3. Consideration should be given to tasking a small number of differing local authorities to test this enhanced form of LAQM consultation practice with a view to encouraging its general use by local authorities in the Fourth Round of Review and Assessment.

### Environment Agency

Over the life-span of the project we have been in close contact with the Environment Agency (EA), and have conducted a series of follow-up meetings with the EA in order to explore how they can take forward our recommendations and general view on consultation mechanisms and strategies, in order to transfer them to other environmental risk issues that the Agency are charged with managing.

### Local Authority

Throughout the life of the project we have been advised by a Project Steering Group, including members representing local authorities. We have liaised with local authority representatives at national and regional *fora* and have shared our findings in specifically convened local authority workshops – we believe that our findings have already influenced thinking and actions in some authorities.

### Research

As a result of this project, the principal investigator, Prof Jim Longhurst, was invited to sit on the Project Steering Group for a research project ‘*Articulating Public Values in Air Quality Policy Development*’ carried out by ‘People, Science & Policy’.

## **FURTHER RESEARCH PRIORITIES**

Further work may involve:

- The empirical investigation of sets of practical difficulties associated with embedding the concept of stakeholder engagement within the environmental risk decision-making arena – how do theoretical and rhetorical imperatives for involvement play out in particular locations and settings?
- Tracking the uptake of our ‘Steps to Better Practice’ Guidance by local authorities involved in LAQM via a longitudinal survey to review change in practice over time.
- Investigating further opportunities for, and boundaries to, the transfer of our research findings to other environmental domains, and comparing and contrasting consultation approaches concerning other environmental media (contaminated land control and water protection).
- The exploratory financial audit of a set of local authority LAQM consultation exercises - in order to cost time and resources needed to practically enact the drive for enhanced public involvement in air quality management.