Evaluation of BERR's public dialogue on perceptions of industrial biotechnology

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Final report to BERR and Sciencewise, June 2009

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Glossary

IB	Industrial biotechnology
BERR	Department for Business, Enterprise and Regulatory Reform
IB-IGT	Industrial Biotechnology Innovation and Growth Team

Executive summary

Context and engagement activities

BERR commissioned a public dialogue in autumn 2008 on perceptions of industrial biotechnology. The project comprised two stages of meetings with selected members of the public: an introductory meeting explaining basic concepts, and a second meeting at which expert speakers presented mainly about various uses of IB. These meetings were informed by expert input behind the scenes, through a Project Advisory Group. The project reported back to BERR in December 2008 and to participants, speakers, and members of the Project Advisory Group in February 2009.

Evaluation aims and method

The project was evaluated to find out to what extent it had met BERR's objectives and Sciencewise's principles of good practice in public dialogue. The evaluation mainly used observations, questionnaires, and interviews with participants, expert speakers, policy makers, and the delivery team.

Findings: dialogue process

How clear was the scope and purpose of the dialogue process? The scope was determined with input from experts and policy makers, through the Project Advisory Group, and in response to requests and questions from participants at the first Citizens Meeting. The scope and purpose were clearly communicated to participants at the Citizens Meetings.

How well was information provided: how accessible, engaging and credible was the information? The information was provided in a way that was very accessible (by introducing concepts in stages, repeatedly explaining them, and relating them to real examples) and engaging (using fun and imaginative tasks, and spanning a range of uses of IB with something to appeal to everyone). On the whole the information was seen as authoritative and credible.

How well were discussions among participants facilitated? Discussions were well facilitated, moderated by skilled facilitators using a range of tasks and techniques to stimulate discussion. However, with just one dedicated note taker moving between break out groups, an additional note taker would have been valuable.

How well organised and supportive was the dialogue process? The delivery team had a very good rapport with the participants and ensured that their practical needs were well attended to. More support to speakers would have been welcome.

How well was information provided: did the dialogue provide information from a range of perspectives? Because of the difficulty recruiting speakers from

organisations that might be expected to hold less positive views about some of the uses of IB, there was a clear emphasis on the potential benefits of IB at the second Citizens Meeting, from both industry and independent speakers. This influenced the response of at least some participants to IB and also meant that the public's response to arguments against IB was not thoroughly explored.

Finding: dialogue impacts

Did it influence knowledge and attitudes towards IB? Gaining a direct insight into the public's views on IB was a very valuable benefit for some speakers and will influence some in their future dealings with the public.

Did it encourage broader participation in public engagement in science and technology? On the whole the speakers felt there were some positive outcomes or personal benefits to taking part. Taking part also overcame misgivings about, for instance, potential hostility from the public. Some speakers therefore volunteered that they would be happy to take part in similar events again.

Did it influence knowledge and attitudes towards the use of public dialogue in informing policy and decision making? The project demonstrated the importance and value of public dialogue to participants, speakers and policy makers. However, there was some concern about the trustworthiness of the findings because of the focus on the benefits of IB and the small number of participants. The latter could be addressed by explaining the purpose and value of qualitative research.

Findings: project objectives

Did the dialogue create greater awareness of IB amongst the public and understanding of concerns and drivers? By the end of the dialogue process, participants were impressively aware of the uses, potential benefits and (to a lesser extent) potential problems of IB. The process went beyond creating awareness and for some stimulated interest in IB that persisted after the meetings for some participants. It encouraged them to find out more after the meetings, to discuss what they had learnt with family and friends, and to suggest that meetings like this should be run for others in the future.

Did the dialogue draw out the relationship between IB and GM? Participants' responses to a variety of uses of GM in IB were thoroughly explored to understand the different responses to them. Participants heard about and discussed GM products and processes, both contained and not, for a range wide of purposes, including bio-fuels, bio-plastics, and speciality chemicals for health and personal care.

Did the dialogue enable BERR to make better informed decisions on policy relating to IB, taking into account public values? Many findings were seen to be of considerable value. They were used within BERR to formulate a recommendation in the final IB-IGT report, would be used to inform

communication strategies, and had led to setting up a group with NGOs to look at IB. They had also been used by DIUS.

Did the dialogue help build confidence in government's use, management and regulation of science and technology? Some participants were reassured that government was looking into solutions to resource shortages and that strong safeguards were in place regarding the use of GM. However, other participants' general views about government dominated their thinking and were unsurprisingly unchanged by the dialogue process.

Did the dialogue create a mechanism for drawing a wider range of NGOs into the IB-IGT process? It proved very difficult to engage environmental and consumer organisations that might be expected to hold less positive views about in the dialogue process, let alone the IB-IGT. This was mainly because they did not cover IB or it was not high priority for them, or they were short of time.

Conclusions and lessons for good practice

Overall the dialogue worked well, meeting most of BERR's project objectives and Sciencewise's principles of good practice in public dialogue. It was of value to the public, policy makers, and speakers. Two aspects were particularly outstanding:

- With careful design and delivery of Citizens Meetings, the team managed very successfully to make a complex scientific issue accessible and engaging to a wide audience.
- As a result of good communication between the delivery team, policy makers, and experts on the Project Advisory Group, the material and structure of the Citizens Meetings ensured that key policy questions were addressed.

However, difficulty engaging organisations that hold less positive views about some of the uses of IB was a serious problem. Their absence meant that some participants either had nagging doubts or concluded that the problems of IB were minimal, and that policy makers did not know how the public would react if arguments against IB should surface in the future.

There are three main lessons for the future:

- The public is able to have a sophisticated debate around complex scientific issues, provided that information is given in an engaging and accessible way.
- Close involvement between delivery team, policy makers and experts, through a well facilitated mechanism such as the Project Advisory Group, helps ensure that findings are of value for policy and decision making.
- It would also be useful to find ways to present both sides of the argument throughout the dialogue process, in the absence of speakers with serious concerns about the technology under discussion.

1 Introduction

In autumn 2008 BERR and Sciencewise commissioned a public dialogue to explore public perceptions of industrial biotechnology (IB). The project was delivered by Opinion Leader and 3KQ. It comprised two stages of Citizens Meetings with selected members of the public: a meeting introducing them to IB and related scientific concepts, followed by a meeting at which expert speakers provided more detailed insights into IB. These meetings were informed by expert input behind the scenes, through a Project Advisory Group.

As required of Sciencewise projects, an evaluation of the public dialogue was commissioned. The purpose of the evaluation was to assess to what extent the project objectives and the good practice principles for public dialogue were met, with a view to identifying lessons for future public dialogue projects.

Chapter 2 describes the aims of the evaluation and how it was carried out. Chapter 3 briefly summarises the activities and context of the public dialogue. Chapter 4, 5 and 6 report the evaluation findings: how the dialogue process worked (chapter 4), what impacts it had (chapter 5), and to what it extent it addressed the project objectives (chapter 6). Chapter 7 presents the main conclusions and suggests lessons for good practice in public dialogue.

2 The evaluation

2.1 Aims

The evaluation aimed to address three broad questions:

- To what extent were Sciencewise's principles relating to the **processes** of public dialogue¹ met?
- To what extent were Sciencewise's principles relating to the **impacts** of public dialogue met?
- To what extent were BERR's **objectives** for the dialogue met? The detailed questions relating to these three broad questions are summarised in Table 2.1. Based on findings relating to these questions, the evaluation also considered lessons for good practice in public dialogue.

Table 2.1 Questions addressed by the evaluation

Broad question	Detailed questions
How well did the process work to enable effective dialogue?	 How clear was the scope and purpose of the dialogue? How well was information provided? How well were discussions among participants facilitated? How well organised and supportive was the dialogue process?
What impacts did the process have?	 What impacts did it have on public, experts, and policy makers? Did it influence knowledge about and attitudes towards the use of public dialogue in informing policy and decision making? Did it influence knowledge about and attitudes towards IB? Did it encourage broader participation in public engagement in science and technology? How easy were the outputs to understand?
To what extent were the dialogue objectives met?	 Did it create greater awareness of IB amongst the public and understanding of concerns and drivers? Did it draw out the relationship between IB and GM? Did it help build confidence in government's use, management and regulation of science and technology? Did it create a mechanism for drawing a wider range of NGOs into the IB-IGT process? Did it enable BERR and other departments to make better informed decisions on policy relating to IB, taking into account public values?

¹ Sciencewise (May 2008) *The Government's Approach to Public Dialogue on Science and Technology.* Department for Innovation, Universities and Skills.

2.2 Method

There were two main components to the evaluation. Further details of both are given in Table 2.2.

- Observing Citizens Meetings and a Project Advisory Group meeting This enabled us to independently assess the dialogue process and, to a lesser extent, the impacts.
- Hearing from participants, experts (speakers and Project Advisory Group members), and policy makers This enabled us to hear how the process worked and what impacts it had from the different perspectives of those involved. A mixture of questionnaires and interviews were used. To avoid interfering with the process, this was mainly left until the end of the meetings or some time afterwards. Interviews were recorded and transcribed, and transcripts were analysed thematically.

In addition, we reviewed some written material from the project (e.g. presentations used at the Citizens Meetings, the summary report). However, because of the small scale of the evaluation, this analysis was very basic.

The evaluation was small-scale and the timescale was short. However, we took a number of steps to ensure that conclusions would be robust and useful.

- We used a mixture of methods, both quantitative and qualitative, and made sure we heard a range of views and perspectives.
- The questionnaires built on existing questionnaires to allow comparison with other dialogue projects and to build on good practice².
- We carried out interviews with speakers and policy makers as late as
 possible in order to asses the impacts as fully as possible. However,
 because the evaluation was due to report shortly after the summary report
 was circulated to speakers and participants, some impacts could not be
 assessed.
- We kept thorough records throughout the evaluation so that there is a clear audit trail, should anyone wish to understand how we reached our conclusions.

The evaluation was carried out independently of policy makers and the dialogue delivery team. Their input consisted of:

- BERR provided briefing on the aims of the dialogue at the start of the evaluation. They approved evaluation questionnaires and interview topic guides.
- Opinion Leader provided briefing on the dialogue process at the start of the evaluation. They made available material relating to the Project Advisory Group and Citizens Meetings (e.g. presentations for the Citizens Meetings).

BERR, Opinion Leader, and Sciencewise commented on the draft evaluation report.

² Warburton, D. (May 2008) Final report on evaluation of Sustainable Development Commission's public and stakeholder engagement programme on tidal power. Warburton, D. (November 2007) Final report on evaluation of the HFEA consultation on hybrid and chimera embryos.

Table 2.2 Summary of evaluation methods

	Method	Timing
Participants	Observation	(1) 1st Citizens Meeting (London only) (2) 2nd Citizens Meeting
	Questionnaire 2 x A4 pages distributed and collected at Citizens Meetings Given to all participants	 (1) At end of 1st Citizens Meeting (London & Manchester) (2) At end of 2nd Citizens Meeting
	Telephone interviews (1) Approx ½ hour (2) 5 minutes 8 participants who had attended the 2nd Citizens Meeting were interviewed. They were selected to include: - a range of ages - from London and Manchester - with different levels of participation at the meeting	(1) Within 4 weeks of 2nd Citizens Meeting(2) After summary report circulated
Experts (speakers and Project	Observation	(1) 2 nd Project Advisory Group meeting (2) 2 nd Citizens Meeting
Advisory Group members)	Questionnaire 2 x A4 pages, by email Sent to all speakers at 2 nd Citizens Meeting and all Project Advisory Group members ³	Within 4 weeks of 2 nd Citizens Meeting
	Telephone interviews Approx ½ hour 6 speakers at the 2 nd Citizens Meeting were interviewed. They were selected to include speakers: - from industry and independent organisations - with different levels of involvement in IB-IGT beforehand - who had spoken in different sessions at the Citizens Meeting	After summary report circulated
Policy makers	Face to face/telephone interviews Approx ½ hour 2 representatives from BERR	After draft report received
Delivery team	Telephone interviews Approx ½ hour 1 member of Opinion Leader team & 1 member of 3KQ team	After draft report submitted

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 $^{^{\}scriptscriptstyle 3}$ Questionnaire results from the Project Advisory Group are not reported because of the small number of questionnaires returned.

3 Overview of the public dialogue

In autumn 2008 BERR and Sciencewise commissioned a public dialogue on perceptions of industrial biotechnology (IB). The project was delivered by Opinion Leader (responsible for the project overall, particularly Citizens Meetings) and 3KQ (responsible for the Project Advisory Group).

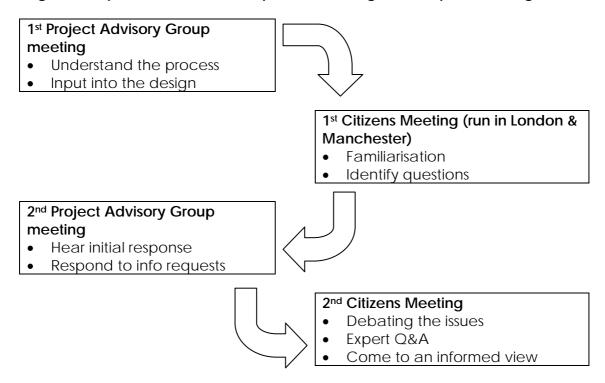
3.1 Context

BERR's IB-IGT had identified public perception as an important potential barrier to the uptake of IB. The main driver for the dialogue project was their wish to understand what concerned the public in order to help overcome potential barriers, as well as what excited the public in order to build on the opportunities this presented. Because of the use of GM in IB, there was also wider interest in understanding public responses to GM in this context.

3.2 Stages

The dialogue comprised two stages of Citizens Meetings with selected members of the public: a meeting introducing them to IB and related scientific concepts, followed by a meeting at which expert speakers provided more detailed insights into IB. These meetings were informed by a Project Advisory Group that met to plan each Citizens Meeting.

Figure 1. Opinion Leader's description of the stages in the public dialogue



3.2 Citizens Meetings

Format and content of first meeting

The first Citizens Meeting ran over one evening and the following full day. It consisted of:

- Discussions, in break out groups and plenary, about science and technology in general in everyday life
- A number of tasks introducing scientific concepts and the context for IB (e.g. environmental problems)
- A presentation introducing industrial biotechnology from an independent 'science translator'
- Discussions, in breakout groups and plenary, about IB to identify initial responses and questions that they would like answered at the second Citizens Meeting

Policy makers from BERR were present for part of the Citizens Meetings. They gave presentations at the start, sat in on presentations and the question and discussion sessions that followed them, but were discouraged from listening in on the small group discussions. Their involvement was similar at the second meeting.

Format and content of second meeting

The second Citizens Meeting ran over two consecutive days. It consisted of:

- Presentations from panels of expert speakers (with each presentation lasting approximately 5 minutes), followed by questions from participants, chaired by Opinion Leader
- Break out group discussions after each session of presentations, facilitated by Opinion Leader
- An opportunity for participants to sum up and present back to several policy makers and other experts at the end of the two days

Possible speakers, who were experts on some aspect of IB and could communicate well with the public, were suggested by the Project Advisory Group, then invited them to take part by Opinion Leader and/or BERR. The speakers are listed in table 3.1.

Participants

The first Citizens Meeting was run twice, once in London and once in Manchester. Participants were selected to include a mix of age, sex, socioeconomic group, and ethnicity, and to exclude anyone with a good knowledge of IB. The second Citizens Meeting was held in London. Half of the participants from the first Citizens Meetings in London and Manchester were invited to attend, with participants chosen at random.

All meetings were held on weekdays. Participants were given a cash incentive for attending (£85 at the end of the first Citizens Meeting and £165 at the end of the second).

Table 3.1 Speakers at the second Citizens Meeting

Session	Speakers
Setting the scene	• Bio3
	• BERR
	• DECC
Bioplastics &	• Syngenta
polymers	• WRAP
	Carbon Trust
	• CPRE
	• Demos
Speciality	• Croda
chemicals	Pharma Intermediates
	Chemical Innovation Knowledge Transfer Network
	Imperial College London
Biorefinery	British Sugar
	INEOS Bio
	Frontier Agriculture Ltd
	 National Non-Food Crop Centre
	Bioscience Knowledge Transfer Network
	 Department of Sociology, University of Essex

Table 3.2 Number of participants

Meeting	Number of participants
Meeting 1 – London	24
Meeting 1 - Manchester	23
Meeting 2	24

3.3 Project Advisory Group meetings

BERR asked for volunteers for the Project Advisory Group from the IB-IGT Steering Group and Working Groups. They also asked them to suggest NGOs that might be interested in taking part, and these NGOs were then contacted by BERR and 3KQ with limited success (see 6.4). The full list of Project Advisory Group members is given in table 3.3.

A Project Advisory Group meeting, attended by members and delivery team and facilitated by 3KQ, was held to plan each Citizens Meeting. Draft material and agendas for the Citizens Meetings were also circulated for further expert input. About eight Project Advisory Group members attended each meeting and commented on material in between meetings.

Table 3.3 Members of Project Advisory Group

	Project Advisory Group member
Commissioners	BERR
	Dialogue by Design (representing Sciencewise)
	AEAT
Other stakeholders	AkzoNobel
	Unilever
	Boots
	Humber Chemical Focus
	Chemical Watch
	Which
	Janet Bainbridge
	University of Warwick
	Biotechnology and Biological Sciences Research
	Council

3.4 Timing

The project began in September 2008. The final report to BERR was submitted in December 2008, to link in with IB-IGT's timetable. The summary report was circulated by Opinion Leader (under a joint letter from Opinion Leader and BERR) to participants, speakers, and members of the Project Advisory Group in February 2009.

3.5 Costs

Two members of staff at BERR were particularly involved in the dialogue project. The amount of time they devoted to it is difficult to estimate as it varied a great deal over the course of the project but it was more than anticipated. Overall, it probably took about 50% of the project manager's time. A great deal of input was needed at the following points:

- Tendering
- Development (e.g. inviting experts to join the Project Advisory Group and speak at the second Citizens Meeting)
- Attending Project Advisory Group meetings
- Attending Citizens Meetings
- Commenting on the report

BERR also provided venue and refreshments for the two Project Advisory Group meetings and the first London-based Citizens Meeting.

Costs for Opinion Leader and 3KQ's work are summarised in the table 3.4. In addition, the total cost of the evaluation was £7500 (excluding VAT).

Table 3.4 Costs for Opinion Leader and 3KQ

Activity	Costs
Project management	£6150.00
Recruitment	£4385.00
Material development	£12550.00
Project Advisory Group meetings	£11275.00
Citizens Meetings	£14010.00
Analysis and reporting	£13863.00
Incentives for participants	£9212.00
External venues and catering	£6803.13
Travel and subsistence (staff)	£1250.00
Travel and subsistence (participants)	£4200.00
Total (excluding VAT)	£83698.13

4 Findings: dialogue process

4.1 How clear was the scope and purpose of the dialogue?

Did the dialogue address the interests of public, experts, and policy makers?

The experts and policy makers on the Project Advisory Group had a strong influence on the content of the Citizens Meetings. For instance, at the second Project Advisory Group meeting, the scope, broad agenda, and list of possible speakers for the second Citizens Meeting were collaboratively developed with input from all present, with skilful facilitation by the delivery team. This close involvement ensured that the dialogue addressed key policy interests (see 6.5).

The two stage process meant that the agenda for the second Citizens Meeting was also influenced by questions that participants raised at the first meeting. For instance, participants were interested in the land use implications of bio-fuels and this was addressed by inviting CPRE to speak at the second meeting. However, to keep the focus on the main objectives for the dialogue, the Project Advisory Group recommended that at the second meeting:

- A few issues that had not been raised by participants should be introduced. For instance, bio-refineries were included in the agenda to find out whether there were concerns around infrastructure and planning issues.
- A few issues of interest to participants should not be explored in detail. For instance, discussions about how IB compared to other solutions to environmental problems (e.g. whether use of plastic could be reduced rather than developing bio-plastics) were curtailed.

The majority of participants (91% at the end of the first Citizens Meeting, 79% at the end of the second) said on the questionnaires that they were able to discuss issues that concerned them.

Was the purpose clearly communicated?

During the Citizens Meetings, the delivery team frequently explained the purpose of the meetings and how the results would be used. This observation was reinforced by answers on the questionnaire, with almost all participants agreeing at the end of the first meeting that they understood the purpose of the meeting (97%) and how the results would be used (96%). There was just the occasional participant who worried that there was a "hidden agenda".

Was the scope clearly communicated?

The scope of the project was communicated to participants. For instance, in the second Citizens Meeting, following the steer from the Project Advisory Group, the delivery team explained very clearly that wider environmental issues were beyond the scope of the discussion. Exactly what IB

encompassed was not clear to all participants (see 4.2) but the delivery team clarified when participants introduced issues that were not related to IB (e.g. stem cell research).

4.2 How well was information provided?

How accessible and engaging was the information?

The delivery team and speakers managed very successfully to make a complex scientific issue accessible to a wide audience. On the questionnaires, almost all participants agreed that they had understood the information provided (90% at the first Citizens Meeting, 92% at the second). While participants did not understand all the details, they picked up more than enough for a well informed debate. Even a participant who had left school at the age of 12 said in her interview that she had understood a great deal ("I was very surprised that I understood what I did understand").

From observing the Citizens Meetings and from feedback in the interviews, the following features seemed to have enabled participants to grasp the information that was presented:

- Scientific concepts were introduced in stages ("started right from the bottom, like this is an enzyme, and then gradually built up").
- Most speakers kept technical terms to a minimum and explained them when they did use them.
- Real examples were used to illustrate concepts, for instance bread and beer as examples of biotechnology.
- The team checked understanding frequently.
- There was repetition of important concepts ("they kept drumming it in").
 This was sometimes unintentional, due to speakers preparing their presentations independently without sight of others' presentations.
 Nevertheless it served to reinforce basic concepts.

While there was a great deal of information presented, on the whole participants managed to assimilate it. The majority of participants (75%) said on the questionnaire at the end of the second meeting that there had been the right amount of information. Just over one tenth (13%) felt there was too much information and the same number (13%) felt there was too little.

While the various uses of IB were clearly explained, there did not seem to be a clear overview of what IB encompassed. As one participant put it "it wasn't the information that was difficult to understand, it was mainly comprehending the whole topic". This meant that there was a hazy sense of the scope of IB, with participants not entirely sure about the relationship between GM and IB ("I was classing them as two different things") and even whether IB included other innovative and controversial technologies such as stem cell research. This point came across from interviews and observation of the Citizens Meetings. However, it did not seem to be a problem because most of the debate focused on the particular uses of IB that had been mentioned by speakers.

From interviews and observation of the Citizens Meetings, on the whole participants were very engaged although there were inevitably times during the meetings when interest waned. In interviews, even participants who admitted that they had no interest in the topic at the beginning said that they were sufficiently interested by the end of the first Citizens Meeting to want to return for the second.

From observing the Citizens Meetings, this high level of engagement was due to careful design and delivery, in particular:

- Linking IB to familiar and everyday concepts and experiences.
- Fun and imaginative tasks such as a 'pub quiz' to introduce potentially dry concepts such as what a chemical is.
- Spanning a range of uses of IB. For instance, it was very noticeable that a
 presentation about bio-fuels for cars sparked questions for the speaker
 from several participants who had not asked the speakers questions
 before.

How credible and authoritative was the information provided?

The Project Advisory Group helped to ensure that the information that the delivery team provided was accurate. During the Citizens Meetings, the delivery team stated very clearly that they were not experts. They gave the pre-prepared information but asked participants to save technical questions for the experts.

From observing the Citizens Meetings, on the whole participants saw the information they were given as highly credible. They very much welcomed the scientist at the first meeting and the many expert speakers at the second meeting. However, they sometimes questioned:

- The **independence** of the information, either because it was given by industry speakers or because the project was government funded ("it's not as simple as the government through this type of exercise is trying to lead us to believe"). Speakers from universities were seen to bring independence.
- The accuracy of information about more familiar concepts and terms. For instance, not all accepted the facts that they were given about broader environmental issues and the definitions of scientific terms and concepts ("we don't agree that everything's a chemical").

Did the dialogue provide information from a range of perspectives⁴?

At the **first Citizens Meeting**, the delivery team were observed to inform participants about both the potential benefits and the potential problems of IB. For instance, in one exercise participants were shown arguments for and against IB and asked for their responses to them, with equal numbers of arguments for and against. In spite of this, some participants remarked that the emphasis of the first meeting was on the positive aspects of IB.

⁴ The steps taken to engage NGOs and the reasons for their absence are discussed in 6.4.

In contrast, at the **second Citizens Meeting** the presentations were observed to be dominated by the potential benefits of the uses of IB that were discussed. Some potential difficulties were mentioned. For instance, CPRE flagged up the possible implications of growing more non-food crops on wildlife, water demand, fertiliser and pesticide use, and food production. However, mentions of the potential difficulties were outweighed by mentions of potential benefits, both in number and strength with which the points were made. This was the case for presentations from both industry and independent organisations.

The emphasis on potential benefits was certainly not intentional. The delivery team and BERR made a point of trying, with limited success, to engage environmental and consumer organisations that might be expected to hold less positive views about IB in general or some of its applications (see 6.4). So that participants would not feel that they were being '"fed a line", early on during the meeting the delivery team explained that they had invited along experts from a range of organisations, including organisations "who we thought might be against" but not everyone they invited had agreed to attend.

The emphasis on potential benefits was noted by some, but not all, participants and speakers:

- Participants On the questionnaire about half of participants (58%) said that the information at the second Citizens Meeting had focused on pros. They also said they had learnt more about benefits than problems (see 6.1). In interviews there were comments that, for instance, "we really only heard one side of the story", "we came to a decision that there wasn't really enough being spoken about the negative side of anything ... all I ever heard was the positive information".
- **Speakers** On the questionnaire about half of the speakers (54%) agreed that the presentations represented a balanced range of views. In interviews some speakers from both industry and independent organisations who presented in three different sessions during the meeting remarked on the dominance of the positive views. For instance: "it was very much a pro camp", "pretty one sided really there was no counter argument to any of the points raised"; "all pretty positive there was nobody saying it was a load of tosh or dangerous".

There were mixed views about how problematic the focus on benefits was.

• In the participant interviews, some felt it was not important and that they had enough information to make up their minds. Other participants argued that people would have reached different conclusions if they had heard more objections to IB ("we came away quite positive because we heard mainly positives"). For at least some participants, the absence of environmental organisations that might be expected to oppose IB suggested that the potential problems are not serious ("these green people weren't wholly convinced that it is a bad thing", "it kind of makes you start thinking maybe it's not such a bad thing."). Other participants were left with "nagging doubts":

"It would probably have been good to have heard somebody who put a negative point of view just so we could have understood if there were any negatives. Obviously we weren't really told too many. We were told why [IB] may not be the answer for everything but as far as being detrimental in any shape, it didn't appear it was. That may be the case but we don't know."

- The speakers would also have welcomed the opportunity to discuss the issues with someone holding an opposing view because they thought this would help participants understand the issues. "It is important to have both sides represented it would have been useful for [participants] to see us argue to check the validity of both sides."
- For policy makers, the concern was that they had not been able to see how the public would respond to arguments against IB (discussed in 5.1).

Although the potential benefits dominated the presentations, the delivery team pointed out that the information provided could nevertheless be considered balanced because it had been well reasoned and evidenced. Participants seemed to concur, with most agreeing that the information provided was fair and balanced (87% at the end of the first Citizens Meeting, 75% at the end of the second).

Were participants encouraged and given time to ask questions about the information provided?

From observing the meetings, it was clear that the delivery team went to lengths to encourage questions, for instance by:

- Clearly emphasising to participants at the outset that their task was to ask
 questions. For instance when introducing the meetings, participants were
 told: "If there's anything you don't understand, please speak up and ask
 questions we haven't recruited you to be experts." The introductory
 slides reinforced this point stating "Your role: Asking questions, raising
 issues, challenging viewpoints".
- Asking "any questions?" often throughout the meetings.
- Asking the speakers questions themselves to get the ball rolling.
- Welcoming questions when they were asked. The speakers followed their lead on this (e.g. "Great, a question!" said a speaker on seeing the first hand go up).
- Taking all questions seriously, from basic questions asking for definitions of scientific terms to less mainstream questions about ethical and religious issues.

These efforts to stimulate questions were very successful. In the second citizens meeting, an impressive two thirds of participants (17) asked at least one question after the speakers' presentations.

However, there seemed to be insufficient time for questions. It was observed after several presentations that not everyone who had questions was able to ask them. This observation was reinforced in some, but by no means all, of the interviews. It was suggested that it was simply a result of having a large number of speakers.

4.3 How well were discussions among participants facilitated?

Was there enough time for participants to explore views with others?

From observations and interviews, the break out group discussions were very helpful for enabling participants to absorb and reflect on the information they had been given. They were also one aspect of the meetings that participants particularly enjoyed. Participants felt that the time allowed for these break out group discussions was about right.

Were all participants enabled to join in the discussion?

A range of tasks and techniques were effectively used in the first Citizens Meeting to stimulate discussion. These included:

- A 'pub quiz' about science and technology where groups worked together to come up with answers to questions about scientific concepts
- A 'true and false' game where participants were challenged to say whether environmental 'facts' were correct.

From observing the break out group discussions, the delivery team ensured that everyone had an opportunity to have their say. For instance, they were careful to draw in the quieter participants and to emphasise that all views were valid. Interviewees echoed this finding and were generally complimentary about how the break out groups were managed.

Were positive and negative views explored?

The delivery team made a point of exploring both positive and negative views about IB. For instance, when positive views dominated the discussion, they probed about negative views and vice versa. When attitudes suddenly shifted, becoming markedly more positive, this was also explored.

Introducing two central questions, what excites you and what worries you about IB, at the start of the second Citizens Meeting worked well. They were used to structure break out group discussions and feedback at the end of the day, helping to ensure that views both for and against IB were covered throughout.

How well were discussions recorded?

From observing the meetings, participants' questions, comments and discussions seemed to be fairly well recorded:

- The break out group discussions were digitally recorded although recordings were not transcribed.
- In the break out groups, the moderator recorded points from the discussion on a flip chart for some but not all of the discussion.
- There was one dedicated note taker recording onto a lap top. He took notes when all participants were together in the large group. He also took notes in one break out group during the break out sessions, sitting in on different groups in different sessions. This meant that only one break out group had a dedicated note taker at any time, and the other did not.

4.4 How well organised and supportive was the dialogue process?

How was the structure and length of the Citizens Meetings?

On the questionnaire, a substantial minority of participants said that there was not enough time to fully discuss the issues (19% at the first Citizens Meeting, 29% at the second). As discussed above (4.2 and 4.3), at the second Citizens Meeting there seemed to be sufficient time for break out group discussions but insufficient time to question the speakers, mainly because of the number of speakers. The main suggestion was to cut back the number of speakers, although some participants welcomed the variety and felt that the number of speakers added to the credibility of the meeting.

How supportive was the process?

Almost all participants (93% at the first Citizens Meeting, 96% at the second) said they enjoyed taking part. From observing the focus groups, the delivery team related to the participants with warmth and humour. For instance, they joined in the first ice breaker session, made it clear that they were not scientists or experts, and joked to lighten difficult situations such as dealing with dominant participants.

These issues were occasionally remarked on in the interviews. For instance, a policy maker was impressed by the rapport between the delivery team and participants, while a participant valued the care the team had taken at the meetings and when making arrangements for the Manchester contingent while they were in London.

Almost all speakers (92%) also enjoyed taking part. However, some would have appreciated more support from the delivery team. For instance, it was mentioned that the following would have been helpful:

- More thorough briefing about the format of the day and content of other speakers' presentations.
- More help setting up before speaking, rather than being left to their own devices.
- Firmer chairing of panels to ensure speakers were given equal amount of time to present and answer questions. The short amount of time available was particularly problematic if a speaker had had some way to travel.

Some of these issues may have been related to the large number of speakers, including several who were new to public dialogue, and the short amount of time available to liaise with and brief speakers beforehand.

There were just the occasional comments, both positive and negative, about the practical arrangements for the Citizens Meetings suggesting that on the whole they were fine.

How diverse were participants?

The delivery team managed to recruit a good mix of participants to both the first and second Citizens Meetings, in spite of the meetings being held on

weekdays. The socio-economic profile of participants at the second meeting is shown in Table 4.1. From the interviews it was clear that participants also differed widely in terms of educational attainment and interest in science and technology. Some had come along because they found the topic "intriguing" whereas others had had no interest at the start and had come along mainly because of the incentive payment.

In the interviews this diversity was remarked on by both participants and speakers. However, the absence of anyone with obvious disabilities was occasionally noted.

Table 4.1 Profile of participants at the second Citizens Meeting

Characteristic	Number of participants
Age	
18-34	7
35-59	11
60 and over	6
Sex	
Male	12
Female	12
Ethnicity	
White British	20
BAME	4
Area	
London	12
Manchester	12

This was a small scale project by qualitative standards. While samples for qualitative research are usually small, running group discussions with just 24 participants limits how thoroughly, for instance, diversity can be explored. The delivery team explained that the complexity of the topic and the need for question and discussion precluded the meeting being run with a larger sample or several meetings being run. Nevertheless, given additional time and budget, a slightly different approach could have been used to provide greater detail, such as carrying out in-depth interviews with participants after the second Citizens Meeting.

4.5 Summary of findings

Evaluation question	Findings
How clear was the scope and purpose of the dialogue process?	The scope was determined with input from experts and policy makers, through the Project Advisory Group, and in response to requests and questions from participants at the first Citizens Meeting. The scope and purpose were clearly communicated to participants at the Citizens Meetings.
How well was information provided: how accessible, engaging and credible was the information?	The information was provided in a way that was very accessible (by introducing concepts in stages, repeatedly explaining them, and relating them to real examples) and engaging (using fun and imaginative tasks, and spanning a range of uses of IB with something to appeal to everyone). On the whole the information was seen as authoritative and credible.
How well were discussions among participants facilitated?	Discussions were well facilitated, moderated by skilled facilitators using a range of tasks and techniques to stimulate discussion. However, with just one dedicated note taker moving between break out groups, an additional note taker would have been valuable.
How well organised and supportive was the dialogue process?	The delivery team had a very good rapport with the participants and ensured that their practical needs were well attended to. More support to speakers would have been welcome. Almost all participants and speakers said they enjoyed taking part.
How well was information provided: did the dialogue provide information from a range of perspectives?	Because of the difficulty recruiting speakers from organisations that might be expected to hold less positive views about some of the uses of IB, there was a clear emphasis on the benefits of IB at the second Citizens Meeting from both industry and independent speakers. This influenced the response of at least some participants to IB and also meant that the public's response to arguments against IB was not thoroughly explored.

5 Finding: dialogue impacts

5.1 Did it influence knowledge about and attitudes towards the use of public dialogue in informing policy and decision making?

Public

On the questionnaire at the end of the second Citizens Meeting, almost all participants (96%) agreed that it was important to consult the public about IB. In the interviews they gave several reasons for this view, for instance:

- In general it is important for government to listen to the public ("you are voted in by the people, you have got to listen to what people say sometimes [although] you might not always be able to go along with it").
- In particular it is important that government understands how much education people need on IB ("maybe now after all this they realise how very little people do know about it").

On the questionnaire, there was less consensus about whether government would actually take the public's views into account, although more than half thought they would (59%). In the interviews participants mentioned that they were encouraged by certain aspects of the process that suggested their views were being taken seriously by government or the speakers. However, none of these was widely mentioned.

- Having their requests at the first Citizens Meeting reflected in the agenda for the second.
- The sheer number of speakers from industry and academia. This suggested that the project was an important one that government would take seriously ("the fact that they came I take as a seal of approval the fact that they gave up their time").
- Speakers staying to chat over tea or lunch and to hear the participants' summing up at the end of the second meeting:
 "People didn't come down just for the ten minute talk... There were people who stayed until the end, sat at the back and listened to the outcome. I thought 'Yes, they are definitely interested in what the pubic opinion is.'"
- Seeing the summary report. Even interviewees who had just "skimmed" the report commented that it reassured them: "just the feeling that people actually took notice of what we said and did go to the trouble of putting it all in a report".

There were also mixed views about how trustworthy the findings were. In the interviews discussion centred around three issues:

- They worried that the focus on benefits of IB might have swayed opinions (see chapter 4).
- The **small number** of people taking part was a concern ("I don't think you can really get a country's opinion on something just off 50 people"). However, the **good mix** of people was reassuring ("I know it's just a small section of the public but it was a wide spread section younger ones, the old guys, and then from different parts of the country"). The concern

about sample size reflects a lack of understanding of qualitative research; the purpose of the project was to find out what views exist, what drives these views, and how people respond to information, **not** to understand the prevalence of certain views, drivers, or responses which would have required a quantitative approach. To boost trust in the findings, this could perhaps have been explained in a couple of sentences in the summary report.

 In the first set of interviews, before the summary report was circulated, there was uncertainty about whether the report would fully reflect the views participants had expressed and considerable interest in seeing the summary report⁵:

"We have spent four days discussing it, picking it apart, really dissecting it. [I would like] to see if any particular ideas were jumped on and carried forward and what actually now is their take on it." (Participant)
Having seen the report, interviewees felt that it was "a fair reflection" of discussions at the Citizens Meetings, picking up on the main points that they had made. It was occasionally pointed out that the full range of views was not included ("when you're in a group there are always more opinions than actually have been noted but [the report included] the democratic or overall view of the group") but this could perhaps have been because participants only saw the summary rather than the full report.

Speakers

The speakers were impressed by the insights gained through the dialogue and could see how valuable it was to understand the public's responses. For instance, understanding the public's fears means that "you can actually answer them up front", reassuring the public and avoiding the scares that had surrounded some other innovative technologies. Perhaps the strongest endorsement came from a speaker who said that his organisation is seriously considering using public dialogue themselves as a result of his experience.

Nevertheless, echoing the participants, there was some concern among speakers that the **small number of participants** and the **focus on benefits of IB** undermined the credibility of the dialogue. It was also pointed out that the value of the dialogue would depend on **how the findings were actually used**⁶.

Policy makers

The policy makers interviewed had had limited experience of public dialogue before, just through peripheral involvement in 'GM Nation'. The current project had demonstrated the value of public dialogue to them (see 6.5). They would be keen to use a similar process in the future to hear the public's response to other potentially controversial and complex issues.

⁵ The participant interviews were carried out in December 2008 before the summary report had been circulated in February 2009 (see section 3.4).

⁶ This was not known at the time of the speaker interviews.

While good use was made of the project findings (see 6.5), two limitations were flagged up:

- Because few arguments against IB had been presented by the speakers, it
 was not known what arguments might surface and how the public might
 react to them.
- While it was clear that intensive dialogue was needed to reach a point where understanding of IB could be properly explored, it was not clear how transferable the conclusions were to the general public ("how you tailor the messages when you've only got about 2 minutes of them reading something").

5.2 Did it influence knowledge about and attitudes towards IB⁷?

Attending the Citizens Meeting gave the speakers an insight into the public's understanding of and views about IB. On the questionnaire, about half of the speakers (53%) mentioned this as a positive outcome of their involvement⁸. In the interviews they explained that they appreciated being able to actually watch the public's reaction and hear their questions. This direct feedback was not something that they ordinarily got in the course of their work. For some, it would influence their dealings with the public in future. It was very helpful for them, for instance:

• To try out messages

"Because I do press work as well as broadcast, I really want to understand how the things we were talking about worked with the general public. Getting a straight reaction to the messages, actually listening directly to the general public is a good experience." (Speaker)

- To hear the public's misunderstandings and fears
 "You suddenly realise why people are so scared and that was quite an
 eye opener for me people really don't understand." (Speaker)
- To understand that it is possible to communicate complex scientific messages to the public

"The message to me is ok the public at large may not know a lot about science. However they certainly have the potential to learn a lot more if presented to them in the right way." (Speaker)

However, speakers took away very different messages, depending on the questions that had been asked in their particular session. These ranged from "[there is an] apparently broadly held view that biotechnology and chemistry are dangerous and a threat to society" to "a cross-section of the population... are not ideologically opposed to the technology". This highlights the importance of sending a summary report to speakers afterwards so that they can get a more complete view of responses⁹.

⁷ This section only discusses impacts on experts. Impacts on participants and policy makers are discussed in 6.1 and 6.5.

⁸ They mentioned it either as the most successful aspect of the meeting or the most important benefit for them personally.

^{9 9} The speaker interviews were carried out in January 2009 before the summary report had been circulated in February 2009 (see section 3.4).

5.3 Did it encourage broader participation in public engagement in science and technology?

From the interviews it was clear that speakers varied a great deal in how involved they were beforehand in public engagement in science and technology. Some had only communicated about IB to people with a professional interest, while others had, for instance, spoken in schools or taken part in radio interviews.

According to the questionnaire, most of the speakers (90%) enjoyed taking part in the dialogue. They mentioned a number of positive outcomes or personal benefits:

- Hearing the public's response to IB (discussed above)
- Having the opportunity to inform and answer questions from the public ("demystifying biotechnology", "providing hard facts", "allaying fears", "getting our message out")
- Listening to and meeting other speakers
- The experience and challenge of presenting to a lay audience
- Raising their profile

Taking part in the meeting overcame some uncertainty and misgivings. Therefore some speakers, including those with limited prior experience of public engagement, volunteered that they would be happy to take part in similar meetings again.

"I had no idea what to expect. I was worried about whether it was going to be hostile or not and that made me nervous... I really enjoyed it actually." (Speaker)

5.4 How easy were the outputs to understand?

The policy makers had made good use of the full report, for instance pulling out key points for possible inclusion in the IB-IGT report and forwarding it to their contacts as briefing material before meetings. The speakers who had seen a report, either a summary or the full report, were also content with it. On the whole participants had looked at the report briefly, rather than reading it thoroughly, which was sufficient to reassure them that it summarised what had been said at the Citizens Meetings. While some felt it was just the right length, others would have liked it a little longer or shorter.

From reviewing the summary report, it seemed very digestible and suitable for a non-technical audience:

- It was just 6 pages long.
- It had clear sections on the main findings and implications.
- It used few technical terms besides those that had been used and explained in the Citizens Meetings.

5.5 Summary of findings: dialogue impacts

Evaluation question	Findings
Did it influence knowledge and attitudes towards IB?	Yes - Gaining a direct insight into the public's views on IB was a very valuable benefit for some speakers and will influence some in their future dealings with the public. (See also 6.1 for impacts on participants and 6.5 for impacts on policy makers)
Did it encourage broader participation in public engagement in science and technology?	Yes – On the whole the speakers felt there were positive outcomes or personal benefits to taking part. Taking part also overcame misgivings about, for instance, potential hostility from the public. Some speakers therefore volunteered that they would be happy to take part in similar meetings again. (See also 6.3 for a discussion of the difficulty involving a wide range of NGOs)
Did it influence knowledge and attitudes towards the use of public dialogue in informing policy and decision making?	Somewhat - The project demonstrated the importance and value of public dialogue to participants, speakers and policy makers. However, there was some concern about the trustworthiness of the findings because of the focus on the benefits of IB and the small number of participants. The latter could be addressed by explaining the purpose and value of qualitative research.

6 Findings: Project objectives

6.1 Did it create greater awareness of IB amongst the public and understanding of concerns and drivers?

Participants acquired a great deal of knowledge about IB over the course of the Citizens Meetings. On the questionnaires, almost all participants at the first meeting (94%) and all participants at the second agreed that they had learnt something they did not know before. At the Citizens Meeting and during interviews the policy makers and some speakers also noted how much participants had learnt:

"Some of the people who I got the impression didn't know a lot before the event seemed to have picked up a lot, and that was quite impressive I thought, for non-scientists to pick up as much as they did in that very short time. I was very impressed with that." (Speaker)

Participants had acquired:

- Concepts and language of IB and GM For instance, in the interviews they talked comfortably about genes and enzymes. They had also picked up wider scientific knowledge ("I didn't have a clue that oil pretty much made all plastic"). However, they found it much harder to recall the subtleties of IB, for instance how GM is used in IB and exactly what IB encompasses (see also 4.2).
- Awareness of the uses of IB In the interviews there was good recall of the main uses of IB that were discussed at the second Citizens Meeting: biofuels ("apparently we have 10% of something like bio-fuels going into certain cars at the moment"), speciality chemicals ("the shampoo guy"), bio-refinery ("the sugar man, everything being used, little waste"). They also recalled other uses that had just been mentioned in passing ("this guy researching into changing that really quite coarse and gluppy oil into manageable and useable oil again").
- Awareness of the drivers of and, to a lesser extent, concerns about IB On
 the questionnaire at the end of the second Citizens Meeting, 38% said that
 they now knew a lot about the possible benefits compared to 13% who
 said they now knew a lot about the possible problems.

The project went beyond creating awareness and stimulated a genuine interest in IB among some participants. This was demonstrated in a number of ways:

- The opportunity to learn was mentioned as the best aspect of the meeting by over a quarter of participants (26% at the end of the first Citizens Meeting, 29% at the end of the second).
- Some participants left with a wish to learn more ("once you whet the appetite..."). In interviews they said, for instance, that they were planning to look for more information on the internet and that they would now choose to watch TV news items about IB and GM.
- Some participants were so enthusiastic about what they had learnt that they went on to tell their family and friends about it. For instance, a young

- man who was excited about bio-fuel said when interviewed some weeks after the event: "I find myself still talking about it to my mates."
- Some participants urged during the second Citizens Meeting and in interviews that other people, particularly children, should be given the opportunity that they had had to learn about IB.

Attitudes towards IB and GM also changed over the course of the Citizens Meetings. On the questionnaires, about half of participants said that the first meeting had changed their views (49%) while all participants said that the second meeting had done so. The impact of the second meeting is particularly impressive and much higher than typically found in evaluations of similar public dialogue projects. This substantial attitude change was also noted during observation and in interviews. There was a very marked shift partway through the second meeting, with participants becoming more excited and less concerned about both IB and GM.

There was some concern among participants that this attitude change was due to hearing mainly positive views about IB and GM. However, it was also attributed to simply understanding the issues better, for instance understanding that IB has been used for many years and finding out for the first time what GM actually involved:

"GM is actually removing one aspect of the gene, not messing about with it. A lot of us thought that it was injecting this, and taking this out, and doing that, when in actual fact it is one minor little tweak. So a few of us where quite shocked." (Participant)

6.2 Did it draw out the relationship between IB and GM?

On the advice of the Project Advisory Group, the agenda for the second Citizens Meeting covered several different uses of GM in IB. This meant that participants heard about GM products and processes, both contained and not, for a range wide of purposes, including bio-fuels, bio-plastics, and speciality chemicals for health and personal care. This information was necessary to inform discussions about under what circumstances GM would concern them and under what circumstances they would welcome or accept it.

At the second Citizens Meeting, the delivery team made a point of encouraging participants to discuss their responses to this information. In the break out group discussions, moderators were observed to thoroughly explore the issues, for instance by asking "Does anyone think GM is unacceptable across the board? Does anything think their views [about GM] have changed? What's made the difference?" Participants were also asked to present their views on GM, as well as other issues to do with IB, in the feedback session at the end of the meeting.

6.3 Did it help build confidence in government's use, management and regulation of science and technology¹⁰?

On the questionnaire at the end of the second Citizen's Meeting, about half of participants said that the meeting had boosted their trust in government's decisions about IB. This issue was explored further in the interviews.

- Where the meeting had boosted confidence, this was because it had demonstrated that strong safeguards were in place regarding the use of GM or that government was looking into solutions to resource shortages.
- Where the meetings had not made a difference, participants referred to their general views about government ("it always worries you a little bit, you always think are they doing the best?"). Perhaps unsurprisingly, the dialogue process had not been sufficient to change these views.
- No one said that the meetings had undermined their confidence in government's actions on IB.

6.4 Did it create a mechanism for drawing a wider range of NGOs into the IB-IGT process?

The delivery team and policy makers had considerable difficulty involving in the dialogue process environmental and consumer NGOs that might be expected to hold less positive views about IB. In the interviews they explained that they had taken a number of steps to try to involve them.

- They invited six to join the Project Advisory Group, with 3KQ using a combination of known contacts and cold calling. Which? and Chemical Watch took up the invitation.
- They circulated material for the Citizens Meetings to all six for their comments, as well as to Project Advisory Group members.
- They invited several to speak at the second Citizens Meeting. CPRE took up the invitation.

The organisations they approached gave them two main reasons for not participating:

- They did not cover IB or it was not a high priority issue for them at present.
- They did not have time to attend meetings or needed more notice. While this response was understandable and not unusual for public dialogue projects, it was not entirely expected. For instance, the Project Advisory Group thought it would at least be straightforward to find an environmental NGO to talk about bio-fuels.

Due to the tight timescale, giving more notice would have been very difficult. However, it was suggested that NGOs might have been more willing to be involved if the commissioners:

- Had built more on IB-IGT's existing contacts and met NGOs individually beforehand.
- Had been able to provide some clear benefit for NGOs from taking part, for instance by publicising their involvement more widely ("if they are seen

¹⁰ The evaluation explored views about government's actions in relation to IB, rather than science and technology in general.

- to be engaging in this debate and maybe trying to influence it, it's a benefit for them").
- Had been able to offer some scope for NGOs to influence policy on IB, rather than simply to help work out how best to communicate to the public about IB.

Had NGOs engaged with the dialogue process, it is not clear whether this would have led to involvement in the IB-IGT. On the questionnaire within a few weeks of the second Citizens Meeting, most speakers except those who were already very involved with the IB-IGT expressed some interest in becoming more involved. However, when interviewed about 2 months later, either this greater involvement had not materialised or speakers believed it would have come about even without speaking at the Citizens Meeting.

6.5 Did it enable BERR and other departments to make better informed decisions on policy relating to IB, taking into account public values¹¹?

At the time of the interviews with policy makers (December 2008), they had only recently received the report from the delivery team and were reflecting on how it would be used. They expected that some points from the report would be included as recommendations in the IB-IGT report. By the end of March 2009, it was confirmed that the findings:

- Had been used to formulate a recommendation in the final IB-IGT report
- Had led to BERR starting to set up a group with NGOs to look at IB
- Would be used when developing communications with the public on IB
- Had fed into DIUS's work

As discussed in 4.1, the level of involvement from policy makers and other experts on the Project Advisory Group was invaluable in ensuring that the findings were of value. The interviewees believed that the findings would be particularly helpful for informing communications with the public around IB. They identified a number of key findings:

- The lack of knowledge about basic concepts. This was a valuable reminder for policy makers and experts who were "steeped" in IB.
- Misconceptions about, for instance, the level of regulation.
- Different responses to the different uses of GM.
- The need to focus on "the bigger picture", particularly how IB relates to environmental concerns.
- The value of giving facts through scientists.

Their concerns about making decisions based on the finding are discussed in 5.1.

Observing meetings directly, rather than relying entirely on reports from the delivery team, was helpful.

• It meant that the key issues could be fed back quickly to the IB-IGT without needing to talk to the delivery team or wait for reports. This was very useful given the tight timescale that the IB-IGT was working to.

¹¹ Note the impact on other departments was not discussed in the interviews and because of the small scale of the evaluation policy makers at other departments could not be interviewed.

• It gave another dimension to policy makers' understanding. They particularly valued being able to hear first hand the strength of feeling, the level of misunderstanding, and how views differed among respondents ("where people were coming from").

6.6 Summary of findings

Evaluation question	Findings
Did the dialogue create greater awareness of IB amongst the public and understanding of concerns and drivers?	Yes – By the end of the dialogue process, participants were impressively aware of the uses, potential benefits and (to a lesser extent) potential problems of IB. The process went beyond creating awareness and for some stimulated interest in IB that persisted after the meetings for some participants. It encouraged them to find out more after the meetings, to discuss what they had learnt with family and friends, and to suggest that meetings like this should be run for others in the future.
Did the dialogue draw out the relationship between IB and GM?	Yes - Participants' responses to a variety of uses of GM in IB were thoroughly explored to understand the different responses to them. Participants heard about and discussed GM products and processes, both contained and not, for a range wide of purposes, including biofuels, bio-plastics, and speciality chemicals for health and personal care.
Did the dialogue enable BERR to make better informed decisions on policy relating to IB, taking into account public values?	Yes - Many findings were seen to be of considerable value. They were used within BERR to formulate a recommendation in the final IB-IGT report, would be used to inform communication strategies, and had led to setting up a group with NGOs to look at IB. They had also been used by DIUS.
Did the dialogue help build confidence in government's use, management and regulation of science and technology?	Somewhat – Some participants were reassured that government was looking into solutions to resource shortages and that strong safeguards were in place regarding the use of GM. However, other participants' general views about government dominated their thinking and were unsurprisingly unchanged by the dialogue process.
Did the dialogue create a mechanism for drawing a wider range of NGOs into the IB-IGT process?	No – It proved very difficult to engage environmental and consumer organisations that might be expected to hold less positive views about IB in the dialogue process, let alone the IB-IGT. This was mainly because they did not cover IB or it was not high priority for them, or they were short of time.

7 Conclusions and lessons for good practice

7.1 What worked well

Overall the dialogue worked well. It met most of BERR's project objectives and Sciencewise's principles of good practice in public dialogue. It was of value to the public, policy makers and speakers. Two aspects were particularly outstanding.

Firstly, the delivery team and speakers managed very successfully to make a complex scientific issue accessible and engaging to a wide audience. As a result, participants gained a good understanding of the uses of IB, the potential benefits and to a lesser extent the potential problems. Some were even stimulated to find out more or to share what they had learnt with others after the meetings.

This success was due to careful design and delivery of the meetings. The high level of engagement seemed to result from skilful facilitation, using fun tasks, and covering a range of topics with something likely to interest everyone. The good understanding among participants seemed to result from introducing concepts in small steps and in relation to meaningful examples, checking for understanding and reinforcing it, and using appropriate language.

Secondly, the material and structure of the Citizens Meetings ensured that key policy questions were answered. This was achieved by good communication between the delivery team, policy makers and experts, mainly through the well facilitated Project Advisory Group. For instance, the wide range of uses of IB discussed at the meetings, selected by the Project Advisory Group, meant that the relationship between IB and GM could be thoroughly explored.

Lessons for good practice

- The public is able to have a sophisticated debate around complex scientific issues, provided that information is given in an engaging and accessible way.
- Close involvement between delivery team, policy makers and experts, through a well facilitated mechanism such as the Project Advisory Group, helps ensure that findings are of value for policy and decision making.

7.2 What worked less well

The main problem for the project was the difficulty engaging organisations that hold less positive views about some of the uses of IB. BERR and the delivery team tried to draw them in, by inviting them to join the Project Advisory Group or speak at the Citizens Meeting, but there was little take up of these offers. This was understandable given that IB was not a high priority issue for most of the environmental and consumer organisations that were approached. Nevertheless, it meant that some participants either had

Evaluation of public dialogue on perceptions of IB, final report, June 2009

nagging doubts or concluded that the problems of IB were minimal, and that policy makers did not know how the public would react if arguments against IB should surface in the future.

Opinion Leader made considerable effort to present a range of views at the first Citizens Meeting, using an exercise where participants were shown arguments for and against IB that were developed in consultation with the Project Advisory Group. Perhaps a similar approach could have been used at the second Citizens Meeting.

Lesson for good practice

It would also be useful to find ways to present both sides of the argument throughout the dialogue process, in the absence of speakers with serious concerns about the technology under discussion.

Annex A Results from questionnaires to participants

The response rate on the questionnaires at the end of meeting 1 and meeting 2 was 100%.

Meeting 1 questionnaire

Results from the Manchester and London meetings have been combined.

Q1. How far do you agree or disagree with the following statements about the meeting?

	No. (%) of respondents					
	Strongly agree	Agree	Neither agree or disagree	Disagree	Strongly disagree	Missing
a. There was enough time to fully discuss the issues	7 (15%)	26 (55%)	5 (11%)	9 (19%)	0 (0%)	0 (0%)
b. The information provided was fair and balanced	10 (21%)	31 (66%)	3 (6%)	2 (4%)	1 (2%)	0 (0%)
c. I understood the information provided	14 (30%)	28 (60%)	3 (6%)	1 (2%)	0 (0%)	1 (2%)
d. I understood the purpose of the meeting	27 (57%)	19 (40%)	0 (0%)	0 (0%)	1 (2%)	0 (0%)
e. I understood how the results of the meeting will be	05 (500)	00 (400)	0 (00()	1 (00)	1 (00)	0 (00()
f. Attending this meeting has	25 (53%)	20 (43%)	0 (0%) 18	1 (2%)	1 (2%)	0 (0%)
changed my views g. I learnt something I did	10 (21%)	13 (28%)	(38%)	4 (9%)	2 (4%)	0 (0%)
not know before	29 (62%)	15 (32%)	1 (2%)	2 (4%)	0 (0%)	0 (0%)
h. I enjoyed taking part i. I was able to discuss the	25 (53%)	19 (40%)	0 (0%)	1 (2%)	2 (4%)	0 (0%)
issues that concern me	17 (36%)	26 (55%)	4 (9%)	0 (0%)	0 (0%)	0 (0%)
j. All participants were treated equally and respectfully	25 (53%)	18 (38%)	1 (2%)	0 (0%)	3 (6%)	0 (0%)

	No. (%) of respondents			S
	I knew very little	I knew a fair amount	I knew a lot	Missing
Q2. How much did you know about industrial	41 (87%)	5 (11%)	1 (2%)	0 (0%)
biotechnology before the meeting?				
Q3. How much do you know about industrial	4 (9%)	32 (68%)	11 (23%)	0 (0%)
biotechnology now?				

Q4. What were the best/most successful aspects of the meeting?

Respo	Responses		Examples
qeq	Opportunity to learn	12 (26%)	"Learning what biotechnology means", "Finding out some of the facts about bio- fuel", "Learning about what oil and fossils are used for"
Info provided	Presentation from/discussion with scientist	13 (28%)	"Talking to the scientist"
<u>u</u>	Way info presented	1 (2%)	"Felt the way the information was delivered was excellent - quite in depth but methods used were never too draining"
С	Opportunity to discuss issues	16 (34%)	"Discussions and sharing of ideas", "Listening to the views of others"
Discussion	Way discussion was managed	4 (9%)	"Well conducted, everybody had their say"
Disc	Particular discussion sessions	2 (4%)	"True and false facts as it really encouraged discussion among the group"
	ure and isation	2 (4%)	"Opinion Leader staff very helpful and explained very well", "The way it was broken into sections"
Gene	ral positive ack	1 (2%)	"It was very interesting, all of it"
Missin	g/answer not clear	2 (4%)	

Q5. What were the worst/least successful aspects of the meeting?

Responses		No. (%) of respond- ents	Examples
þ	Too much info	4 (9%)	"Sometime there was to much info to take in at one time"
Info orovided	Too little info	3 (6%)	"Not enough statistic on the various technologies involved"
pr	Way info presented	1 (2%)	"Case studies were a bit confusing"
sion	Way discussion was managed	6 (13%)	"Some participants tried to dominate the group", "Perhaps too much 'off topic' talk"
Discussion	Particular discussion sessions	4 (9%)	"I felt our final discussion with cards (pro and cons) was far too complex, to much info to digest"
ure g.	Not enough time	11 (23%)	"Not enough time to discuss such a large range of issues"
actur org.	Too much time	2 (4%)	"Time dragging"
Structure & org.	Practicalities	6 (11%)	"The atmosphere of the room stuffy", "We ran out of orange juice", "Hard chairs"
Lack of transparency 1 (2%)		1 (2%)	"There seemed to be an agenda which was hidden from us."
Nothir	ng	11 (23%)	
Missing	g/answer not clear	4 (9%)	

Q6. How do you think the meeting could have been improved?

Responses		No. (%) of respondents	Examples
	More information	3 (6%)	"More info on bio technology benefits and non benefits"
/ided	Less information	2 (4%)	"More time spent discussing/debating, less time spent informing"
Info provided	More speakers	7 (15%)	"More speakers or professionals we could question (apparently next meeting)"
Infe	Info presented differently	3 (6%)	"More visual aids", "More balanced provision of factual info (except in last session where this was done)"
Discuss- ion	Longer for discussion	5 (11%)	"I think the only way it could be improved is with more time and more discussion"
Disc	Change group management	5 (11%)	"Smaller groups maybe", ""Tougher group rules perhaps?"
	Longer	8 (17%)	"More time"
ure g.	Shorter	1 (2%)	
actur org.	Different structure	2 (4%)	"More breaks", "Shorter breaks, earlier finish"
Structure & org.	Practicalities	3 (6%)	"Better food", "More comfortable surroundings"
More transparency 2		2 (4%)	"More clear details re purpose, how info would be used and by whom."
General positive 7 (150 feedback/no improvements		7 (15%)	"Near perfect"
Missing	9	5 (11%)	

Q7. Is there anything else you would like to add?

Respo	Responses		Examples
	Would have liked less info	1 (2%)	
Info provided	Would have liked more speakers	1 (2%)	"At least one govt speaker"
o pro	Would have liked wider range of info	2 (4%)	"Too much emphasis on bio fuels/plastics."
Info	Liked the way info presented	1 (2%)	"I enjoyed the session - felt the scientist could have been very dull but it was stimulating"
Discuss-	Would have liked to contribute more	1 (2%)	"I found this topic very interesting although I feel like I did not contribute as well as I could have"
⊗	Would have liked it to be longer	1 (2%)	
ture	Well organised	2 (4%)	"A well run process", "Well facilitated"
Structure org	Practicalities	2 (4%)	"Good venue", "In the interest of recycling - perhaps handouts could be given optionally"
	General positive feedback 9		"Found it very interesting, thank you"
+	g to add	13 (28%)	
Missing		15 (32%)	

Meeting 2 questionnaire

Q1. How far do you agree or disagree with the following statements about the meeting?

	No. (%) of respondents					
	Strongly agree	Agree	Neither agree or disagree	Disagree	Strongly disagree	Missing
a. There was enough time to	1 (40/)	11 (4(0))	F (010/)	7 (2004)	0 (00/)	0 (00()
fully discuss the issues	1 (4%)	11 (46%)	5 (21%)	7 (29%)	0 (0%)	0 (0%)
b. The information provided was fair and balanced	4 (17%)	14 (58%)	4 (17%)	2 (8%)	0 (0%)	0 (0%)
c. I understood the						
information provided	8 (33%)	14 (58%)	2 (8%)	0 (0%)	0 (0%)	0 (0%)
d. Attending this meeting has changed my views	13 (54%)	11 (46%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)
e. I learnt something I did	, ,	,	, ,	, ,	, ,	, ,
not know before	20 (83%)	4 (17%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)
f. I enjoyed taking part	15 (63%)	8 (33%)	1 (4%)	0 (0%)	0 (0%)	0 (0%)
g. I was able to discuss the						
issues that concern me	8 (33%)	11 (46%)	5 (21%)	0 (0%)	0 (0%)	0 (0%)
h. It is important to consult						
the public on these issues	20 (83%)	3 (13%)	0 (0%)	1 (4%)	0 (0%)	0 (0%)

		No. (%) of respondents				
	Too much information	Right amount	Not enough information	Missing		
Q2. How did you find the amount of information given at the meeting?	3 (13%)	18 (75%)	3 (13%)	0 (0%)		

		No. (%) of r	espondents	
	Focused on pros	Covered both pros	Focused on cons	Missing
		& cons		
Q3. How did you find the type of information given at the meeting?	14 (58%)	9 (38%)	1 (4%)	0 (0%)

Q4. How much do you know now about the following?

	No. (%) of respondents			
	I know	I know a	I know	Missing
	very little	fair amount	a lot	
a. What industrial biotechnology	0 (0%)	14 (58%)	8 (33%)	2 (8%)
could be used for				
b. The possible benefits of using	0 (0%)	13 (54%)	9 (38%)	2 (8%)
industrial biotechnology				
c. The possible problems of using	1 (4%)	18 (75%)	3 (13%)	2 (8%)
industrial biotechnology				

Q5. What were the best/most successful aspects of the meeting?

Respo	nses	No. (%) of	Examples
		respond- ents	
Info provided	Opportunity to learn Presentation from/discussion with expert speakers Way info presented	7 (29%) 10 (42%) 1 (4%)	"Learning the diversity of biotech" "Meeting the specialists (mainly scientists) and hearing what they are passionate about", "The different industries talking about their subjects" "Information broken down (laymen's terms)"
sion	Opportunity to discuss issues	4 (17%)	teimsy
Discussion	Way discussion was managed	1 (4%)	"Good detailed opinions, everyone got chance to air views"
	ure and organisation	1 (4%)	
Missing	g/answer not clear	4 (17%)	

Q6. What were the worst/least successful aspects of the meeting?

Respo	Responses		Examples
qeq	Lack of opposing views	6 (25%)	"It would have been great to hear some someone who was completely opposed and their reasons why"
Info provided	Too many speakers/too little time for each	4 (17%)	"Not enough time for all speakers to say their bit"
드	Too much time for each speaker	1 (4%)	"Some speakers dragged on, some people lost interest"
Discussion	Way discussion was managed	4 (17%)	"Quite a lot of people with strong opinions that did not always listen to others", "Too much off target chatter"
Disc	Too little time for discussion	1 (4%)	
ه ن ن	Not enough time	2 (8%)	"Not enough time given - should been another half day"
Struc. org.	Structure	2 (8%)	"Sitting still for so long", "Too much variety on first day"
General positive 4 (feedback/nothing		4 (17%)	
Missing	9	3 (13%)	

Q7. How do you think the meeting could have been improved?

Responses		No. (%) of respond-	Examples
		ents	
Info provided	If speakers representing opposing views had attended	2 (8%)	"More people from places like Friends of the Planet etc"
o pro	Fewer speakers/more time for each	2 (8%)	
Infe	More time to question speakers	2 (8%)	
re & ation	Longer	3 (13%)	"spread over 3 days rather than 2", "Maybe more time to feedback at end"
Structure & organisation	Different structure	4 (17%)	"Maybe 2 speakers at the time, then discuss and then 2 more etc", "Better structure, too much crammed in"
	Different venue	2 (8%)	"Bigger room"
Other		2 (8%)	"Site visit, products, lab experiment"
General positive feedback/no improvements		2 (8%)	
Missing		3 (13%)	

Q8. How far do you agree or disagree with the following statements about the government and industrial biotechnology?

	No. (%) of respondents					
	Strongly agree	Agree	Neither agree or disagree	Disagree	Strongly disagree	Missing
a. The government will take into account the public's views about these issues	5 (21%)	9 (38%)	8 (33%)	1 (4%)	0 (0%)	1 (4%)
b. The government will make sound decisions about these issues	2 (8%)	8 (33%)	11 (46%)	1 (4%)	0 (0%)	2 (8%)
c. This meeting has boosted my trust in the government's decisions about these issues	3 (13%)	9 (38%)	9 (38%)	2 (8%)	0 (0%)	1 (4%)

Q9. Is there anything else you would like to add?

Responses	No. (%) of respondents	Examples
Feel much better informed	4 (17%)	"I thoroughly enjoyed and learnt so much, feel like I've just learnt more than I did in a term of University!", "My fears about GM crops and Bio Fuels have been removed"
Found it interesting and/or enjoyable	3 (13%)	"I was very apprehensive about this survey and the financial incentive was my focus but I feel especially privileged to be involved in this. I have leant so much! And got paid in the process. Thank you."
Interested to see outcome/progress on IB	2 (8%)	
Other	2 (8%)	
Missing	13 (54%)	

Annex B Results from questionnaire to speakers

The response rate on the speaker questionnaire was 72%, with 13 out of 18 speakers completing questionnaires.

Q1. How far do you agree or disagree with the following statements about the meeting?

	No. (%) or respondents					
	Strongly agree	Agree	Neither agree or disagree	Disagree	Strongly disagree	Missing
a. There was enough time to fully discuss the issues	1 (8%)	2 (15%)	1 (8%)	7 (54%)	2 (15%)	0 (0%)
b. The speakers represented a balanced range of views	1 (8%)	6 (46%)	2 (15%)	4 (31%)	0 (0%)	0 (0%)
c. I was able to say everything I wanted	1 (8%)	5 (38%)	2 (15%)	5 (38%)	0 (0%)	0 (0%)
d. Participants seemed to understand information I						
provided	1 (8%)	11 (85%)	1 (8%)	0 (0%)	0 (0%)	0 (0%)
e. I was given enough guidance before the						
meeting	2 (15%)	8 (62%)	0 (0%)	2 (15%)	1 (8%)	0 (0%)
f. I enjoyed taking part	6 (46%)	6 (46%)	0 (0%)	1 (8%)	0 (0%)	0 (0%)

Q2. BERR's Industrial Biotechnology Innovation and Growth Team is developing a strategic plan for IB, with input from stakeholders.

	No. (%) of respondents				
	Not at all	A little	Some-	Very	Missing
	involved	involved	what	involved	
			involved		
a. How involved were you in	4 (31%)	3 (23%)	1 (8%)	5 (38%)	0 (0%)
this process <u>before the</u>					
meeting?					

	No. (%) of respondents			
	No	Yes, possibly	Yes, definitely	Missing
b. As a result of taking part in the meeting, are you likely to become more involved now?	5* (38%)	6 (46%)	1 (8%)	1 (8%)

^{*}All of these respondents were already very involved before the meeting.

Q3. What were the best/most successful aspects of the meeting?

Responses	No. (%) of respondents	Examples
Informing the public	5 (38%)	"The opportunity to interact with the public and de-mystify biotechnology for them providing hard facts that help to counter the apparently broadly held view that biotechnology and chemistry are dangerous and a threat to society."
Hearing the public's views	5 (38%)	"Getting a feel for the level of understanding of the issues and opportunities and interest in the subject from a cross section of the public."
Meeting and hearing from other speakers	2 (15%)	"Hearing a wide range of views and topics presented to a public audience."
Missing	0	presented to a pablic addictive.

Q4. What were the worst/least successful aspects of the meeting?

Responses	No. (%) of respondents	Examples
Not enough time for presentations	6 (46%)	"Travelling several hours for a slot of 15 minutes was not a good use of my time", "5 minutes was not enough to do anymore than skim the surface"
Not enough time for questions	2 (15%)	"Presentations could have been shorter to allow more discussion"
Little briefing/ coordination of different presentations	2 (15%)	"If we had have known who else was speaking at our session we could have had a more balanced debate instead of all 4 of us giving the same message."
Content	2 (15%)	"Far too much time given to one company stifled debate and had throw in to question the impartiality of the process. Failure to keep the debate on the topic."
Practicalities	1 (8%)	"People at the back couldn't see the screen"
Missing	2 (15%)	

Q5. How do you think the meeting could have been improved?

Responses	No. (%) of respond-	Examples
NAS as the second	ents	"Description of the second of
More time for presentations	4 (31%)	"By giving more time for the expert speakers to introduce the technology."
More time for questions to	4 (31%)	"Fewer speakers, with more time for
speakers		discussion and questions by the jury."
Better briefing/	4 (31%)	"Let speakers know what else has been and
coordination of different		is being discussed"
presentations		
Content better focused	2 (15%)	"Less discussion of global warming"
Other changes to	5 (38%)	"Informal (less formal) discussions with
structure/format		audience may have engaged some who
		didn't want (have time to) speak in open
		question session.", "Possibly giving the jury
		time to debate and then come back with
		questions for the expert panel."
Missing	2 (15%)	

Q6. What was the most important benefit for you personally in taking part in this meeting?

Responses	No. (%) of respondents	Examples
Informing the public	4 (31%)	"Getting our message out and seeing the public reaction", "Great opportunity to share with the general public my own views of the benefits that science and technology can bring to society and an opportunity to explain how chemistry has transformed society over the last 100 years."
Working out how to present scientific information to the public	2 (15%)	"Putting new points to a group of non industry people helps challenge your own arguments."
Hearing the public's views	5 (38%)	"Good to understand how the general public think and feel about bio-plastics"
Raising profile and gaining experience	2 (15%)	
Missing	1 (8%)	

Q7. Is there anything else you would like to add?

Responses	No. (%) of respondent	Examples
	S	
Worthwhile	2 (15%)	"Worth doing"
Enjoyable	2 (15%)	"I enjoyed this very much and think it
		worked quite well."
Would have liked better/different organisation/structure	2 (15%)	"The organisation was quite poor. The organisers may have run these events many times but the speakers are likely to be first timers and need better information and guidance both before the event and also on the day. The event seemed to be rather inflexible and was run to a strict set of rules rather than allowing the discussion to follow its natural path. This led to discussions being curtailed without everyone having their questions answered."
Missing	8 (61%)	

Annex C Topic guides for interviews

Topic guide for participant interviews

Background (5 minutes)

- Why they got involved
- How much they knew about IB and GM beforehand

Process (10 minutes)

- How easy/difficult the information was to understand
- Whether they feel they heard a range of views
 - o How important this was
 - o What, if anything, was missing
- Whether they were able to ask everything they wanted
- Whether they were able to have their say

Impacts (10 minutes)

- How much they know about IB and GM now
- How they feel about IB whether the meetings made a difference
- How confident they feel about government's decisions about IB whether the meetings made a difference

Lessons for future (5 minutes)

Messages for people organising meetings like this in future

Topic guide for speaker interviews

Background (5 minutes)

- Why they got involved
- How involved they were beforehand in BERR's IB-IGT
- Whether they have been involved in public dialogue projects before

Process (5-10 minutes)

- How much advice they had before the meeting about their presentation
- Whether they were able to say what they wanted PROMPT time, talking to non-experts
- Whether they feel a range of views was represented
 - o How important was this
 - o What, if anything, was missing
- · Whether they feel participants were able to ask the questions they wanted

Impacts (5-10 minutes)

- Whether being involved in the meeting gave them insight into public views about IB – how useful this was
- Whether being involved in the meeting encouraged them to become more involved in IB-IGT now
- How useful they think public dialogue is for decision making

Lessons for future (5 minutes)

Messages for people organising public dialogue projects in future

Topic guide for policy maker interviews

Background/context (5 minutes)

- What their role was on the public dialogue
- What they experience of public dialogue was before
- Why they had decided to commission the project

Process (10 minutes)

- How they found the Project Advisory Group process what worked well and less well
- How they found the Citizens Meetings what worked well and less well

Impacts (10 minutes)

- How well the dialogue met its objectives run through each objective
- Whether it has/will have an impact on policy/decision making
- How they found the report
- How useful to attend meetings as well as read the report

Lessons for future (5 minutes)

- Whether they would use public dialogue again in the future
- Suggestions for public dialogue projects in future

Topic guide for team interviews

Background/context (5 minutes)

- What their role was on the public dialogue
- · Whether they had worked on IB and GM beforehand

Process (10 minutes)

- How they found the Project Advisory Group process what worked well and less well
- How they found the Citizens Meetings what worked well and less well

Impacts (10 minutes)

How well the dialogue met its objectives – run through each objective

Lessons for future (5 minutes)

• Suggestions for public dialogue projects in future