



1. Background and Aims

Following the success of the pilot Work Shadowing Scheme in late 2009, the second scheme took place over three days in January 2011 and involved 13 scientists from the participating Research Institutes placed with colleagues within various departments of the Scottish Government.

The aims of the programme were to:

- help scientists recognise the potential methods and structures through which they can effectively communicate their science to policy makers and to government;
- help researchers understand the contexts of how their work is received and used within Government and gain an insight to the pressures under which policy colleagues operate;
- help government officials become more familiar with the process of scientific research and bring this knowledge into better informed discussions and decision making;
- help build closer links between scientific researcher and government policy colleagues.



2. Programme

A programme was put together for each participant by the relevant hosts at the Scottish Government. The programme had to be flexible as it reflected the real working world of the hosts and it would depend very much on what was already scheduled for that week. Fixed points in the programme were also included where the whole group was brought together. These included:

- Evening reception at the Royal Society of Edinburgh, where participants, hosts, government officials, MSPs and representatives from many other organisations gathered on the first evening of the Scheme for an informal wine reception and networking opportunity. Professor Anne Glover, Chief Scientific Adviser to the Scottish Government and Dr Valerie McNiven, Director of Rural and Payments Inspectorate made short speeches of welcome and to emphasise the importance of improving science-policy connections.
- Visit to the Scottish Parliament to attend Rural Affairs and Environment Committee, looking at the Wildlife (Scotland) Bill; a Chamber debate; a visit and discussion with Tom Edwards and Murray Earle at the Scottish Parliament Information Centre (SPICe); tour of the Scottish Parliament.

3. Participants and Hosts

Participant	Expertise	Work Shadow Areas	Host
John Jones (SCRI)	Plant pathogens and nematode genomics	Procurement, Innovation and Knowledge Exchange - RERAD	Phil Balls
Adrian Newton (SCRI)	Cereal pathology research	Procurement, Innovation and Knowledge Exchange - RERAD	Phil Balls
Charlotte Burgess (MRI)	Population & quantitative genetics of ovine nematodes and anthelmintic resistance	Veterinary and Science Team – Animal Health and Welfare Division	Nia Ball
Chris Hodgson (MRI)	Pneumonic and systemic bacterial disease in cattle	Agriculture and Climate Change Branch – Agriculture and Rural Development Division	Antje Branding
Petra Louis (RINH)	Diet and commensal gut micro-organisms and human health	Public Sector Liaison – Food and Drink Industry Division	Robin Gourlay (and others)
Alan Sneddon (RINH)	Role of dietary micronutrients in human health	Food Standards Composition and Labelling – Food Standards Agency Scotland	Susan Pryde
Emily Hastings (MLURI)	Use of the Ecosystem Approach in natural resource management	Marine Planning Branch – Marine Scotland	Martyn Cox
Kerry Waylen (MLURI)	Relation between human systems & society and natural resource management	Biodiversity Strategy Team – Natural Resources Division	Charles Stewart Roper
Bedru Balana (MLURI)	Environmental economics	Protecting Land, Water and Air Quality and Managing Flood Risk – Environmental Quality Division	Neil Ritchie & Joyce Carr
George Dyer (MLURI)	Economic development & conservation aspects of agricultural policy	Rural Communities Division	Bruce Beveridge
Stephan Helfer (RBGE)	Taxonomy, epidemiology and developmental biology of fungi	Science Advice for Scottish Agriculture – Diagnostic and Analytical Services	Kevin O'Donnell
Jane Atterton (SAC)	Rural and regional development	Rural Communities Division	Bruce Beveridge (Provisional)
Fiona Burnett (SAC)	Measurement of crop disease risk	CAP Reform and Crop Policy – Agriculture and Rural Development Division	Rosi Waterhouse

4. Evaluation

Hosts and participants were asked to complete an evaluation form after the work shadowing week and a few participants also kept a diary.

4.1 Summary of Main Findings

4.1.1 Scientist Participants

Participants were very positive about their experience, using words such as “*very interesting*”, “*enjoyable*” and “*valuable*” and they showed much appreciation for the time given to them by their hosts. The main benefits reported by the participants were:

- an improved understanding of the policy making process and the place of scientific research within the process
- more insight into the structure and workings of the Scottish Government and Parliament and the relationships between them
- a better understanding of the workings of the Department/Division in which they were placed
- an insight into the constraints and pressures under which policy colleagues worked
- better mutual understanding between the two groups, as regards how each perceives the other and how they may communicate more effectively
- enhanced understanding of with whom, when, what and how to communicate
- a valuable opportunity to make contacts with both policy colleagues and scientists from the other MRP's

A more detailed analysis of comments under these headings can be found in **Appendix A**.

Suggestions for improvement included:

- **Set a practical exercise:** One scientist was given an exercise to do before his work shadowing placement which involved producing a briefing previously provided for a Minister by his hosts in the Scottish Government (SG). The scientist then saw the real briefing whilst at the SG and there was an opportunity for discussion with hosts. Two other scientists commented in their feedback that they would have liked a practical exercise. This recommendation will be considered for future work shadowing schemes.
- **Supply more information:** Greater knowledge of the roles of participants and hosts and their organisations in advance of the scheme, to aid knowledge exchange. This

was mentioned by two scientists. One scientist suggested that a presentation from the work shadower about his/her research might be useful, although it might be difficult for policy colleagues to set aside time together to listen to a talk. Possibly the advance information suggested by other participants would be easier for all parties to accommodate.

- **Introductions at reception:** Two scientists suggested some more formal structure, perhaps facilitators, to aid networking at the reception.
- **Policy makers should shadow scientists:** Set up a reciprocal work shadowing scheme.
- **Timing/length of scheme:** One scientist thought the scheme should be longer; another would like the reception to be held on a Tuesday, as his placement was not in Edinburgh, however, several other people commented that the length of the Scheme was about right.
- **A placement at SPiCe :** One scientist commented that this would be *“hugely valuable”* even for a short time.
- **Choose hosts carefully and make sure they fully embrace the scheme:** One scientist felt uncomfortable, as hosts struggled for something with which to keep the scientist occupied. Although this individual was sympathetic to constraints on the hosts, it was felt that not a great deal had been learned about policy making. This issue might partly be addressed by the suggestion of setting up a practical exercise (see above).
- **Better matching of host and participant:** One scientist suggested that there was a need for greater coordination between organizers and participants to ensure the best possible match between scientists and policy colleagues, as he felt that the work of the Division in which he was placed did not entirely relate to his own, so that contacts made were less useful than they might have been,

A complete list of suggestions for improvement is to be found in **Appendix A**.

Extracts from the diaries of participants are included as **Appendix B**.

4.1.2 Hosts

Hosts too were very positive about the experience. They considered that the work shadowing scheme had brought the following benefits:

- An increased understanding and awareness of research activity and of changes in research bodies
- A better understanding of each other's roles and of scientists' perceptions of policy makers
- The opportunity to make useful contacts and forge relationships between the SG and the MRPs

- It encouraged reflection on the policy makers' own role , on how they use evidence in policy making and on issues of communication between not just senior staff, but other staff in the SG/MRPs

A complete list of comments is to be found in **Appendix A**

Suggestions for improvement of the scheme included:

- **Lengthen the time of the scheme** : two hosts made this point, although another thought the length about right
- **Allow the scheme to operate more flexibly**: Perhaps over a fortnight, so that "interesting days" could be chosen for the scientist, one host commented. However, another host considered that it should not be assumed that, "what seems mundane to us won't be very interesting and valuable to others".
- **Spend time in different sections**: One host considered that sitting alongside a policy official for 1 or 2 days isn't the best way of enabling scientist to understand what policy work means and could be boring. By moving participants around different sections they may get a more rounded experience.
- **Measure success of the scheme** by the number of initial contacts that are built on e.g. a further tailored contact via a specific event or consultation.

A full list of suggestions for improvement is in **Annex A**

4.2 Excerpts from the evaluation forms

4.2.1 Scientist participants

"Staff were very open and I had a good balance of one to one sessions where staff explained their work and the issues, and then practical sessions where I could see these issues in practice. I have a far better appreciation now of how civil servants must evaluate complex but often incomplete information and reach pragmatic conclusions, which is in contrast to the scientists' experience where conclusions are reached in response to completed datasets"

"I obtained a better insight into where the policy commissioned work in agriculture and the environment of Scottish Government fits in with the bigger picture of Scottish Government objectives. My impression of how the MRPs are perceived in this process changed - particularly in terms of recognition of the need to maintain a strong, world-class capability to deliver policy needs. A more direct interaction between scientists and policy people seems to be welcomed and encouraged"

"The main benefit to me of taking part in the scheme was to gain an understanding of how policy is made, amended and delivered. It gave me an insight into the many areas just one division takes responsibility for and how so many things have to be taken into account before decisions are made on

anything. It certainly helped me to realize that although at times we, as scientists, grumble about various things related to governmental policy, the people in the government work hard to ensure that the outcomes are the best possible. By taking part in the scheme I have been introduced to important contacts and given an understanding of how research I am involved in could, in the future, be useful in policy making. I found it a very interesting experience and would recommend others to take part in any further schemes."

"[My host] had produced an agenda in advance...I think it was key to the positive feedback I would give this placement as it was well planned, had good balance, fully involved me and also allowed me to plan and think about issues in advance of the placement. The formal work sessions were very informative but staff were also generous with their time and contributions even over informal lunch and coffee breaks, and all sessions were very insightful. I also valued the chance to work on something practical in the final session, having spent two days with the team"

"I am far more aware now of their need to form and keep networks of people to consult on questions and issues and I felt scientists were often regarded as 'second level' or more as a backstop than a first port of call on issues. For example the link between the science commissioned by Scottish Government and the civil servants who use such information isn't always known or understood on either side."

"On a more individual note it was interesting to understand better the mechanics of the Scottish Government and to witness the exchanges between Ministers and civil servants, and between scientists and civil servants"

"I had a very positive experience and would recommend the structure used. From speaking to others on the scheme the 'real life' elements I enjoyed such as sitting in on meetings and being given a task to do made a good contrast and led to a better understanding of issues, compared to just speaking to individuals."

"The scheme has given me a better insight into the work of [department name] and the confidence to contact individuals directly if needed"

"I would like to thank [policy colleague] and everyone I met at [department] for their warm welcome and for giving up their time to explain their roles within the workings of the Agency. Through the shadowing scheme, I now have a greater understanding of the workings of the Agency and a greater knowledge of all the many different areas that they encompass. It has also allowed me an insight into how colleagues in Policy view research from their perspective. In addition, perhaps more importantly in terms of work, I now have a wider appreciation of how the process of commissioning research at [department name] occurs"

"I would like to express my heartfelt thanks ... for [the] fantastic administrative support throughout the process of this scheme. I would also like to express my gratitude to [my host] for her willingness to host me and unreserved support throughout my three days stay"

"The visit to the parliament I found very interesting on a personal level and it is a little clearer to me now how the parliament works and how the legislative process is carried out on a day-to-day basis"

"I was also able to appreciate, in a small way, the strengths and limitations of policies in the face of natural realities and human factors I experienced the position of policy makers and their difficulties"

(political, economic, cultural or financial) in promoting policy adjustments. Language and conceptual differences need to be bridged: scientists tend to talk in probabilities whereas policy makers want absolutes”

“The day in Parliament was helpful in illustrating the importance of both thorough research and clear, unambiguous (black and white) formulation of policy in order to communicate clearly with stakeholders (and their lawyers)”

“Gave me some insights into the complexity of decision making in the Government and that there are quite often competing or contrary issues that have to be reconciled. The day spent at the Parliament was the most interesting for me”

“On the whole I felt a bit uncomfortable during my two days work shadowing, as I seemed to be handed from person to person for short periods of time and got the feeling that they struggled to find something to keep me occupied with”

“I attended as I was keen to better understand the drivers from within RERAD – what they expect from MRPs and what processes they need to follow in their work. I certainly achieved this. In terms of direct benefits I have a much clearer understanding of the processes that underlie the decisions to commission policy research through the CRF scheme”

“I found the scheme very useful. It was an invaluable experience to hear about the different areas of work covered by the Division and the different tasks in which staff are involved on a day to day basis. The scheme has given me an insight into how the policy-making process works, and the points at which researchers can best influence the process and assist towards the creation of a robust evidence base for policy-making. In particular, it was interesting to hear about the differences in work undertaken for policy development and to introduce and implement (‘operationalise’) legislation. This improved my understanding of the differences between policy and legislation and how the two sit alongside one another. This is important in ensuring that researchers are targeting the right people and processes when they are communicating research. It was also particularly useful to talk through the process of setting up a recent consultation, including a discussion of how the consultation document was written and by whom, how the responses were analysed and what happens next”

“The scheme has also given me an important insight into the broader parliamentary and governmental processes in Scotland”

“The scheme was a great chance to make personal contacts with a number of Scottish Government staff with whom I would like to work more closely in future. The scheme has resulted in some further specific action points that I will take forward in my current post”

“It would have been useful to have undertaken a ‘practical’ exercise during the placement e.g. writing a response to a parliamentary question or part of a speech or attending a meeting”

“It might have been useful if the short biographies collected beforehand from the researchers were circulated more widely amongst government staff involved in the shadowing so that they were better informed about my role (although I accept that they are busy people!). Thus the process would be less about knowledge transfer from the government staff to the researcher and more about knowledge exchange”

"I have a better understanding of the operations and internal structure of the Scottish Government. [and] a feeling for the day-to-day work of people within the Natural Resources Division, their relationship with ministers and bills passed into law. I have some idea of how policy-makers seek information and particularly think that personal contacts seem important. I do not know that this will immediately benefit the work that I do, but I hope that this will make me more confident and effective at communicating relevant parts of my work to policy-makers"

4.2.2 Hosts

"I enjoyed hosting [the scientist]. I found that having to explain my role and how I work with my policy colleagues made me take a step back from the daily whirl of activity and reflect on what value I bring to the Division. Having to explain my role made me have a fresh think about how I am currently, and how I should be, spending my time"

"I (and my policy colleagues who spent time with the scientist) learnt more about the research that [Scientist] group is involved in ... This will benefit me in my role as Science Adviser"

"We enjoyed having [the scientist] with us. My branch benefitted from the experience and one member was able to discuss a specific project on communication with [the scientist] which was very helpful for us. We had both bilaterals as well as branch lunches on the two days she was with us so this was also good for team working within my branch"

"It reminded me that I can't assume conversations with senior staff in our MRPs necessarily get communicated further throughout the organisation. I found it useful then to just have a very informal conversation exploring the various perspectives and roles we have as individuals whether in Government or as professional scientists. We should not assume that what seems mundane and routine to ourselves won't be very interesting and valuable to others – 'travel broadens the mind'"

"[I got] a better understanding of what goes on in academia and established a relationship with [the organisation]"

"It made us think about how we use evidence in our policy making and evaluation which is always useful"

"Useful to make contact and to help forge links between our respective organizations; to learn about the forthcoming changes in research bodies; to understand how policy-makers are perceived by researchers"



Appendix A

A. LIST OF BENEFITS NOTED BY SCIENTIST PARTICIPANTS

1. An improved understanding of the policy making process and the place of scientific research within the process :

- Learned about structure and policy processes of Government
- Insight into how the policy-making process works
- Have a much clearer understanding of the processes that underlie the decisions to commission policy research
- I achieved a better understanding of the drivers from within RERAD – what they expect from MRPs and what processes they need to follow in their work
- Main benefit gained an understanding of how policy is made, amended and delivered
- Able to participate in some of the processes of policy formulation and witness effects of policy on the work of those who are charged with its delivery
- Underlined the importance of tuning research to support policy and of effective communication between policy and research communities
- Better insight into where policy fits in with SG objectives
- Understand how research I am involved in could, in the future, be useful in policy making
- I now have a wider appreciation of how the process of commissioning research at FSA occurs
- Learnt how science is being used in the Scottish Office [sic], for example to brief [Minister's name]
- learnt that SG more likely to consider funding that gives added value to current work, especially with focus on Scottish benefits, rather than develop an entirely new area

2. More insight into the structure and workings of the Scottish Government and Parliament and the relationships between them

- important insight into the broader parliamentary and governmental processes in Scotland
- better understanding of the operations and internal structure of the Scottish Government
- Understand better mechanics of Scottish Government
- Interesting to witness exchanges between Ministers and civil servants and between scientists and civil servants
- Day spent at the Parliament was the most interesting for me much better understanding of how the legislative process works
- It was very useful to spend some time with Murray[SPICe], who did an excellent job in showing us round and explaining the workings of the Parliament
- Clearer how Parliament and the legislative process work
- Day in Parliament was helpful in illustrating the importance of both thorough research and clear, unambiguous (black and white) formulation of policy in order to communicate clearly with stakeholders (and their lawyers).
- Interesting to see how parliament-government interface operates
- Became more aware of the nature of information filtering and translation problems in the various channels used to link both science-government and government-parliament. This

insight will help with any involvement I may have in the Centre of Expertise and Strategic Alliances being set up by SG

- Learned more about parliamentary processes
- Learned that post holders move on every 3-5 years to help maintain a fresh approach

3. A better understanding of the workings of the Department/Division in which they were placed

- Insight into work of Department
- I have a feeling for the day-to-day work of people within the Natural Resources Division, their relationship with ministers and bills passed into law.
- Invaluable experience to hear about the different areas of work covered by the Division
- Greater understanding of work of agency
- I had a first-hand opportunity to learn about the Division's goals and work ...[although not entirely related to my own]
- learned more about the structure , organisation and way of working

4. An insight into the constraints and pressures under which policy colleagues operate

- Able to appreciate, in a small way, the strengths and limitations of policies in the face of natural realities
- some insights into the complexity of decision making in the Government, and that there are quite often competing or contrary issues that have to be reconciled
- I have a far better appreciation now of how civil servants must evaluate complex but often incomplete information and reach pragmatic conclusions, which is in contrast to the scientists' experience where conclusions are reached in response to completed datasets
- Experienced the position of policy makers and their difficulties (political, economic, cultural or financial), in promoting policy adjustments. Language and conceptual differences need to be bridged: scientists tend to talk in probabilities whereas policy makers want absolutes
- I understand the effects and interaction with political priorities and timetables.
- Insight into how many areas just one Division takes responsibility for and how many things have to be taken into account before decisions can be made.
- I have also learnt a lot about the resources available in the policy team and can see how this would be of huge benefit to some of my colleagues
- Greater knowledge of all the many different areas that they encompass
- Helped me realize people in government work hard to ensure the best possible outcomes

5. Better mutual understanding between the two groups, as regards how each perceives the other and how they may communicate more effectively

- gained a somewhat better understanding of the way of thinking in the government
- Changed my impression of how scientists are perceived – there is a recognition of need to maintain strong, world-class [scientific] capability to deliver policy needs
- Insight into how colleagues in Policy view research from their prospective

- Policy people seem to welcome more direct interaction with scientists, but also recognise that scientists have other “customers” to satisfy

6. Enhanced understanding of: with whom, when, what and how to communicate

- Better informed about sort of information [about research] civil servants need and the need to present research information more in context, as the work sections in RERAD and the work programmes undertaken by the MRPS don't often line up cleanly.
- Insight into the points at which researchers can best influence the process and assist towards the creation of a robust evidence base for policy-making
- Better understanding of what we need to offer if we are to make a genuine contribution to policy development and how to portray our science to policy staff
- Learnt about opportunities for scientists and policy makers to engage –[name] on occasion contact scientists for information on particular topics but reverse communication would be welcomed
- More aware of the need to form and keep networks of people to consult to ensure officials draw on the scientist resource
- I have some idea of how policy-makers seek information and particularly think that personal contacts seem important
- improved my understanding of the differences between policy and legislation and how the two sit alongside one another [which] important in ensuring that researchers are targeting the right people and processes when they are communicating research
- Scientists should not assume that their Scottish Office [sic] colleagues have a similar scientific background or the same expertise on a given topic
- [SG official's name]'s preferred mode of information provision was Powerpoint summaries as an efficient way to distil and emphasise outputs and policy relevance

7. A valuable opportunity to make contacts with both policy colleagues and scientists from the other MRPs

- Opened opportunities for future collaborative work
- Made important contacts
- Made contact with relevant SG colleagues that may be responsible for commissioning work in the future
- Great chance to make personal contacts with a number of Scottish Government staff with whom I would like to work more closely in future
- Gave me confidence to contact individuals directly
- scheme has resulted in some further specification points that I will take forward in my current post
- scientists from [MRP] have a 6 month secondment to SG, there are opportunities for a similar secondment in [my area]

B. LIST OF SUGGESTED IMPROVEMENTS NOTED BY SCIENTIST PARTICIPANTS

- Participants give some presentation/talk on their research area and how they relate their research with policy to a wider group in SG interested in the participant's research area (in addition to their host), this may generate better discussions, knowledge exchange, understandings between the participants
- Working through actual processes, or seeing several snapshots of the processes would have been informative. For example, preparation of information in response to a request to SPICe, or material for a committee
- An overview of what particular individuals spend their time doing in any given period, say a month. Some job descriptions alongside such overviews would be informative.
- Some organisation information about, for example, RERAD and what all its component parts in terms of functions and people are and do. Coming in to whatever was happening or just talking with people could be more useful if the context was better established with some prior information of this type
- Scheme should be longer
- Reverse scheme would be useful – policy makers shadow scientists
- A large number of people present[at Reception] (more than just the hosts and placements) and a few facilitators would have been useful to allow introductions to be made
- It is difficult to meet people at the evening reception if your host can't come and you don't know anyone else there - some structure that forces new contacts may be useful, if making new contacts is deemed appropriate
- Have reception on Tuesday as my placement was not in Edinburgh
- Choose the hosts carefully and make sure that they fully embrace the scheme...uncomfortable... I seemed to be handed from person to person for short periods of time and got the feeling that they struggled to find something to keep me occupied with. [It] did not help me that much in broadening my horizons in policy making
- It would have been useful to have undertaken a 'practical' exercise during the placement (e.g. writing a response to a parliamentary question or part of a speech or attending a meeting)
- It might have been useful if the short biographies collected beforehand from the researchers were circulated more widely amongst government staff involved in the shadowing so that they were better informed about my role (although I accept that they are busy people!). Thus the process would be less about knowledge transfer from the government staff to the researcher and more about knowledge exchange.
- Placements in SPICe was discussed and I think this would be a hugely valuable experience, even if just for a short period of time
- It may have been more beneficial to be flexible when organising the scheme and, by liaising with both Scottish Office member and work shadower during the planning stage, to ensure that visits took place at times and during workloads that would have been more appropriate to the aim of the scheme. Also would have been better to ensure more overlap between shadower interest and the members of SG involved.

C. LIST OF BENEFITS NOTED BY HOSTS

- **An increased understanding and awareness of research activity and of changes in research bodies**
 - Opportunity to learn about research activity
 - Better understanding of what goes on in academia
 - Useful to learn about the forthcoming changes in research bodies
 - Finding out about a report the scientist had prepared
 - Increased awareness and understanding
 - Able to discuss a specific project, which was very helpful to us

- **A better understanding of each other's roles and of scientists' perceptions of policy makers**
 - Useful to understand how policy makers are perceived by researchers
 - Allowed us to describe our role in advising Ministers... which is not political, and how that decision process happens
 - Useful to have the opportunity to teach researchers about the role of policy-makers and where science fits into that

- **The opportunity to make useful contacts and forge relationships between the SG and the MRPs**
 - Useful to make contact and help to forge links between our respective organizations
 - Established a relationship with the other organisation

- **It encouraged reflection on the policy makers' own role , on how they use evidence in policy making and on issues of communication between not just senior staff, but other staff in the SG/MRPs**
 - Explaining my role made me reflect on what value I bring to the Division and how I should spend my time. It gave me some perspective
 - It was useful to talk informally about our respective perspectives and roles
 - Made us think how we use evidence in our policy making and evaluation which is always useful

- **I enjoyed having the scientist with us**
- **Good for team working within my branch**
- **It reminded me that conversations with senior staff at the MRPs don't necessarily get communicated to other staff. Should not assume that what seems mundane to us won't be very interesting and valuable to others**
- **Scientist had a good range of experience as she spent most of the time with my colleagues**
- **No immediate benefits.....I'm sure there will be some knock-on long term benefits sometimes in the future**

- **Inevitably a compromise to be made between the benefits of getting everyone together at the reception (and building cross-MRP links) and timing the work shadowing to coincide with specific events/meetings. On balance though it seems about right**

D. LIST OF SUGGESTED IMPROVEMENTS NOTED BY HOSTS

- Joint annual seminar between the SG Food and Drink Industry Division
- Make it a full week
- Have longer term secondments
- Try 1 day in a branch or 1 day in two branches – sitting alongside a policy official for 1 or 2 days isn't the best way of enabling scientist to understand what policy work means (boring to sit and watch)
- Organise it more flexibly over a fortnight so that 'interesting days' could be chosen by arrangement with the scientist
- Have Edinburgh events on non shadow days to open them up to govt depts. In other parts of Scotland
- Have bilateral with branch members
- Include observation in meetings
- A measure of success would be if initial contacts made were built on e.g. a further tailored contact via specific event or consultation

Appendix B

Extracts from participants diaries

Participant A. Work shadowing diary

17th Jan

Started the day with a discussion with my host, about some of the topics they are working on – interesting to investigate how they see some of the relevant concepts and concerns, as compared to us. Much of their work is, like mine, at a desk in front of a computer. However, my host has taken care to invite me along to meetings and to introduce me to several individuals working in this and related departments.

At 11am there is a meeting about a large UK report which will come out soon. I know some of the authors contributing to this, so it is interesting to see how some of the ‘users’ see the process.

A meeting to discuss a strategy that they have been working on revealed to me the numerous inputs from and iterations that can be involved. I imagine it can be quite frustrating sometimes. Timings and events can even affect the process, both events that are predictable (for example, upcoming elections) and events that are unpredictable (for example, the recent snow and bad weather may influence attention given to transport). I understand why documents may sometimes be edited or altered not quite in ways that a particular group (say scientists) would hope for.

I also met with some people from RERAD. I hadn’t realised their dual role as providers of information internally, as research commissioners. Slowly the internal structure of the government and the links between the directorates are becoming clear to me! It helps to unpick the black box of ‘policy-maker’ a bit. Of course, different departments have different roles and different people have different experiences and knowledge. Some civil servants will have rotated posts and have no personal background in the topics they now work on.

18th January

Some more introductions to members of the team, and I work on commenting on a section of the draft report we discussed yesterday. I am surprised that everyone works in an open plan but I suppose it makes for good teamwork! The canteen is rather better than ours!

Whoever I speak to, the importance of personal contacts seems to be agreed upon as important. Some of the best ways to make links between scientists and policy-makers are informal personal connections. Related suggestions include the need for scientists to be confident in their messages. As interesting aside, scientists may see ourselves as having to overly simply complex messages, but the civil service might sometimes be in a similar position, when distilling information to a minister who wants a brief message. Sometimes we have a lot in common!

A short meeting to discuss the launch of a report highlights several things that the scientific team authoring the report probably don’t think about. The team have to consider how it will be launched, and how to make it sound interesting. They also have to consider political involvement, links with other strategies and launches, and timings and coordination with other devolved administrations.

Participant B. Work Shadowing Diary

Monday 17 January

[Division] lies outside the regular public transport network. However, a free taxi shuttle service connects with the RBS bus stop in the morning and evening and this is a very satisfactory arrangement.

After an initial discussion with my host, agreeing on the different elements of the shadowing programme, I met with the head of [section]. He showed me the facilities in the lab. We had discussions on policy impact on the work of [the Division] and how a seemingly small change in policy can have huge implications on the delivery of services. With new EU legislation in place, [the Division] now has to deliver a screening and testing output four times more intensive than previously..... As a consequence a high throughput automated system was installed dealing with the isolation of the PCN cysts. Furthermore, molecular tests are now mandatory and sometimes reveal positive tests even in the absence of cysts. Since PCN is extremely rare, the work of the screening specialists is truly monumental.

I subsequently visited the bee health and entomology laboratory where some of [MRP's] quarantine intercepted pest samples had been reared to maturity.

After coffee break I met with [name] to look at the quarantine setup at [the Division]. The setup is very impressive, including the use of overshoes and lab coats to prevent any escape of organisms from quarantine. Here we also met up with [name], who currently works with samples from Benmore (and other sites) on the screening for and eradication of the quarantine pests *Phytophthora ramorum* and *P. kernoviae*. We discussed policy implications and what the current worrying trend of the pathogens could mean for the future of this research. Should these pathogens move onto European larch, our chances of eradication would be minimal. This could lead to a switch in status and a drop in research effort.

We walked through the research quarantine glass houses and discussed general plant pathology issues. The most significant impression for me was the dependence of research interests on policy decisions – a situation which is very different at [my place of work].

After lunch [2 names] and I went to Saughton House for a discussion between the Policy Makers [names] and Policy delivery, represented by [the Division]. Another work shadowing participant at Scottish Government joined us.

The meeting was lively and relevant. Issues of Seed Policy, Pesticides, GM, Common Agricultural Policy, Potatoes, Plant Health and International Trade were discussed. The meeting illustrated the beneficial effect of face to face meetings between these two groups, where small changes in conditions can have large impacts: e.g. trading with new markets can bring high burdens on policy delivery, when these markets require specific testing or harbour specific quarantine pests.

This meeting was followed by a discussion on particular Scottish Plant Health issues with [name], who is responsible for Scottish Government Plant Health Policy. Impressions from the morning were thus reinforced by meeting with the workers at the other side of the process.

The day concluded with a reception at RSE where we could meet other participants and hosts and where we were shown the Knowledge Scotland film.

Tuesday 18 January

My initial two hours were spent evaluating possible collaborative approaches with [name] in the department of [Division]. This was followed by a discussion and tour of the potato research section with [name]. He explained the organisational structure of [the Division] and helped me to understand the different sections and how they interacted. We visited the potato store, ready to get planting stock prepared for planting in the fields surrounding the station in the near future. We also toured the extensive glass house experimental area. Together with colleagues, [name] pointed out the importance of the specialist training for crop inspectors in recognising the many potato varieties and their potential problems and how to evaluate many of the characters, used in the description of particular varieties. We concluded the programme by visiting the IT department, where a database of seed potato growing fields for Scotland is held, together with the crop histories and any relevant pest or disease problems that may have occurred. This ties in with policy, regulation and licensing, and provides a powerful tool for monitoring and policing plant health compliance, giving Scotland a strong competitive advantage over regions where such care is not taken so seriously.

After lunch I shadowed [name] of the [Branch name]. The most fascinating aspect for me was the maintenance, development and research carried out on old land races of vegetables (Shetland Cabbage) and cereals (Bere Barley, Black Oats and others). This is where (bio) diversity and distinctness meets with uniformity and stability, and where cultural issues and historic values compete with economic considerations solely based on crop yields. A link with [my MRP] exists in their common interest in nomenclature of cultivated plants, and [name] is a member of HORTAX, alongside [name]. During the visit I also saw interesting developments in morphometric methods where collaboration with ADIAC at [my MRP] might be useful.

To round off the shadowing programme, I met with team members of the Official Seed Testing Station. [name] showed me experiments related to cereal seed physiology, where sprouting tests and the commonly used tetrazolium tests do not always agree and further research into seed viability is necessary. This is particularly relevant in years when crops are harvested during damp periods, potentially leading to premature germination or harvest of immature seed. [Name] gave a short insight into the importance of policy and regulations as seed certification and marketing is concerned.

To end the day, I had a short inspiring talk with [name, Head of [Division] about the work shadowing programme, the value of research, politics & policies, the Universe and everything else.

Wednesday 19 January

The visit to the parliament brought most of the scientists participating in the work shadowing scheme together again and was an essential experience to round off the policy making process. We visited a committee meeting, debating the WANE bill in second reading (conclusive debate). What was most striking to me was the fact that any policy, regulation or amendment needs to be formulated in a way that does not allow misunderstandings or misinterpretation, as well as representing “the spirit” of what is intended to be achieved by it. In some instances this seemed impossible to attain. I was also frustrated by the long discussions about what appeared to be minor matters, affecting only a small minority of people in Scotland. This was contrasted by the plenary debate, which we visited in the afternoon: here a huge problem (domestic abuse), affecting many thousands of Scots was being discussed at first reading.

Between the two events we were shown the workings of Parliament by the team of SPICe, the Scottish Parliament Information Centre. It was fascinating to see how access to research can empower politicians, and how as scientists we have a direct role to play, by making the results of our research available to them in various ways by contributing to public consultations, answering questions or supplying data and information when asked. I had little doubt that policy makers valued research, however, I am not so sure whether they want to understand the processes and limitations of research outcomes beyond the political opportunities they provide. Maybe a “return visit” of policy makers shadowing scientists would be appropriate at some stage. This would enable them to experience the challenges and opportunities we have, especially when faced with serious resource limitations. The plight of mycological expertise in Scotland can be cited as an example.

At the end of the visit to the Scottish Parliament, we were given a tour of the building by our hosts from SPICe. This is a fascinating building, carrying a wealth of culture, history and enterprise as well as the hopes and ambitions of the Scottish people

Participant C**Main activities:**

1. Initial lengthy and detailed meeting with [name] explaining set-up, type of work, approaches used and introduced me to others in the open-plan office, including [name], head of the division.
2. Met with [name], main co-ordinator of policy. Discussed Animal Health & Welfare, terms that we may consider synonymous whereas the European Commission view them differently – Animal Health with a clear cost and Welfare being less easy to quantify. Intended to send me details on how animal welfare measured. Talked of the 4 axes and 3 pillars in the CAP from which the UK gets ~£230M. Axis II (environment, animal health) is usually a 5y commitment. Mentioned the Court of Auditors, a body with much power.

Evening: Attendance at informal wine reception, RSE, George St and launch of the new knowledgescotland film. Met with [names]

18 Jan11: Saughton House [Division name]

Main activities:

1. Meeting with [name] (Plant Health mainly potatoes and excluding cereals and seeds – [name]area) with another shadower, [name] General thrust is to maintain a viable industry. Most work is reactive with longer term work, for example writing guidelines, consultations. Referred to reason for rotating staff between topics is because their job is to make an impact and, after 3-5y, may find you begin to un-do things set up at the start of that job. Main duties were to respond to pests and diseases, much work was with the European (and Mediterranean) Plant Protection Organisation (EPPO) and outweighed considerably that done on animal health! Mentioned current major debate on plant passports.
2. [name]'s daily routine involved:
 - a) Dealing with policy (for example revision of EU potato cyst nematodes (PCN) directive)
 - b) Translating between scientists, farmers to brief ministers (main contact is Science & Advice for Scottish Agriculture (SASA), such as ourselves would be second level)
 - c) Sending out notes to ministers (Green, Blue folder status)
 - d) Assessing impact, responses, why going with A and not B
3. Would get perhaps 1mo notice to prepare for an event (could be 3mo for a NFU conference) but dealing with parliamentary questions (oral and written) was difficult – although all questions tabled first, supplementary questions may be asked. Try then to determine actual question, have to provide definite answers
4. Work driven by email inbox. Content that day was
 - i) Agenda for meetings
 - ii) Clean up data
 - iii) Briefing ministers
 - iv) Wash-up meeting on potatoes with SASA
 - v) Article for intranet
 - vi) Suspect ring-rot investigation
 - vii) Horticultural planning meeting
 - viii) Food and Environment Research Agency (FERA) consultation on poinsettias, UK-wide
 - ix) Science and Agriculture conference at SASA – write 2 presentations
 - x) Develop strategy for potato protection
 - xi) Update Farm Commission on tree disease
 - xii) Epirix (potato flea beetle) consultation

- xiii) Importing Egyptian potatoes, missions with SASA
 - xiv) Reading press releases from Forestry Commission
 - xv) Phytophthora research programme (a soil-inhabiting water mould fungus that causes wilt and root rot of rhododendrons)
 - xvi) Working Group on invasive spp
5. Next meeting was with [name] and [name] regarding GM crops. A main job is to brief ministers, liaise with Defra, FSA, etc. Explained that primary legislation is European. Any research is often joint between SG and HSE in which Scottish ministers have control. GM issues include
- i) Contained use – risk assessment and management
 - ii) Deliberate release, for example crop trials (Scotland free of GM crops and no trials for a few years. However, not sure whether any GMO in animal feed)
 - iii) Commercial use/marketing/growing – has to be approved at European level
 - iv) 60% soya is GM. Europe cannot meet protein demand for fast-growing animals but can supply maize for slower-growing animals
 - v) Policy is not to fund any research that would accelerate development of GM products
6. After lunch sat in on a procurement meeting involving [name] and [name] and 2 shadowers from [MRP name]. Afterwards, [name] spent more time with us discussing commissioning for 2011-16.

Participant D

Monday, 17 Jan. 2011 (first day)

On the first day of my visit, I spent most of my day with my host. We have had quite useful discussions on various policy and applied research issues, particularly related to water: the implementation of WFD in Scotland via the Controlled Activities Regulations (CAR) Scotland Act. [Name] was busy on finalizing the document proposing the amendment of CAR and to be sent to the ministers. It was quite useful experience to me that I learned the process on how Bills are initiated, debated, and passed. We also discussed on diffuse pollution issues with particular emphasis on land-based sources and their impact on water quality.

I attended the presentation by [name]. The Presentation was results from SEPA commissioned research on effectiveness of farm ponds based on experimental data on P, N, and FIOs from three sites. The key message of the presentation was that in two of the sites under the study, constructed ponds did not result in P reduction to comply with the environmental regulations. The study did not include the socio-economic aspect of the constructed ponds. During the discussion, I suggested that research on BMPs should not only focus on biophysical effectiveness of measures but also on socio-economics of the impact of measures.

Later in the afternoon, I met with **[Name]** I and [name] have had quite useful discussions on policy relevant research and how research organizations/researchers and policy people should interact for better outcome. [Name]'s emphasis was on two issues: (1) the gap between research and policy community should be bridged/narrowed through effective communication; and (2) existing stock of knowledge (which is already generated) has to be utilized fully (which was not utilized fully according to Ian).

In the evening, [name] and I drove to the reception meeting organized at the Royal Society of Edinburgh for the 2011 work shadowing participants, their hosts, and SG representatives. Introduction to the KnowledgeScotland schemes was provided by the Moredun institute. A speech by SG representative emphasized SG's commitment to basing policy decisions on scientific evidence and the importance of science-policy interaction. The scientific advisor to SG gave a speech on the role of science-policy interface and on translating scientific outputs to solve practical societal problem. Then a documentary film on KnowledgeScotland and the six organizations took part in the scheme.

Tuesday, 18 Jan. 2011 (second day)

In the morning of the second day [names], and I travelled to Sterling (SEPA office) to take part in a meeting. The meeting was scheduled to discuss on draft policy paper that SEPA has produced on designating drinking water protected areas (DWPAs) or Safeguard Zones. SEPA Scientists presented a paper on how to identify/locate and designate areas for groundwater protection. The discussion in the meeting gave me further exposure on the process of policy formulation.

Back to Victoria Quay later in the afternoon, I met with **[name]**, a senior Economist at SG. With [name] I had a very useful discussion on various economic tools such as cost-benefit analysis, cost-effectiveness analysis, multi-criteria analysis, environmental valuation, etc. to support decisions. I also met **[name]**, Economist, and discussed similar issues on policy relevant economic research.

Wednesday, 19 Jan. 2011 (third day)

Visit to Scottish Parliament: sit in committee debate (Rural Affairs and Environmental Committee) at the second stage of the Wildlife and Natural Environment (Scotland) Bill; briefings by SPICE; Sit in main chamber session (where first stage Bill on domestic abuse) and tour of the Parliament guided by SPICE

Participant E

Day1 - 2: Work-shadowed at [Division name].

Day 1. Rather than work-shadowing one person in particular, the first day this placement took the form of a series of ~30 minute meetings with a variety of personnel representing most of the different teams within the [name]. This format provided me with a broad view of what the [name] does and gave enough time to cover the workings of each team and answer any questions that I had.

Day 2. After another short series of meetings, I then undertook a submission exercise which required me to formulate a response to a Ministers question regarding advice on a SG policy issue. Although an exercise, this was based on an actual real case submission and allowed me to get a feel for some of their work and the time-pressure that they can work under.

Day 3. I visited the Parliament where we first sat in on the Rural Affairs and Environment Committee meeting which was discussing amendments to the Wildlife and Natural Environment (Scotland) bill (stage 2) and then we met with representatives of Scottish Parliament Information Specialists who explained their role in the Parliament and the process through which Bills are made into law. Afterwards, we sat in on a chamber debate on Domestic Abuse (Scotland) Bill of which only 14 MSPs were present (none of the 'big-hitters') and which (predictably but rather boringly!) had unanimous cross-party backing so there was little debate and much congratulating. I also had time during lunch and coffee-breaks to meet the other shadows for the first time and got feedback on their experiences.



www.knowledgescotland.org