

The logo for EPSRC (Engineering and Physical Sciences Research Council) features the acronym 'EPSRC' in a bold, purple, sans-serif font. The text is centered between two horizontal teal lines.

Pioneering research
and skills

Physical Sciences

Town Meeting

Church House, London

26th September 2011

Table of Contents

		Page
1	Introduction	3
2	Objectives of the Meeting	4
3	Meeting presentations	4
4	Key Points from the Discussion Session	5
5	Reflections from the Audience	6
6	Next steps	7
7	Summary	7
	Annexes	8

1 – Introduction

On 26th September 2011, the EPSRC Physical Sciences Theme hosted a Town Meeting for representatives from the departments in UK institutions that hold the majority of Physical Sciences Theme funding.

Following the launch of EPSRC's Shaping Capability Strategy in July 2011, the Physical Sciences Theme hosted the town meeting to engage with the community to communicate details of the strategy, the Physical Sciences Theme approach to Shaping, and to encourage thinking about how it will affect physical sciences researchers. The meeting presented an opportunity to hear and ask questions about EPSRC's plans for the Strategic Plan goal of Shaping Capability, specifically with respect to Physical Sciences. There was also an opportunity to see how shaping can work in practice, with a session on the Physical Sciences Grand Challenges. The full agenda for the meeting is in Annex 1 of this report.

Heads of Departments were invited to nominate representatives from their department to attend the half day meeting at Church House in London. Those attending included researchers that hold current EPSRC funding and have an interest in EPSRC strategic policy. The expectation was for delegates to disseminate the key messages back to their departments following the meeting. Also in attendance at the meeting were representatives from The Royal Society, the Royal Society of Chemistry, the Institute of Physics and industry. A full attendance list is provided in Annex 2 of this report.

In advance of the meeting, attendees were invited to gather questions from their colleagues and submit these to EPSRC. The questions received mapped into four main themes:

- Shaping Capability: strategy, process and consultation
- Importance and Impact
- Peer Review
- Studentships

The discussion session at the meeting was structured to address these four themes. The discussion was chaired by Attila Emezc (EPSRC Director, Communications, Information & Strategy). The panel members for the discussion session were:

- Andrew Bourne (EPSRC Physical Sciences Theme Lead)
- Clive Hayter (EPSRC Associate Director Capability)
- Neil Alford (Imperial College London and Member of Physical Sciences Strategic Advisory Team)
- Steve Howdle (University of Nottingham and Member of Physical Sciences Strategic Advisory Team)

The presentations from the meeting were filmed and published on the Physical Sciences pages of the EPSRC website following the meeting (See Section 4 - Meeting Presentations). The discussions from the meeting were recorded and the key points are summarised in Section 5 of this report. A full transcript of the discussion can be found in [Annex 3 and the questions submitted in advance of the meeting are listed in Annex 4.](#)

2 – Objectives of the Meeting

- Clearly communicate the EPSRC Physical Sciences Theme's approach to the Strategic Plan goal of Shaping Capability to representatives of the physical sciences community.
- Provide an opportunity for the community to ask questions and discuss issues relating to Shaping Capability for Physical Sciences.
- Address the concerns raised by the community on the shaping process by conducting an open and constructive dialogue in an open forum.
- Communicate how shaping can work in practice, by raising awareness of the Physical Sciences Grand Challenges.

3 – Meeting Presentations

There were two presentations at the town meeting:

EPSRC's plans for Shaping Capability with respect to Physical Sciences.

The presentation described the shaping capability strategy and set the context of this. It also described the approach to shaping capability and the knowledge that was used to determine the shape of the Physical Sciences portfolio. The engagement on shaping with the learned societies, industry and the community was also described.

The key messages from this presentation were:

- EPSRC as an organisation continually engages with the research community (academic and industry).
- Physical Sciences have brought together a number of different advice streams and information sources to set a framework for future scientific funding.
- Decisions need to take into account the wider physical sciences / EPSRC context.
- Setting priorities is not new for EPSRC.
- EPSRC openly welcomes continued evidence as part of this dynamic process.

Physical Sciences Grand Challenges

The presentation used Grand Challenges as an example of how shaping can work in practice and gave an update on the progress of the Grand Challenges. The update included the chemistry grand challenge networks and the recently announced call for networks for the Physics Grand Challenges. The presentation also covered some opportunities for funding for the Grand Challenges.

The key messages from this presentation were:

- The Grand Challenges are a good example of shaping the physical sciences portfolio by EPSRC and the community.
- The Grand Challenges were a result of the science and innovation investment framework in 2004 and the chemistry grand challenges were the result of a recommendation from the International Review of Chemistry.
- As a result of the Chemistry Grand Challenges, three networks were funded: Dial a molecule, Directed assembly of extended structures network, CO₂ Chem.
- There is a current call for networkplus proposals in the Physics Grand Challenges of Emergence and Physics far from equilibrium and Understanding the Physics of Life.

- Opportunities for the Grand Challenges are signposting in standard research and fellowships.

The video of these presentations can be found on the EPSRC website at:

<http://www.epsrc.ac.uk/ourportfolio/themes/physicalsciences/ourapproach/Pages/townmeeting.asp>
[X](#)

4 – Key Points from the Discussion Session

The key points from the discussion are listed below. Please see **Annex 3** for a full transcript of the discussion session.

(a) Shaping Capability: Strategy, Process and Consultation

- There was a broad acknowledgement of the process described in the presentation and the people/organisations EPSRC engaged with whilst developing the portfolio decisions for the Physical Sciences Theme; however there was a clear steer from the audience that EPSRC should do more consultation and should specifically engage more with the learned societies. Learned societies are keen to work constructively with EPSRC in moving forward.
- EPSRC Council approved the process for Shaping Capability and explicitly decided for a focused rather than open consultation.
- There were concerns from members of the audience around the quality of evidence used and, in particular, about perceived inaccuracies of EPSRC data. EPSRC invited further evidence from the community for research area shaping and asked for specific input on those areas where there is a belief that EPSRC's own data is inaccurate.
- There was a consensus from the floor that EPSRC should be clearer on how input received has been used and how decisions have been affected by evidence provided.

(b) Impact and Importance

- When encouraging greater economic impact there was a view that it is important to consider the outputs as well as managing the input side with peer review. Those advocating this position suggested there should be more reward for those that achieve significant impact outputs.
- In a straw poll of the question "Is demonstration of impact necessary for funding from Government to continue?" around 98% of the audience voted yes.
- There was a broad consensus from attendees that it was important to remember that impact does not only relate to 'economic impact' the term is broader than that, particularly for the physical sciences, where a significant impact is enhancement of knowledge.
- It will be important for EPSRC to be clear to the community about the difference between 'National Importance' and 'Impact'

(c) Peer Review

- There was significant concern from the audience about how the peer review process and panel operation would change to enable shaping of research areas. There was a general recognition that some change would be necessary to support the shaping agenda.
- EPSRC explained that from November onwards 'National Importance' will be a primary criterion alongside 'Research Quality' in peer review. Reviewers' forms will be changed in November to reflect this, but the first panels under this new method will not be until February 2012. The new panel process is still under discussion with Council with a number

of options possible. EPSRC invited any ideas from the community for how the panel process might best work.

- There were also concerns about how shaping in peer review would work alongside demand management. This will be considered thoroughly by EPSRC and Council.

(d) Studentships

- There was a strong call from the audience for EPSRC to reintroduce project studentships on grants.
- EPSRC reflected that Council is maintaining the proportion of the budget that is spent on training and that proportion will stay the same as a proportion of what Council invests in. Between 2006 – 2010, the number of project students more than doubled and yet there had been no explicit plan to invest in training in this way and so there was a risk of that growth distorting the portfolio. Removing project studentships enables continuation of a framework to support high quality student training through the Doctoral Training Grant (DTG) and Centres for Doctoral Training (CDT). By the end of the Spending Review period the number of PhD students supported by EPSRC will be similar to 2004, when we had an equivalent budget in real terms.

5 – Reflections from the Audience

The audience were asked whether there were any additional reflections to the questions asked that they wanted to feed back. The main comments made from the audience were:

- Who is going to do the research in the next 40 years, if there are not any project students? There is a need to ensure the future superstars are still attracted into research.
- The need for a wider consultation on peer review changes.
- How can you change behaviour of the applicants who apply to the grow, maintain, reduce research areas?
- The need to be clear between importance and impact.
- Need to identify leadership and how this relates to shaping capability.
- Still not sure about the rationale for the relative reduction of funding in organic synthesis
- Concern on the rank ordered list at panel members and demand management.
- How shaping capability fits in with other research councils.
- The need to explain the changes to the panel process for shaping capability so that the community understand the peer review changes when applying to EPSRC.
- Issue of impact for theoretical research, community needs to convince ministers what impact is.
- A desire that options for changes be considered should be on the web for the community to comment on them.

As this session was for audience reflection, these points were not addressed at the town meeting but were noted and taken back to be considered by EPSRC.

6 – Next Steps

The comments, questions and reflections from the audience at the town meeting have been fed back to the relevant people within EPSRC for example the Shaping Capability Lead and her team and the Peer Review team.

The Physical Sciences team will continue with their engagement on the shaping capability strategy with key Universities, industry and the Learned Societies. Both key Universities and the Learned Societies have been asked to provide evidence on the remaining Physical Sciences research areas which where relevant are being factored into the decisions making process.

7 – Summary of the town meeting

Based on EPSRC's perception of the town meeting, the summary of the main points are:

- Andrew Bourne articulated the approach surrounding the shaping capability decisions, the evidence and engagement used.
- The tone of the meeting was constructive with the spirit of openness and challenging questions asked.
- A range of topics were discussed including: the process of shaping capability, the consequences of it, how peer review would work, studentships, impact and importance.
- EPSRC are happy to engage more with the Learned Societies as part of input in to shaping capability decision making process and have already asked them for evidence before the town meeting.
- The need for impact in the broadest sense was accepted by approximately 98% of people in the room.
- There was a debate on studentships which is still ongoing. Views on this from the community are strongly held.
- The nature of the questions asked indicated a broad acceptance for Shaping Capability as a strategy but there are concerns on how it will operate at the panel meetings. The peer review process is still to be defined but EPSRC said it would be in place by April 2012.
- The audience recognised a need for leadership in the community and the need to work with a reduced capital budget.

Annexes:

Annex 1 – Agenda

Physical Sciences Town Meeting

Monday 26th September 2011

Location: Church House, London.

9.30	Registration
10.00	Introduction and welcome
10.10	Shaping Capability presentation
11.00	Question and answer session
11.45	Tea break
12.00	Grand Challenges session
12.45	Final remarks
13.00	Lunch
14.00	Close

Annex 2 – Attendees

Professor Varinder Aggarwal	University of Bristol
Professor Ali Alavi	University of Cambridge
Professor Neil Alford	Imperial College London
Professor James Annett	University of Bristol
Professor Alan Armstrong	Imperial College London
Dr Mete Atature	University of Cambridge
Professor Paul Attfield	University of Edinburgh
Professor Darren Bagnall	University of Southampton
Professor Steve Barnett	University of Strathclyde
Dr Andrew Bourne	EPSRC
Professor Lee Brammer	University of Sheffield
Professor Mark Brouard	University of Oxford
Professor Richard Brown	University of Southampton
Dr Steven Bull	University of Bath
Miss Clare Bumphrey	EPSRC
Dr Daren Caruana	University College London
Professor Stephen Clarke	University of Glasgow
Dr Radu Coldea	University of Oxford
Professor Andy Cooper	University of Liverpool
Dr Peter Cotgreave	Royal Society
Dr Eddie Cussen	University of Strathclyde
Professor Jawwad Darr	University College London
Dr Hendrik Ulbricht	University of Southampton
Mr Philip Diamond	Institute of Physics
Professor Martin Dove	Queen Mary, University of London
Laura Dawson	Royal Society
Dr Jacob Dunningham	University of Leeds
Professor James Durrant	Imperial College London

Dr Ray Elliott	Syngenta
Professor Andrew Ellis	University of Leicester
Mr Atti Emezc	EPSRC
Professor Vladimir Falko	Lancaster University
Professor Peter Fielden	The University of Manchester
Professor Andrew Fisher	University College London
Professor Paul French	Imperial College London
Professor Ian Galbraith	Heriot-Watt University
Professor John Girkin	University of Durham
Professor Mike Greaney	The University of Manchester
Professor Mike Green	Newcastle University
Professor Mike Gunn	University of Birmingham
Professor Malcolm Halcrow	University of Leeds
Dr Colin Harrison	The Centre for Process Innovation
Dr Wayne Hayes	University of Reading
Dr Clive Hayter	EPSRC
Professor Laura Herz	University of Oxford
Professor Jonathan Hirst	University of Nottingham
Professor Andrew Hodgson	University of Liverpool
Dr David Hollinshead	AstraZeneca
Professor Steve Howdle	University of Nottingham
Miss Amanda Howes	EPSRC
Professor Nigel Hussey	University of Bristol
Professor Jim Iley	Royal Society Chemistry
Dr Natalie James	EPSRC
Dr Petr Kilian	University of St Andrews
Dr Emma King	EPSRC
Professor Peter Knowles	Cardiff University
Professor Stefan Kuhr	University of Strathclyde

Dr Hon Wai Lam	University of Edinburgh
Professor Wolfgang Lange	University of Sussex
Professor Gaetana Laricchia	University College London
Professor David Leadley	University of Warwick
Dr Wei Loh	University of Southampton
Dr Joachim Loos	University of Glasgow
Professor Cait MacPhee	University of Edinburgh
Professor Jon Marangos	Imperial College London
Professor James Marrow	University of Oxford
Mr David Martin	EPSRC
Professor Hugh McCann	The University of Manchester
Dr Joe McDouall	The University of Manchester
Professor Ronan McGrath	University of Liverpool
Professor Glen McHale	Nottingham Trent University
Dr David McPhail	Imperial College London
Professor Steve Meech	University of East Anglia
Dr Julian Moger	University of Exeter, Physics
Professor Philip Moriarty	University of Nottingham
Professor Philip Mountford	University of Oxford
Professor Adrian Mulholland	University of Bristol
Professor David Neeley	STFC - Laboratories, Central Laser Facility
Professor David Parker	University of Durham
Dolly Parkinson	EPSRC
Professor Mike Payne	University of Cambridge
Dr Timothy Prior	University of Hull
Professor Alan Matthews	University of Sheffield
Professor Ian Reaney	University of Sheffield
Dr Neville Reed	Royal Society Chemistry
Professor Gill Reid	University of Southampton

Professor David Richards	King's College London
Dr Jason Riley	Imperial College London
Dr Katherine Rooke	EPSRC
Dr David Rooney	Queen's University of Belfast
Professor Ifor Samuel	University of St Andrews
Professor John Saunders	Royal Holloway, University of London
Professor Martin Schroder	University of Nottingham
Professor Peter Scott	University of Warwick
Professor Maurice Skolnick	University of Sheffield
Professor Julie Staunton	University of Warwick
Professor Stephen Sweeney	University of Surrey
Mr Martin Sweet	EPSRC
Professor Richard Taylor	University of York
Dr James Tucker	University of Birmingham
Professor Nigel Wilding	University of Bath
Professor Howard Wilson	University of York
Professor Klaas Wynne	University of Glasgow
Professor Robert Young	The University of Manchester

Please note:

Durham University Chemistry, Durham University Physics, University of St Andrews Physics and Astronomy, University of St Andrews Chemistry, University of Sheffield Chemistry, UCL Physics and Astronomy, University of Warwick Chemistry were offered two places and decided to send one person.

The Institute for Materials, Minerals and Mining (IoM3) and Queen's University of Belfast Mathematics and Physics were offered two places and did not reply to the emails sent.

Annex 3 – Transcript from the question and answer session:

Chair: Attila Emezc – Director for Communications, Information and Strategy, EPSRC.

Panel: Neil Alford - Imperial College / Physical Sciences Strategic Advisory Team,

Andrew Bourne - Head of Physical Sciences at EPSRC,

Clive Hayter – Associate Director for Shaping Capability at EPSRC,

Steve Howdle - University of Nottingham / Physical Sciences Strategic Advisory Team.

Questions from the audience:

Is Professor Delpy here?

Andrew Bourne replied: It's a physical Sciences team meeting and so I am here talking to the physical sciences community.

Why are learned societies unhappy?

Clive Hayter replied: I think I will allow the Learned Society to speak for themselves. As Andrew has outlined and will use physical sciences as an exemplar we have since 2009 really set a course around shaping capability and I am aware of at least 15 engagements with the Learned Society specifically in the physical sciences area, but I will allow them to speak for themselves and ask whether they view they have been consulted. EPSRC has been very clear we have never set out to hold a completely open consultation in this area and we have discussed that issue at length with Council and they endorse the approach we use, but as I say we have had 15 engagements since 2009 with the Learned Societies in Physical Sciences, where we have explicitly discussed the landscape of research which Andrew has introduced today.

Floor opened to learned societies to comment.

IOF - I guess you are referring to this letter that went out at the time by the presidents of various societies including the RSC, the Royal society etc. I think and we had some discussions with the EPSRC about that from the IoP perspective, the issue of how the consultation for this process I know Andrew has described in detail the to-ing and fro-ing of the dialogue and so on but the methodology on this consultation I think is something of some concern and the exactly how "importance" works and "impact" and how this shapes what is funded and what is not funded is of philosophical issue for the IoP I can't speak for the other societies but I think those are the key points from our perspective.

Comment from an audience member A on this question:

What does EPSRC definition of consultation mean? Because this goes back it is not just the Royal Society and IoP and the Learned Society getting very concerned about this. It goes back to you flagged up the International Review of Chemistry there is a clear message from that EPSRC is not doing enough to communicate with it's community and if you look at the minutes of very many of the SAT meeting particularly with regard to the termination of project studentships your SAT members were deeply uncomfortable with this, so who decides where does the consultation stop and where does the buck end?

Clive Hayter replied: I can be quite explicit on who decides - Council have decided on the approach. The executive proposed an approach in shaping to council and we explored a number of options right from entirely open web based consultation process, through to just a closed process which involves just the SATs. I have to say what we have ended up with is something in the middle but Council explicitly gave us advice on the consultation method - that is what we tried to do. What I would say is judge us on who we have spoken to and Andrew has indicated that it is on the web, - who we have spoken to is published on the website if you feel we have missed somebody then please by all means tell us.

Comment from audience member A: Did not wait to speak with the microphone so this comment is not recorded in full - It is not so much you who you took advice from, it is more how you acted on that advice regarding that consultation, SATS are continually ignored.

Andrew Bourne replied: There is one issue there in terms of the studentship issue in which you mentioned but clearly that's in the context of not only the desire of the community but also the budgetary limits that are available and I don't know what else we can say on the areas of funding of studentships but quite clearly Council are sure that the compromise of not producing studentships when there are research budgets is actually taking such a large reduction and also with the limitations with the capital you could not proceed with the current rise in exponential almost demand on studentships that the council was facing and so quite clearly yes there are concerns more about studentships support but not necessarily about the method of implementation now again SAT members can say I there are many issues where I do listen to the SAT and Neil and Steve can tell me if I don't but actually I think that is a different question.

Attila Emezc asks the SAT members, their views on this point, whether EPSRC are listening to their SAT:

Neil Alford: Yes this did come up at the SAT certainly I and Steve and other members of the SAT, one or two who are here I know. SAT did express their concern about reduction of studentships our problem is that given the current economic situation there are certain things that are going to have to go by the wayside and so reducing studentships will free up money elsewhere. I was particularly concerned about studentships because material science is a discipline that relies very very heavily on project studentships and we are very successful in that, so yes not terribly happy about it, but frankly given these choices that we are having to make we are between a rock and a hard place – and we really do have to make some decisions I think.

Steve Howdle: Yes and to back that up that SAT was very vociferous in this but we really didn't want studentships to be cut and we very strongly argued against that but the evidence presented that and the choices that were given were very strong we could see that we were going to get hit as a community in lots of different ways, I'm a chemist and chemists rely essentially on project studentships we can't do without them I didn't agree with the decision but I can understand why it had to be looked at and in the end I think we have to understand why they made that decision, there are other hard choices that have to be made.

Clive Hayter replied: I would just add one more other thing then is that Council actually then take very seriously the advice its getting from all of its SATs so it is not just a case of seeing this decision in studentships in isolation it has to consider the advice it gets from all of its SATS, and what they have done it sort to maintain a proportion of funding they spend on training if they didn't and actually kept the growth in studentships we have to look at another area to trim back more significantly such as research grants.

Royal Society of Chemistry representative 1: You asked what learned society felt about this – I share a lot of IoP's comments. I think we are concerned about how the word consultation is being used, what we could and could not share with our community when we had the information and dialogue is about a two way process not only speaking but also listening and hearing what people are saying to you and I think the reason why we were delighted to join with a letter was we think that our council would a period of reflection to take stock and listen to what the community is saying and hopefully take them with you and engaged in a more constructive two-way dialogue is something we would like to see and think that would help everyone going forward.

Comment from the audience member B: Andrew, I appreciated your presentation there on the shaping of the portfolio one of the things that you do and you have access to is all this wonderful data and by presenting it in the way that you do you can prove and actually put forward a very convincing argument but it relies on that data being entirely correct and that is one of my concerns is that data that you are basing the shaping the portfolio on reliable data – how has it been acquired and is it actually correct ?

So one of the figures you put forward was £44 million for Synthetic Chemistry of current live grants I printed off that set of grants and I just so that people can see I've highlighted in yellow the current grants that are not active in 1st April 2011, so this document that you have suggested to us is actually there are a lot of inaccuracies on it and when I look down the list of grants that are funded in the name of synthetic organic chemistry I don't know where to start. The naked scientists and interactive platform for public engagement with science you know, there is £164,000 for synthetic organic chemistry in that. I could go on and on, the ones in green I have highlighted here are ones that I would never put down as synthetic organic chemistry so you know I think the way that you create the data is something that you have got to look at I as a scientist it's the one thing that you look at is your data in which you check and you double check it, I don't think that's happened here and so I have a real problem with arguments that then are used or put forward following the data.

Andrew Bourne replied: So thank you B – so what should be clearly pointed out is that there are different ways of looking at synthetic organic chemistry so first of all let's just talk about the research area that's highlighted on the web, so synthetic organic chemistry as we've defined it is the research area into synthetic organic chemistry that does not mean to say that every synthetic organic chemist fits into that research area there are many synthetic organic chemists that get research funding in many other areas of their portfolio, but what we are talking is the area of synthetic organic chemistry of research about what the focus of that research is.

Now coming back to your data issue obviously we can have a discussion about where you think there are discrepancies that the EPSRC staff don't just read the title they read the abstract they read the research proposal and they look for what actually the research objectives are in those proposals and actually the assignment that we give to researcher themes is actually what is the research challenge or what is the element being studied as part of that research proposal so it is not just a simple case of taking the title and translating it into a theme area it is actually reading in detail and we get that triangulated by that research reviewers that come in to actually understand whether it's a proposal as well and quite often at peer review panels communities will tell us that the peer review choices are right or they are wrong they give us quite honest and brutal feedback at times if we do get it wrong so I think there is a lot of confidence and 93% of our reviewers that are chosen are actually deemed to be the right ones, so I think you have to trust us to say that actually when we look at all these research proposals we broadly speak, understand our portfolio in its entirety. There might be a little proposals at the edge that you might have to say do I call it synthetic organic chemistry or do I call it catalysis or do I call it, broadly speaking I think you will find that the majority are correct.

Audience member B: I am a professional synthetic organic chemist I have been through this list and the way I look at it is it looks very arbitrary to me how it's been assigned, some grants have been assigned 40 or 50% for synthesis they should be 100% some have been assigned 20 to 50% it should be zero. I'm a professional your staff who are dealing with these (with respect are not) they can't be.

Clive Hayter replied: I think what you described is part of the picture the level of investment and the portfolio that makes up organic chemistry we are taking that in isolation first of all from the rest of the Physical Sciences what Andrew laid out was really seeing that part of the portfolio in the context of the entire physical sciences and if you like beyond the EPSRC Landscapes. Precisely what you say there is ultimately why this process we are not setting a budget for synthetic organic chemistry or analytical chemistry, or plasma physics that's precisely what we are not doing here ultimately the community itself will determine how much we invest in a particular area within a framework that is shaping capability so there isn't a target budget here which we say is 44 now it has to get down to 35 because that would be madness absolutely madness and I think the last thing I would actually say is the synthetic chemistry community aren't of one mind on what is synthetic chemistry are they. You know that if you talk to anyone in the community you will

get a range of views on what synthetic organic chemistry actually is. Any taxonomy has its drawbacks we fully accept that, absolutely and that is precisely why we are not setting budgets at that level it is a framework for peer review to operate and peer review will ultimately determine by the nature of the proposals which come forward and which are successful through that process what the level of investment is.

Audience member B - Can you agree that in the list of grants there are errors?

Clive Hayter replied: I think we are happy to engage if you feel strongly that there are errors in that list of grants, but I think I come back to my point that there isn't a single considered clear view what Synthetic Organic Chemistry is.

Audience member B – made a point off microphone so was not picked up.

Andrew Bourne replied: All I can just say that every research grant on Grants on the Web has its research teams associated with it so every individual can look at it when get back into the office.

Royal Society of Chemistry representative 2: The question was asked why was the RSC concerned? I think one of the biggest issues and it is coming out of the discussion that we are having so far actually we haven't got an overall picture of what's going on here we got at the moment in our area in Catalysis theme and Synthetic Organic Chemistry theme, but we have got no idea what the overall picture would look like. So the question then becomes – How are you testing the conclusions you are coming to in the context of the overall picture and that something were we would very much like to be and engaged in a dialogue on that and not just being told what the outcome is.

Clive Hayter replied: So I think we are absolutely clear those conclusions are being tested through the Strategic Advisory Teams, Councils Advisory body, and Council itself. The community are invited to provide any inputs they like to that evidence base.

Attila Emezc posed a question to Neil Alford / Steve Howdle - Do you have any comments on about how comfortable you were in relation to making a decision on the first set of research areas?

Steve Howdle: I won't say I was comfortable making a decision because I didn't make a decision on it.

Attila Emezc: providing advice.

Steve Howdle: OK providing advice yes! I think on that issue of consultation I would agree with that I think SATs has got a very wide range of membership so if I just think of the chemists who are on there cover quite a broad base so I only chaired the Royal Societies Chemists Macro group it's the polymer base actually polymers involve organic biosynthesis as well. And so I spend a lot of time in talking to that community and explaining to them some of the issues that are coming up, I have fed back from that community the kind of things that are happening I have also taken some of the issues back to my school, talk to people at Nottingham in not just chemistry but also physics and engineering and materials so, I think from that point of view the SAT has played a role in trying to bring some of these things to the fore. I think one of my frustrations was there wasn't actually a point where anybody said look in the community what do you think about cutting down a particular area. That's never been laid out in front of the whole community it was at the SAT but that was a decision (not a decision) but a consultation that was made amongst a group of people.

I don't know how you do that though. Because you end up with the kind of decision that on end up here, but how much is really organic synthetic chemistry is polymers part of that can we stretch that out for some of these medical applications, it gets very messy, but I take some of the issues I understand where Andrew and Atti are coming from on some of these things and I think as a community that perhaps we got to start engaging a bit more and telling EPSRC what we would like to see recognising in the end there isn't enough money out there we got to do something.

Attila Emecz: Are there any more question on process?

Audience member C: When you were talking earlier you were talking about the consultation process and how you engage this and listen to advice in the community. Clearly Learned Societies are feeling that they haven't been fully listened too in terms of the consultation process – I was wondering what changes you where planning to the process you currently operate and to bring the Learned Societies on board.

Andrew Bourne replied: Certainly in terms of the engagement process I'm sure Council may have a reflection on that in October, but at the moment I would hope that the constructive and openness of were we are with EPSRC and the Learned society could allow that engagement to happen without a significant change because we have kind of again asked for evidence I will continue to come if I'm invited to respective meetings in terms of the Science Policy Board or whether it's a Bilateral, or whether it is a standard conference of Physics Professors, so or equally with the RSC as well so I mean in terms of engagement I'm always ready to listen and clearly there have been numbers of issues that have been raised that I've taken back so, like I remember quite sharply when we went to the RSC well its was Heads of Chemistry meetings so I think it facilitate by the RSC , but its not necessarily their meeting, but clearly there where some issues which came out of the International Review of Chemistry which we have taken back and we kind of fed back into the Action Plan, that is Science Policy Management in progress and I won't apologise for that, so I think if people raise issues as part of my normal engagement then I listen to them. You know but don't pretend we haven't been out there asking for input as part of the process.

Royal Society of Chemistry representative 3: Andrew did come and talk to us and to be fair and to make sure he did have a constructive meeting we had a pre meeting where a lot of people where very concerned about the fact that decisions we going to be made, but we recognised that EPSRC actually has been dealt a very difficult hand – it's having to implement cuts and as we all know as managers we do listen to people and Andrew outlined the process and actually we thought it was a very good process he clearly did not go into detail, no good manager would because that is then the end management decision. So in terms of the RSC we support the process that's been gone through, but we also recognise a lot of disquiet in the community because of cuts being placed right across different parts, and as a company member I recognise that studentships will hit us, but actually the real problem is the budgets, not really the process.

Audience member D: You mentioned the Strategic Advisory Network – which is a very new body and I am not familiar with it. Can you comment on how that is informing the process and its relevant and place in the system relative to the SATs?

Atti Emecz replied: The strategic advisory network is essentially a body that my team manage. The major change to it in relation to how previously the Strategic Advisory bodies works is that it effectively becomes more issued based so exploring these questions the councils executives need advice on effectively forming it on issue base drawing in the skill we need, so previously for example we would have Technical Opportunities principally and academic perspective, User Panel principally a Industrial user perspective , and then the societal issues panel to discuss ethics and that sort of dimensions brought in what we try to do is to integrate into new issue based approach. It is a new name for it so if you say how effective it has been I can't give you an answer to that. How TOP/UP/SIP work it is an advisory to the executive and a lot of that advice gets directed to the Council and that no change there. The first port, for two or three issues, the principle one we are working on at the moment respectively around the whole impact of the agenda so there is a work stream around impact that is going on at the moment. In terms of its membership it's principally drawn from the previous TOP/UP/SIP there has been a little turnover in it, what we are currently looking at is defining a formal process to effectively get the membership of that in a way that is more open and transparent. As you see that evolving I think you will see for from us a more formal appointment process to it, but principally it is drawn from at least two thirds or three quarters from the members who where TOP/UP/SIP previously does that answer the question?

Audience member A: Steve you asked what the community wants, I think you know what the community wants just as everyone else in here does the vast majority of my colleagues in physics put the money into

responsive mode let the community decide don't try and predict certain areas. You are not going to be able to second guess this effectively put the money into responsive mode.

Andrew Bourne replied: I think as I tried to say a lot of research proposals are always investigated led that come into our portfolio as it is at the moment and so that is not changing we will see the investigators leading the research ideas coming forward. I think what it has shown is that if you just rely on a responsive mode or standard process it can get quite lumpy and I think we are just trying to reflect that portfolio to the community and to think about what the strategy might be in some of those areas but absolute getting the right peer review maybe getting more international peer review to ensure the communities are kind of transparenting their support is a good thing.

Neil Alford: Can I just make a point about that: I think that would be a fatal move actually, for us to stuff everything into responsive mode I think that's a bad idea, and the reason I think it is, is because we have got to do have a duty to BIS we need to demonstrate that actually what we are doing is going to be useful for industry and so I think the putting

Everything into responsive mode we can all go and do our own little bit would be a bad idea; I don't think that is the right thing to do.

Response from audience member A, was not said on the microphone, so could not be captured.

Neil Alford: Listen we still have responsive mode but I don't disagree with the fact that we need directed programmes as well, I think that is a sensible idea.

Clive Hayter replied: Can I just add though I think you will find in our delivery plan the words that EPSRC supports excellent long term research, encourages the free generation of ideas, curiosity and research creativity, shaping does not change any of that, that is a key goal within the delivery plan.

Audience member E: Whether or not we're looking at responsive mode or directed mode peer review is clearly going to be one of the critical factors in determining whether or not something is supported and peer review will I'm sure continue to delivery a very high premium on quality and importance and therefore how are you going to manage this issue of growing and reducing against the background of Peer Review which will often give you answers that are not the ones you would like in order to direct your reduction or growth.

Andrew Bourne replied: Absolutely Peer Review will remain central to that decision making process.

What you will find already for example Physical Sciences is that panels are not championing at the but bit starting to take account, they notice on list when they have 4 or 5 proposals in same research area and at the moment you know they rank them purely on the reviewers comments and the evidence presented and I think some panels would welcome I think, well if you got 5 hits here which are the most important ones of this cluster should we be funding and I thinks that would be a healthy discussion to be taking at a panel meeting and so that not EPSRC that's a healthy peer review discussion that should and probably will take place but in terms of the corporate outcome I don't think any final decision has been made on what the process is other than and we would continue to use expert peer review to assess the quality and importance of proposals.

Audience member F: I'm not quite sure you answered that question. I was going to ask it in the later session as well, the question is how you actually do it. If say you have 5 proposals in some areas of the panel and I've seen maybe 3 proposals in every panel, and perhaps people would be able to do something but that is in just one panel with a small selection of proposals. You guys are proposing to look at a portfolio, not 20 proposals coming from a panel. You simply can't manage a portfolio in a way that you are suggesting by looking what happened at any individual panel. If you are proposing to manage the kind of research that happens you have to have the tools to do it, and I don't think you do. I'm not suggesting that you get them by the way.

Andrew Bourne replied: ok so you're right, we do have an overview role and I think about from one panel to the next. I see the cycles of panels, and we have current tools and techniques to sort of manage that so that how we defer proposals to actually make sure that actually we perhaps don't overspend on a particular panel so that we can actually get consideration at the next panel so that is actually going to put a perfect strategy. Already we have rovers in Physical Sciences that take an overview between the different panels in across Physics, Chemistry and Materials so again we get reflections on the state of the portfolio and we have some people who have been rovers in the room today, so I think actually it is a very natural progression of perhaps what we have been doing in Physical Sciences. We're just probably formalising and being as transparent as possible that it is a decision that sometimes needs to be taken.

Atti Emecz: I would love to ask you, you've put the question about how you would do it but I will not do that yet, perhaps we could talk over lunch. Any other questions on the impacts of this policy, the consequences?

Audience member G: I'd like to ask how you would assess whether or not the Shaping exercise is successful?

Clive Hayter replied: That's an extremely good question and one that we've actually had a number of discussions about with Council thus far. So what we now have is some base lining data on where the portfolio currently is and as Andrew has said, that has to be a dynamic process, you can't set that in stone for the next 4 years of the spending review period. I think our aspiration is that we don't have major sort of fixed points through the spending review period where we say all and sundry there is a review of the landscape and we'll do this review at this particular time and produce a new picture. But I think what we would want is, we should be doing this all of the time, in effect we should be managing the portfolio all of the time so we would want continuous advice to come from the learned societies, from the community itself. Council will look at that advice and reflect that, and actually what we have to reflect back is how the investment portfolio we make changes over time. So I think we would want to be very transparent these are the changes over time in what we have done based on the decisions made through peer review, you tell us if there is new evidence, - is that a concern. I think we would become alarmed if there was a rapidly increasing or decreasing part of the portfolio for very good reason.

Audience member H: Economic impact has been something that you have been trying to achieve for at least a decade, and as far as I can see this has all been managed on the input side, with peer review, with asking reviewers to look at impact, can you give me any evidence whatsoever you have achieved greater economic impact purely by trying to manage this input side of the whole process?

Atti Emecz replied: Perhaps I should start the answer and let Clive and others comment. The first question to say is, it's difficult because what is the baseline, and if you were an economist you would be saying what the counter faction here is. What I would certainly note in relation to my experience through the research council, the last 20 years odd now, is that effectively the ease of making the case in the Delivery Plans and the strategic plans that we put together to Government gets easier as the research that is being funded in the universities or that we are getting outputs from is either different or is being presented differently, and I'm not going to suggest which because I'm sure we could argue about it, so that we can demonstrate the impact more. I believe that we are through the case studies through some of the evidence generation we get, for example our reviews of studentships and the value of studentships, able to do that but what I can't do, which I think is the essence of your question, is prove that it would have been different in a different case, what I can do is point to the examples where I think it has become a lot easier for us to make the case, so we have the evidence for example that industry values the centres approach to studentships very very highly. I can point to CBI reports on that, I can point to various reviews that we have done internally on that as well, but it is difficult for me then to say that it would be different in a different scheme.

Audience member H replied: I think my real point is complex systems cannot be controlled by micromanaging the input side, and with something as much as the economic impact, you need to be reward the output side, and I think that to me is the biggest change you really need to embrace if you want to

change what you're doing in EPSRC - is that you need to reward those that are doing what you want to achieve, you can't do it by micromanaging. If I looked at research grants, the number of people who have said I am going to create a billion dollar industry by making some widget, have you actually followed that through? You're right, people write what they are going to do.

Atti Emecz replied: We don't ask people to make that sort of prediction. Audience member A at the back who is desperate to come in on that point, but I'm going to get Neil to comment.

Neil Alford replied: its just the point, in 2 or 3 years time, we will know the answer to that question because in REF everyone in this room is now scrambling away looking for economic impact. So I think in two or three year's time we will know the answer to that.

Audience member I: I wanted to come back to the point made on Responsive Mode. There was an answer to it earlier but a fairly vague answer. Can you tell me what fraction of the research funding or what fraction of the grants do you envisage remaining in responsive mode after the shaping process?

Clive Hayter replied: Corporately for EPSRC, Shaping capability is not about significantly altering the balance between top down and bottom up funding. Its is about putting the way you assess that bottom up funding in a more strategic framework and not about shifting the balance between one or the other.

Audience member I replied: I think the perception is from most people I speak to say that is the perception there has been a shift in that balance already and what I am asking is where you envisage that ending up?

Clive Hayter – I think what we then get then into the definition issues of what constitutes responsive mode - is it this particular mechanism or scheme but as a ball-park figure its around 60% mark, 60:40 taken right across the balance of programmes other but I will caveat that statement with do you count Programme Grants as responsive, do you count Platform Grants as responsive mode? So you have to caveat that statement, but as a broad figure it is 60/40%. Is this true for Physical Sciences specially?

Andrew: Well we will can double check the data.

Attila Emecz – 60 in the national capability, 40% challenge theme areas on that diagram Andrew put up. 60% national capability, 40% challenge, that is the language we now used rather what responsive as issues Clive said and this is a good approximation.

Audience member J: I would like to pick up the point on responsive mode that audience member A made. I think responsive mode should stay backbone of what we do. I think 95% of my colleagues feel some form of responsive mode should be the backbone of what we do. I don't have however have blind faith in it as a process. If I felt confident that it always ranked the international leading science, well great. But we have a whole series of reports from international reviews which suggest that maybe that isn't the case. The Whiteside Review was pretty infamous in chemistry, I'm a polymer chemist basically the conclusion was that a lot of polymer chemistry in the UK is derivative with I recall the exception of conjugated polymers, that is a serious comment. Now these reviews are not infallible, but I think it is potentially arrogant and rather parochial to ignore them. I don't think we should take as an axiom that Responsive mode is the perfect process. I think it is extremely important we consider how we implement any changes, and I also have questions as to how we should shape capability. I would like challenge this idea that responsive mode is perfect and has always been perfect and therefore we should not look at anything.

Audience member A: I agree with the comments, I think responsive mode should be backbone, there are issues with it but isn't perfect. But is what EPSRC is attempting to do on the basis of what seems to be fairly un-quantitative and fairly dodgy data the way to go, but my real point was to come back to what audience member H's question. That exactly it is, the difficult is, it would be better if David Delpy was here, I could

give you his response as he has given it to me over the table – the reason you don't look at outputs and the reason you want to look at impact at the input stage the proposal stage is that you want to change the culture and want to steer the community in a certain direction. So I don't think it is ever going to happen that you will just look at outputs – there will always be this type of pathways to impacting

Audience member H: Can I just add one thing something, the moment you dangled money in front of people for e-science, everyone became an e-scientist, the moment you dangled money in front of people and said nanotechnology the same happened for nanotechnology. If you dangle money in front of people and say produce impact, people would do it. If you want that you can have it.

Attila Emecz: I wish that was so actually.

Audience member H: We do anything for money.

Steve Howdle: just a point about impact, you started a question on economic impact – I don't see if just as economic impact – the impact is much much broader than that. One of the things I do is I collaborate a lot with engineering (I don't expect there are many engineers here today) and their impact is usually getting posts in industry and making money and they don't tend to try and put papers in Nature or Science. EPSRC needs to look across the patch at what we are all doing and Physical Sciences has to hang on to this impact we believe, which is high level science, as well as making money if we can do it. Another point I would like to make is, who is driving this? I don't think it is Andrew and Atti's idea, or even David Delpy's idea to go for economic impact, or money – I think that has been driven from above. Somehow we have to give them the bullets to go back to Government and say "this is not the right way", or "this is the way we could do it"

Audience member H: firstly the research Council hasn't made it clear to the community how much government is demanding impact. If you has been driven from Government (this would have been helpful) – should say in unequivocal terms "if you don't deliver impact, you don't get the money" and a lot of people don't actually believe this. How many people here are convinced that we would get the same level of funding without showing impact?

Attila Emecz asked the audience the following question: hands up who believes that they would still get the same level of funding, without delivery impact to Government? One hand.

Audience member K - I agree with Steve, but that is not what impact is. Impact is not just publishing in impact journals. Not on microphone so can't record all the comments made.

Steve Howdle – I was trying to say that impact is broader than just money

Audience member H: I am a firm believer than Government has made it clear to the Research Councils that there will not be this level of on-going funding into research unless we show impact, either economic or the other categories, like societal etc nothing to do with high quality research (that is my understanding) – but I am not convinced that that message really gets passed down to all levels of the academic community.

Attila Emecz: straw poll - Do we think impact is necessary for us to maintain funding? Who believes this to be true, who believes this not to be true 3 or 4?

Audience member L – if you asked that question in a university environment you would get a slightly different answer.

Audience member M: I would like to ask why organic synthesis was targeted for a cut and why it was down right at the start of the process. And I want to come back and talk about economic impact.

Andrew Bourne replied: So we had to start somewhere, is part of the answer. In terms of our evidence collection which we went through its not always sometimes what is said but is sometimes what is not said, and your right chemistry has a very important part to play in the economy – we did a joint report with the

RSC demonstrating that. But actually I think on balance we felt current funding of synthetic organic chemistry (or whatever the definition is) and the current trend – and knowing the impact of project studentships actually quite clear to us we could state openly the trajectory in this area was on a decreasing area.

If you go on the other side think of Catalysis for example, there are lots of reports and evidence which kept continually raising it as key area of importance, e.g. Powering Sunlight (joint with RSC). If you look at the RSC roadmap that it does it talks about catalysis and energy. If you talk about the Grand Challenges as an underpinning area that was highlighted by colleagues in that process– catalysis continually came out as an area that would be supported and would be required for the portfolio. So it was quite a pragmatic choice, but we had to start somewhere and we are conscious that everyone is itching to know what we think about other areas of the portfolio and we are trying to expedite that process to give as much information.

Audience member M: I would like to think that EPSRC is a reality based, factual based organisation and not just based on collecting anecdotes. The facts are Organic Chemistry is the bedrock of a huge number of areas of research in this country is continually been lauded in reports, international reports: Cline report, before that Whiteside reports etc etc , this is real hard evidence, this is not one of two people over a meal telling you that organics is not doing too well . this is hard evidence, real data you seem to be simply ignoring this and this is where I have a problem EPSRC does you seem to get blown off course and influenced by words from careless words from what you see a “key individuals” rather than looking at the real data. 250 billion pounds worth to the economy, you commissioned the report jointly with the RSC which show the value of chemistry, there is real deliverable, demonstrable input into the economy, driving the economy forward at the time where the country need it. Yet you are choosing to cut us based I don't know what – hearsay, anecdote, people not sticking up for us, I just don't know. This is where the whole process is very opaque is very troubling to those of us who believe in data and hard evidence, not facts and opinions. You are constantly telling us we need to provide you data of where you have been making mistakes. Here it its it all in reports that you commissioned yourself.

Andrew Bourne replied: Yes and I would put this right back to you - the International review of chemistry quite clearly states that there are pockets of excellence when it comes to chemistry portfolio - it makes it quite clear that the chemistry community is not always taking the impact agenda and how it underpins the societal challenges. It talks about the importance of critical mass. I could go on. I think the challenge there is that our portfolio and our assessment does not say at all that we do not value synthetic organic chemistry. I think that what you have to look at is not only how much we put into it, but the distribution of that research investment across the UK. That is part of the challenge we are facing, that at the moment it is in 36 institutions. Even through the knowledge Mapping – 36 institutions did not highlight they had a strength in Synthetic Organic Chemistry so we have got to look at how best we can use the precious resources we have . Also synthetic chemistry is not just synthetic organic chemistry – we support a lot of synthetic chemistry through Super Molecular chemistry, co-ordination chemistry as well so you need to look at the whole picture

Clive Hayter replied: One last point on that issue following the suggestion that our decisions were passed on anecdotes. Council explored in detail all decisions and actually interviewed Andrew Bourne around the evidence base from the SATS discussions – Council are accountable. I want to dispel any myths that this has been created

Audience member N: Thank you for explaining aspects of this process which we will be disseminating to our colleagues when we get back. What I don't think I can explain to very clearly my colleagues you have areas with growth, maintain and reduce going to have panels meetings who will still produce rank list. From the panels - How are you going from the ranked list to funding the grants and how that is changing in view of these areas of weighting?

Clive Hayter replied: The proposal is, as we have published on our website already – we have introduced National Importance as a primary assessment so Quality and National importance are the two primary criteria. I have not saying they are equal weights, not said anything about the weighting. The two primary

criteria are quality and national importance. We propose to do this from 15th November clearly we need to develop some guidance for both those applying and those who are asked to reviewing proposals for us. But that will be the basis that we will rank proposals at a panel meeting quality and importance with the other secondary criteria already in place. National Importance is over a 10 – 50 year time frame. Got to put the guidance in place and not there yet and communicate this clearly to applicants community and those engaged in peer review. We won't actually run a panel differently until April 2012. Although that will be there. There is a period of time for everyone to adjust to what National importance mean. Everyone in the room thinks about their research typically puts why their research is important, this is the nub of the question why of this piece of research important. This won't come in and won't change a panel until April 2012.

The final bit - How do panels provide advice on making Strategic decisions? , in the light of our portfolio the framework of grow, maintain reduce. There are a number of options, and ways in which we could do that I am happy to take advice/ideas from community. Something we are still wish to test with council and advisory bodies. Final part of process, how you do the peer review provide decisions on the basis is something we are looking at a number of options in that process, but won't come in until April 2012.

Audience member O: Assessment of national importance. The strategy seems to already have been to decide what is nationally important so if my synthetic colleagues make an excellent case for the national importance of their science and their peer reviewers who are synthetic chemists agree that it is nationally important, the research council position still seems to be that it is less nationally important than some other areas, so how is the mechanism actually going to proceed. Are they going to be overruled?

Clive Hayter: They will place that in a rank ordered list in the same way as they will place any proposal in a rank ordered list. If that is the view of the peer review community that will be rank ordered and prioritised.

Audience member O - Peer review will override the strategy?

Clive Hayter: I've not said anything about overriding, Peer review will produce a rank order of proposals in terms of quality and national importance.

Attila Emecz: its work in process, we are still discussing this one if the bedrock there will still be a rank ordered list, that will happen. What happens to this rank order, we are still discussing. There will not be any reranking. We are discussing this with Council.

Clive Hayter: if you have views or suggestions on how you would like this to work then by all means please tell us.

Audience member P: Studentships, Clive you said something about reducing the training budget. It always strikes me that EPSRC has this a*** over elbow because they see studentships as coming from a training budget and postdocs doing research, whereas actually students are the absolute bedrock of what we do in terms of research, and it seems insane to me that you are basically scoring an own-goal here because I fail to see why you just can't allow responsive mode and the applicant to decide whether they want a studentship or whether they want a postdoc. The studentship is actually cheaper than the postdoc so it seems to me that in a climate of funding reductions it would make more sense to fund studentships rather than postdocs.

Clive Hayter replied: I accept what you say about PhDs, in a purist view are they training or research. Just to be clear, Council is maintaining the proportion of the budget it spends on training, that is Doctoral Training Accounts, Doctoral Training Centres, that proportion will stay the same as a proportion of what Council invests in. All of the indicators we got back are telling us to focus on PhD quality, and I think what we have is an unplanned unstructured growth in the numbers of PhDs through project studentships so if you go back and look at 2006-2010 there is more than a doubling of PhD studentships. The main reason that Council chooses to invest in PhDs is for training purposes. I accept they might be used to do research in Organic Chemistry or whatever area of chemistry, but the main reason and the aspiration that Council has, why spend the money in training, is they want to do this to invest in trained personnel.

Audience member P: But those project studentships go through peer review and go to a panel and colleagues decide on whether projects should be funded or not. What you are referring to presumably is a large increase of university funded students or studentships from DTC, project studentships go through peer review.

Clive Hayter: and it is the growth of those studentships I'm referring to.

Audience member Q: Peer Review Process - not got a clear answer, let's illustrate this. If you have a funding panel which through peer review produces a ranked list and say for the sake of argument the top 6 just happen to be in Synthetic Organic Chemistry which you have identified as an area within your framework that you want to work towards seeing reduced, and let's say proposals below that in catalysis or whatever that you want to see increased in the level of funding, what is the mechanism by which you are going to make the rank ordered list. adjust or fit within your framework because what I am hearing from you is you are open to suggestions but you don't really know the answer yet, is that correct?

Clive Hayter replied: You are right in a way, I can't say this is how we will do it, because it would be quite wrong to do that at this stage, we simply have not spoken to Council and its advisory bodies, we have a number of options in mind to do that, and my question to you was if you have strong or a view on how you would like to see that work, then please tell us. Let's go through the things that will definitely be the case: we will continue to seek the opinion of expert peer review, the output of peer review will still be a rank ordered list, all proposals judged on their intrinsic merit by postal peer review. National importance and quality are primary criteria. Pathways to impact, resources and management and applicant's ability remain as secondary criteria, any proposals falling below the agreed quality and national importance cut-off on the ranked ordered list will not be funded, irrespective of any strategic funding factors. We will continue to publish the rank ordered list showing which proposals have been funded. The last thing on that list is really then how does peer review factor in that strategic framework in its decision making in the meeting, that is the thing that I can't say to you this is how we will do it, because we are not there at this point in time.

Audience member Q: If a panel still makes the top 5 proposals Synthetic Organic Chemistry, what do you do?

Clive Hayter replied: That is where we then need a discussion with the peer review panel and the panel chair, we need to ask them to reflect that strategic framework, but we won't change the order of the rank ordering.

Audience member Q: How can they reflect it to fit your strategy if you don't change the order?

Audience member F: I said a little while ago that I don't think you have the tools to implement the strategy that you have outlined, and that is what you have just said. It does look strange to make an assessment of what areas should go up and down on the basis of that data because it is really very poor, in other areas too, and just because the tick boxes were wrong. You are using this poor data and then you are saying you don't know how to implement a change in the way So you are still working on how to implement that, I'm rather disturbed by that, I think we ought to know.

Attila Emecz: we said that we are still working on this, That is a different issue to what you have said.

Andrew Bourne replied: can I just give two examples which might help clarify, so at the moment I have a large budget holder and I make investments decisions, I have research standard lists, and First grants being considered alongside this, also have Signpost list considered alongside this and Critical Mass proposals being considered alongside this. So quite opening I make decisions on these investment of these proposals based on the resources available and the landscape we currently have. Many of you would appreciate that if I blindly followed funding list in terms of absolute quality I might not fund as many first grants as I do, but I use my judgement to think about not only have I have to take account of the absolute performance of a proposal but what is the capability and need of that community that is absolutely what EPSRC has done for the last three or four years, and I think moving forward although we have not defined the process for shaping capability funding I think the best analogy I can best describe that show how sometime we have to take other factors in to account when making funding decisions.

Equally we have been having now roving panel members in physical sciences for 6 / 7 meetings where we have been getting candid feedback on relative merits between lists and I hope my funding decisions have reflected those discussions and they have not been out of line with the excellent advice I have received.

Audience member R: I was interested to hear PhD quality, in 2008 RAE we weighed PhDs, we came up with various parameters which informed funding decisions, some of the panel were not happy about that. In Belgium recently, I was informing some of their people about at looking to enhance their research outputs and one word that was used again and again was quality of PhDs. Unfortunately this is not a simple a parameter but it's a function of the ability of individual who comes into eth course and also a steep function of the nature of the supervision he gets and the environment he is training. Now some of us don't believe that this can be driven from above through doctoral training centres we think it's the responsibility of the individual academics who leads this and inspires. Inspiring of this is not going to be brought on so if you are going to look at quality how do you assess both coming in and coming out? And if we look back in time, coming in it was done when my great in first to get an automated studentship so some people helped me to get on.

Andrew Bourne replied: Trying to reflect framework of supporting high quality PhDs so for example we aren't just thinking that everything will be solved by centres for doctoral training. The last announcement of the DTG budget there was some principles given to all universities about the type of training environment that should be provided. We value the DTG training as much as the CDTs approach, they both have a role to play, we have a portfolio approach and don't see it being delivered through one mechanism. I absolutely agree with you that we are trying to encourage not only from a cohort approach and thinking about the challenges that we have is thinking about embedding high quality training provision that doesn't always have to be through centres for doctoral training it can come through the DTG and industrial case mechanisms as well.

I think just on the project studentships, I do have to restate that part of the challenges in physical sciences is that proposals were being shoehorned around a project studentship and a research idea and actually the limitation of the research idea were being set and bound by this would equate to a research studentship and I think part of what we are doing and those were not funded. . You need to think more about what the research challenge is rather than what resource can I use, that is a very important change in moving forward. If there is a training environment and you have a strong reason to get some beneficial training with that research grant, you will get a DTG from your university department to go alongside that. That is kind of the vision on how it should be working.

Neil Alford – can I just make a comment on where we are now. A few months ago when Comprehensive Spending Review was discussed we were facing major cuts, possibly 30%, so this conversation we have had today would have been completely different. I think it's worth bearing in mind, that I think we did well out of the CSR because we could have been facing a far worse situation.

On Shaping, I did think about this, 20 – 25 years ago a number of us would be working on high temperature superconductivity, approx 10 years ago about £40M was being pumped into HTS. That changed. The shaping capability agenda essentially was taken forward by changing into for example ferroelectrics, dielectrics and now we are looking at 2deg electron gases. We need to be agile enough to take the money and start doing stuff which will be funded. That is the point that I would like to get across.

Steve Howdle: A number of issues have come through, the one about peer review is one we all worry about. The next SAT meeting is later this week and I will be there, I'll be all ears and waiting to see what happens. A very important point has been made several times by Andrew and the team that the community needs to engage and equally when these suggestion come out EPSRC needs to listen and respond to them.

Annex 4 – Questions from the community (submitted before the town meeting) which were relevant to Shaping Capability formed the topics at the question and answer session:

1. Who was consulted before the decisions were taken? Please make details of names/organisations and responses public.
2. Were changes made post-consultation? Please provide details?
3. Why were the first round of shaping capability decisions announced without consulting the communities involved – but the community consultations are now being held before further announcements.
4. Which EPSRC committees approved the final details of the shaping capability strategy?
5. How will the new peer review college be appointed? Who will decide on who is appointed – researchers or EPSRC administrators?
6. What will be the weighting placed on review of the scientific case for support vs the impact case for support vs alignment with EPSRC priorities.
7. Will peer reviewers have the final say on a proposal's rank order at panel or will EPSRC staff be able to change that order in line with priorities? If so will the original panel order and the funded order be published?
8. Who was consulted before the PhD numbers were reduced from 3000 to 2000? Please make details of names/organizations and responses public. Which EPSRC committees approved the final details of this strategy; please publicise the names and qualifications of these committees.
9. Please provide the names and qualifications of EPSRC staff.
10. Please provide the percentage of total EPSRC funds that are awarded to researchers (as opposed to funding activities in Swindon, publicity, travel etc.)
11. It was widely felt that the research areas identified so far give an uneven coverage of physical science. They poorly represent some important activities notably in emerging research areas. How will this be rectified and how will EPSRC adapt them to future scientific developments?
12. How does EPSRC make its strategic decisions on the areas to prioritise?
13. With whom do they consult (beyond EPSRC panels) in making these decisions?
14. What external advice has been taken in defining the chosen programme areas?
15. What new competences will EPSRC seek to acquire in order to be able to become 'commissioners' of research as has been stated?
16. Who reviews the performance of EPSRC?
17. What opportunities does this represent for universities?
18. How will performance towards delivering "capabilities" be judged and will metrics be different from the wider academic metrics?
19. How will areas be reviewed after the first evaluation at the start?
20. How fine grained will areas be? Sometimes sub-areas are crowded within a needed research focus, and sometimes sub-areas of a crowded research area are not taken up.
21. How do we ensure the health of areas deemed crowded if everyone leaves them? How do we ensure important work carries on being done, if there are enough large grants now, but they end all in the next few years?
22. How do we ensure that grants at the discipline boundaries spanning areas of great UK expertise and new areas are not also rated as superfluous?
23. What is the EPSRC's policy on ring fencing matching funding for the potential EC FET flagship programme – and if there will be no matching funding does that mean the UK cannot be part of these projects.
24. One of the major issues of concern is the apparent lack of any strategy to maintain breadth of the science (chemistry) base in the UK. While it is obvious that it is not possible to fund internationally competitive research in every area of chemistry in every chemistry department in the UK, there appears to be no strategy to ensure that a national capability is maintained in areas which are not CURRENTLY fashionable or industrially relevant. It appears that the EPSRC indicates it may still be possible for to support work in areas which are not CURRENTLY fashionable or industrially relevant under responsive mode funding PROVIDED applications for such funding are from established, internationally competitive, groups. This is not a financially effective way of ensuring breadth of our national research capability and will make it very hard for young/mid career researchers to maintain their expertise in areas which might prove to be very important in the future. What is the EPSRC response to this point?

25. How will EPSRC make sure that opportunities for distinctive relatively small scale curiosity-driven high-quality work are not reduced/discouraged in the high-level shaping agendas?
26. How will EPSRC ensure that adequate consultation and feedback takes place in order to minimize misjudgements in the adoption of top-down prioritisation, high-level shaping agendas?
27. How will the need to make full use of the UK's distinctive national facilities e.g. Diamond, ISIS be taken into account in the shaping capability agenda? EPSRC-funded physical scientists need access to world-leading facilities such as light sources and neutron beams. Given the division of responsibilities between STFC and EPSRC, it is not clear where new generations of scientists will be trained in the development and exploitation of such facilities and related instrumentation.
28. Is EPSRC fully engaged in working with STFC to develop the strategy for current and future facilities and for the associated training for its science communities? Can you comment on the mechanisms which are in place and their suitability?
29. Of major concern is the abolition of project studentships and their concentration in DTCs. How does EPSRC intend to ensure that this does not translate to hindered access for some and glut for others?
30. What steps if any will EPSRC take to facilitate this in order to bring industry and academia together to explore common interests?

31. Certain topics appearing as parts of Grand Challenges in fact have strong interdisciplinary aspects. For example "Artificial Photosynthesis" is an Engineering Challenge, but has very strong relevance to Chemists and Physicists as well. How will the ideals exemplified in the Mathematical Sciences/Engineering/ICT/Physical Sciences Venn diagram (<http://www.epsrc.ac.uk/ourportfolio/Pages/default.aspx>) be realised in practise through prioritisation panels? ["Artificial Photosynthesis" was proposed as a Chemistry Grand Challenge at the Manchester meeting, but was discounted because the engineers had got there first].
32. How are we going to be able to keep hiring (and training) British nationals on our new post-doc-only grants, when the pool of eligible PhD graduates has shrunk by 1/3? That isn't the best use of resource from the UK's point of view.
33. The STFC was strongly criticised in its recent independent organisational review, for a lack of consultation on key funding changes and for allowing its relationship with its user base to break down. STFC is now having to take positive steps to repair these aspects. EPSRC's approach in reshaping its portfolio is being run on similar lines, so does it have the lessons from the STFC review in mind?
34. The DTC/ priority area based approach deals with markets and employment in areas which are already established and which the government expects to grow and areas the government expects researchers to share with UK businesses.
35. How does the UK maintain its position in new markets (i.e. five or more years in the future) for doctoral graduates when the Research council has withdrawn funding for responsive mode doctoral studies? Income generation is achieved by being the first to have an idea. By withdrawing support from responsive mode are we not in danger of becoming a nation of followers rather than leaders?
36. In the early 80's many universities failed due to an over concentration of effort on single areas of research. Research remains vibrant for 10-15 years academic careers last 30 years. Are we not repeating the mistakes of yesteryear but this time making the country uncompetitive in research this time by concentrating funding into narrow areas and encouraging departments to become so heavily themed?
37. Regarding EPSRC's aim to "Encourage collaborations where there are synergies", is it necessary or desirable for collaborations to be actively encouraged by EPSRC? If EPSRC's purpose is to fund the best science, and in certain areas that must be done through collaboration, then this will happen automatically without the need to promote/demote certain areas of research.
38. A concern regarding the peer review process is that an applicant's reply to referees' comments does not seem to carry very much weight. Looking at many applications over several years it appears that if one referee (typically out of four or five) has a couple of objections, then the proposal is rejected. The rebuttal offered by the applicant seems to be effectively ignored. Will EPSRC be looking at the peer review process, and ensuring that the dialogue it seeks with the applicant is taken seriously in the peer review process?
39. The major role played by organic synthesis in the UK science and economic base is widely

acknowledged. It was identified as occupying a core position and being an area of notable strength in the 2009 International review of chemistry (commissioned by the EPSRC), and it forms the basis of one of the three grand challenges defined by the EPSRC in chemical science and engineering (dial-a-molecule). In light of these facts, why and how has organic synthesis been identified as an area for reduced funding in the EPSRC's portfolio shaping exercise?

40. Given that "Highly-skilled people are the most important output from our research investments, and with industry warning of STEM skill shortages, it has never been more important to ensure our people have the skills most valuable to industry" (<http://www.epsrc.ac.uk/plans/deliveryplan/economicimpact/Pages/default.aspx>) and that training within a research setting provided by PhD studentships is key to industries which contribute to GDP (for example Chemical Using Industries contribute 21% to GDP <http://www.epsrc.ac.uk/SiteCollectionDocuments/Publications/reports/091046-EconomicImpactFlyer.pdf>) - surely an increase in PhD studentships or at least maintaining the number (and not a cut) together with a re-introduction of project studentships is the most cost effective way to achieve the impact the EPSRC requires and provide the growth in the economy the government desires?
41. How is the EPSRC going to interact with the BBSRC and MRC in future? Specifically, (i) how will PhD studentships at the Chemistry-Biology interface be funded?
42. How will the organisations co-fund areas of research now there is no BBSRC Biomolecular Sciences Committee?
43. What is the status of the Life Sciences Interface - does it still exist in the EPSRC?
44. When resubmission was allowed applicants were able to revise their proposals in line with comments that had been made, often resulting in very strong proposals that were subsequently funded. This mechanism has been lost and the huge amount of work that goes into constructing a proposal is generally completely wasted. Might EPSRC's current policy on resubmission be re-visited?