



House of Commons  
Committee of Public Accounts

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# Capital investment in science projects

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Fifth Report of Session 2016–17





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**Fifth Report of Session 2016–17**

*Report, together with formal minutes relating  
to the report*

*Ordered by the House of Commons  
to be printed 15 June 2016*

## The Committee of Public Accounts

The Committee of Public Accounts is appointed by the House of Commons to examine “the accounts showing the appropriation of the sums granted by Parliament to meet the public expenditure, and of such other accounts laid before Parliament as the committee may think fit” (Standing Order No. 148).

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### Publication

Committee reports are published on the [Committee’s website](#) and in print by Order of the House.

Evidence relating to this report is published on the [inquiry publications page](#) of the Committee’s website.

### Committee staff

The current staff of the Committee are Dr Stephen McGinness (Clerk), Dr Mark Ewbank (Second Clerk), George James (Senior Committee Assistant), Sue Alexander and Ruby Radley (Committee Assistants), and Tim Bowden (Media Officer).

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## Summary

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The Department for Business, Innovation & Skills lacks a clear and consistent selection process and structured plan for prioritising potential capital investments and is, therefore, at risk of not selecting the right projects. Furthermore, its decisions to invest in science projects have not been firmly grounded in robust analysis such as a consideration of alternative options or locations, the ongoing costs of running projects and how the Department and its research councils will track the delivery of potential benefits. Proposed organisational changes to the Research Councils, and to the Higher Education Funding Council for England following the recent White Paper, may create opportunities for investment in science. However, the changes will also create risks that the Department will need to manage carefully.

## Introduction

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The Government invests in science to support economic growth, improve national productivity and help the UK take the lead in new markets. Since 2007, the Department for Business, Innovation & Skills (the Department) has committed around £3.2 billion capital funding for major science projects and has announced plans to spend £5.9 billion on capital projects between 2016 and 2021. The Department's capital investments in science include oceanographic research ships, supercomputers, research institutes and the UK's participation in international programmes such as the European Space Agency. The Department funds science through its Research Councils and through the Higher Education Funding Council for England (HEFCE), which funds research facilities in universities.

## Conclusions and recommendations

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1. **The lack of a clear process and structured plan for prioritising projects means that the Department for Business, Innovation & Skills cannot be certain it has made the right investment decisions.** When the National Audit Office previously reported on science capital projects in 2007, it found that the research councils used a well-delineated staged approach for identifying priorities for capital investment. Since 2010, however, the Department for Business, Innovation & Skills (the Department) has not had a clear and consistent process and plan for deciding which projects should be funded, resulting in a lack of transparency about the rationale for investing in some projects but not in others. In addition, it is not clear how the Department uses information from the Higher Education Funding Council for England (HEFCE) and the Research Councils on the condition of its existing infrastructure to inform its decisions on how it allocates its capital funding budget. While the Department is responsible for taking the decisions to invest in science projects, on some occasions other parts of government have played a role in proposing projects. For example, the Council for Science and Technology proposed that the Department invest £20 million in the Alan Turing Institute. In some cases, Ministers have announced projects before full business cases have been developed, raising concerns about political pressures to approve and proceed with projects that have not yet been fully considered.

**Recommendation:** *The Department should implement a structured, consistent and systematic approach for prioritising projects, drawing on consolidated information about the existing condition of infrastructure and future requirements. This should include clarifying the role played by other parties in identifying and proposing projects.*

2. **Individual project proposals have not always been subject to an appropriate level of financial analysis and scrutiny before being approved, creating uncertainty about the potential running cost implications of the programme.** Many approved business cases have lacked assessments of where new facilities should be located, potential demand for facilities, what projects will cost to run and whether running costs are affordable. For example, for projects approved after 2011, only half of the business cases included an assessment of alternative options, while less than half of the business cases included expected running costs and analysis of whether running costs would be affordable. The position was not helped by the Department asking the Research Councils to take a 'light touch' when preparing business cases for projects which had already been announced.

**Recommendation:** *The Department should ensure that all investment decisions are based on full business cases, which should include assessments of alternative options and locations, potential demand for the project and expected running costs, so that the Department has adequate assurance that it can afford the running costs associated with its capital programme.*

3. **The approach taken to evaluating the impact of the Department's investment in science projects has been inconsistent.** Evaluation of science projects has not been systematic and has been too decentralised. Different research councils have taken different approaches, making it difficult to make comparisons or learn lessons.

Nearly half of the 20 business cases reviewed by the National Audit Office did not include a plan for tracking and assessing benefits. Furthermore, out of 17 operational projects examined by the National Audit Office, in only 3 cases had the Department undertaken reviews to check that the desired benefits were being achieved. Where these reviews are carried out, they are often undertaken too soon, before there is any realistic chance of the benefits having materialised.

**Recommendation:** *The Department should develop a consistent and robust approach to assessing the full impact of its investments, while tailoring individual evaluations to match the circumstances of the projects. Approved projects should be supported by clearly defined milestones setting out the expected benefits which can be revisited at appropriate intervals.*

4. **We are not convinced that the Department is doing enough to protect the intellectual property that results from its investment and to secure the benefits for the UK economy.** It is not clear where accountability lies for the effective use of publicly-funded and economically valuable intellectual property. While universities and research institutes may take the lead in ensuring that intellectual property is safeguarded, the Department has an important role to play in ensuring that taxpayers gets a return on their investment in science.

**Recommendation:** *The Department should ensure that there are clear accountabilities in place to safeguard intellectual property rights and the benefits that should accrue to the UK economy as a result of public investment in research.*

5. **Proposed organisational changes in the research and higher education sectors will have significant implications for how the science budget is managed in the future.** Following an earlier review of the Research Councils by Sir Paul Nurse, the Government published a White Paper, in May 2016, proposing the formation of a new body, UK Research and Innovation. The new body would bring together the existing Research Councils and include HEFCE's research funding functions. The White Paper also proposes substantial changes to the higher education system, including abolishing HEFCE with many of its other functions to be carried out by a new Office for Students. These changes could have a significant impact on the funding and organisation of UK science.

**Recommendation:** *By the time legislation is in place, the Department should have developed a plan setting out the key strategic risks affecting investment in science and how it will manage them.*

# 1 Deciding which projects to support

1. On the basis of a report by the Comptroller and Auditor General, we took evidence from the Department for Business, Innovation & Skills (the Department), Research Councils UK (RCUK) and the Higher Education Funding Council for England (HEFCE) on capital investment in science projects.<sup>1</sup> The Government invests in science to support economic growth, improve national productivity and help the UK take the lead in new markets. The Department has overall responsibility for the Government's spending on science, technology and engineering. It provides funding for a wide range of scientific disciplines and industry sectors with the aim of developing and maintaining the UK's science and research capability.<sup>2</sup>

2. Since 2007, the Department has committed around £3.2 billion of capital funding for major science projects. This included expenditure on major national projects such as oceanographic research ships, supercomputers and research institutes, capital funding for large national research facilities such as particle accelerators and the UK's participation in international programmes such as the European Space Agency. In 2014–15, the Department allocated around £1.1 billion of capital funding to science, including £756 million to its research councils and £287 million to HEFCE, which funds research facilities in universities.<sup>3</sup>

3. In December 2014, the Department announced plans for a further £5.9 billion of capital expenditure on science between 2016 and 2021. This included £800 million for new projects, more than £1.2 billion for ongoing national and international projects and a £900 million fund to respond to new challenges as they emerge. It also included plans to spend around £3 billion on the underlying laboratory infrastructure in universities or research institutes.<sup>4</sup>

## Prioritising projects

4. When the National Audit Office previously reported on science capital projects in 2007, it found that the research councils used a well-delineated staged approach for identifying priorities for capital investment.<sup>5</sup> The 2010 Spending Review resulted in a significant reduction in funding for new science capital projects and, as a consequence, the Research Councils did not, after 2010, continue their well-established exercise to propose projects for funding by the Department.<sup>6</sup> When additional funding for science became available between 2011 and 2014, the Department funded projects worth some £1.7 billion.<sup>7</sup> Although the Department did not consider that it had lacked a plan for prioritising its capital investment prior to 2014, the House of Lords Science & Technology Select Committee concluded in 2013 that there was no single long-term investment strategy or plan for scientific infrastructure in the UK.<sup>8</sup>

1 C&AG's Report, *BIS's capital investment in science projects*, Session 2015–16, HC 885, 10 March 2016

2 C&AG's Report, para 1

3 C&AG's Report, para 2; Figure 1, para 1.8

4 C&AG's Report, para 3

5 Q 1; C&AG's Report, para 2.21; Figure 15

6 Q 1; C&AG's Report, para 11

7 C&AG's Report, paras 2.5–2.6 and Figure 8

8 Qq 1, 12; House of Lords Select Committee on Science & Technology, *Scientific Infrastructure*, Session 2013–14, HL 76, 21 November 2013

5. In 2014, the Department used the results of a consultation with the research community to decide how to allocate £5.9 billion of capital funding to major projects and laboratory infrastructure between 2016 and 2021. However, there were gaps in the information used to select projects.<sup>9</sup> The Department told us that the projects selected were subject to an initial screening process and business case assessment process but we remain concerned about the rigour and transparency of the project prioritisation process and how we can be confident that the best projects have received investment.<sup>10</sup>

6. To make well-informed decisions on capital investment, the Department needs sufficient information on the state of the existing science infrastructure.<sup>11</sup> The Department told us that it consults RCUK and HEFCE on their infrastructure needs and uses this information to decide the level of funding it wants to allocate to new facilities and to maintain the existing estate.<sup>12</sup> We heard from HEFCE about its periodic assessments of the condition of the research estate across universities which inform its bids for funding.<sup>13</sup> While RCUK told us that it has good information on the location of its existing infrastructure, it is not clear how the Department uses this information to inform its funding choices.<sup>14</sup>

7. Bodies other than the Department, the Research Councils and HEFCE may be involved in proposing projects for funding.<sup>15</sup> For example, the Department told us that the £20 million Alan Turing Institute for Data Science originated from a 2013 proposal by the Prime Minister's Council for Science and Technology and was subsequently announced in the Budget in 2014. Both the Department and RCUK told us that there was a wide consensus across the scientific community about the importance of data analytics and the need to invest in big data and algorithms and that, although the project had been announced beforehand, the proposal was still subject to assessment of a full business case.<sup>16</sup>

8. However, we were not fully convinced that, in cases like the Alan Turing Institute, where a Minister has already made the announcement and taken the strategic decision to invest, the Department would be likely to reverse the decision on the basis of a subsequent business case assessment.<sup>17</sup> In a separate submission to us, the Wellcome Trust commented that decisions about science capital should not be affected by “political drivers, short-term budgets or the lure of announcement-friendly investment”. The Academy of Medical Sciences also wrote to us to emphasise the importance of delivering an independent research agenda insulated from “near-term political pressures”.<sup>18</sup>

## Robustness of business cases

9. The Department's decisions to proceed with capital projects are subject to a satisfactory business case. Between 2011 and 2014, when investments were often announced before business cases had been developed and approved, the Department instructed the research

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9 [Q 6; C&AG's Report](#), paras 2.8–2.10

10 [Qq 5–6, 28](#)

11 [C&AG's Report](#), para 2.2

12 [Qq 16–17](#)

13 [Qq 12–14](#)

14 [Qq 17–20, 29–31; C&AG's Report](#), para 10, 2.4

15 [C&AG's Report](#); paragraph 2.22

16 [Qq 64–66, 76–78](#)

17 [Qq 64, 67–71, 79–84, 88](#)

18 Academy of Medical Sciences, [\(SCS0001\)](#), para 4; Wellcome Trust, [\(SCS0002\)](#) para 3

councils to take a ‘lighter touch’ when developing business cases.<sup>19</sup> The National Audit Office examined 20 business cases and found that the business cases for projects the Department approved after November 2011 had often lacked key elements.<sup>20</sup> For example, the business cases approved after November 2011 were less likely to include an assessment of alternative options, running costs, evaluation of potential demand, sensitivity analysis of costs and benefits, planning for the tracking and assessing of benefits realisation and the estimated return on investment.<sup>21</sup>

10. For projects approved after 2011, only half of the business cases examined by the National Audit Office included an assessment of alternative options.<sup>22</sup> We asked the witnesses to what extent they consider a range of locations, or scope to expand existing infrastructure, when assessing business cases. The Department told us that it first focuses on scientific excellence when making funding decisions but also aims to make the best of connections between regions, universities and centres of innovation. HEFCE told us that it will take account of local collaboration between universities and small and medium-sized enterprises in the current and future rounds of its UK Research Partnership Investment Fund.<sup>23</sup> Nevertheless, we were concerned that there has been a tendency to focus science investment around Oxford, Cambridge and Imperial universities and we questioned the Department’s decision to locate the Francis Crick Institute in central London, particularly given the risks associated with its proximity to the proposed Crossrail 2 route.<sup>24</sup>

11. Less than half of business cases approved after 2011 included an analysis of running costs and details of how running costs would be funded. The Department accepted that it should have done more to assess running costs in business cases.<sup>25</sup> It also said that it had estimated that the cost of running all of the projects announced in 2014 would be around £140 million a year, 3% of the resource budget it allocates to the research councils and HEFCE.<sup>26</sup> Nevertheless, the costs of running facilities may eat into the remaining budget the research councils have discretion to use for their own priorities. The Department accepted this point.<sup>27</sup>

12. The information used by HEFCE, to decide how capital science funding to universities should be allocated, is consistently more rigorous than the business cases developed by the Research Councils and approved by the Department. RCUK agreed that it could learn from HEFCE’s systematic approach.<sup>28</sup> HEFCE told us that it was not complacent about its performance and had already implemented the NAO’s recommendation that it should seek a range of estimated running costs, not a single figure.<sup>29</sup>

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19 [Q 7; C&AG’s Report](#) para 2.23

20 [C&AG’s Report](#), para 12, para 2.15, Figure 10

21 [Qq 3, 26; C&AG’s Report](#) Figure 10

22 [Q 3; C&AG’s Report](#) Figure 10

23 [Qq 15, 34](#)

24 [Qq 35–40; 107–111](#)

25 [Qq 46, 51; C&AG’s Report](#) Figure 10

26 [Qq 47–50](#)

27 [Q 52](#)

28 [Q 56](#)

29 [Q 57](#)

## 2 Maximising the impact

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### Realising and evaluating benefits

13. Investment in science plays a key part in increasing economic growth and productivity but the Department does not have a systematic approach for assessing whether operational projects are delivering benefits across its portfolio.<sup>30</sup> The National Audit Office's examination of a sample of business cases supporting investment decisions found that nine of the 20 business cases did not include a plan for tracking and assessing benefits once the project was operational.<sup>31</sup> We also learned that only three of the 17 operational projects examined by the National Audit Office had been subject to a 'Gateway 5 review' to check whether the anticipated benefits were being realised.<sup>32</sup>

14. We asked the Department and RCUK what they are doing to improve their focus on benefits realisation and evaluation and ensuring that lessons are learned.<sup>33</sup> RCUK told us that the Research Councils try and evaluate every project but that they take various approaches because every project is different and that the Department does not prescribe how they should evaluate impact.<sup>34</sup> The Department acknowledged that its approach had not been sufficiently systematic and that it should be doing more to evaluate outputs. The Department told us that it is putting in place new systems of evaluation which will bring information together in a systematic way and will help it to identify the full range of scientific, social and economic benefits.<sup>35</sup>

15. Evaluating the impact of science projects can be challenging because the returns from investment in science are often long-term.<sup>36</sup> We questioned the Department about consistency of measurement over time and how it is ensuring that long-term evaluation is in place. The Department acknowledged the importance of long-term evaluation but highlighted conceptual difficulties linked to the often long and variable time lags before economic benefits materialise. To illustrate this, the Department told us that research spending in the 1960s is still playing a part in delivering economic benefits to the country today.<sup>37</sup> However, 'Gateway 5 reviews' to evaluate projects are usually carried out only one year after projects become operational.<sup>38</sup> The Department accepted that, in many cases, this could be too early if it is before there is any realistic chance of benefits having materialised. It was considering the suitability of this review model and would like to work with the National Audit Office to further develop its thinking in this area.<sup>39</sup>

### Protecting intellectual property

16. We asked the Department about its role and accountability for securing the benefits accruing to the UK through publicly-funded and economically valuable intellectual property. In view of the potential detriment to the UK economy of losing intellectual

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30 [Q 93; C&AG's Report](#), para 3.14

31 [Q 58; C&AG's Report](#), para 3.14

32 [Q 59; C&AG's Report](#), para 3.14

33 [Qq 58, 93, 94, 97](#)

34 [Q 94](#)

35 [Qq 93, 96, 99](#)

36 [C&AG's Report](#), para 3.13

37 [Qq 58, 97–99](#)

38 [C&AG's report](#), para 3.14

39 [Qq 58–59, 99](#)

property rights, and the level of taxpayer investment, we would expect the Department to have a clear role in this regard. The Department told us that there are clear processes for maintaining the intellectual property generated in research, commenting that “We are very concerned about IPR” and “it is something we watch”.<sup>40</sup>

17. However, the Department also said that universities are independent and take different approaches. It acknowledged that intellectual property is a very complex area, that it needed universities to learn from each other and said that “we try to participate in that debate”.<sup>41</sup> We noted that different approaches would doubtless produce different results, with some being better than others. Overall we did not get a strong sense that the Department has a clear system of accountability in place to safeguard the intellectual property rights which may accrue from the research it funds.

## The impact of future changes

18. Sir Paul Nurse’s 2015 review of the Research Councils recommended the formation of an integrated organisation which would bring together the seven research councils.<sup>42</sup> A Government Green Paper, also published in 2015, proposed substantial changes to the higher education system, including abolishing HEFCE with many of its functions to be carried out by a new Office for Students.<sup>43</sup> The subsequent White Paper, covering both research and higher education, was published on 16 May 2016, shortly after our evidence session. It proposes the formation of a new body, UK Research and Innovation, which would integrate the Research Councils as well as HEFCE’s research funding functions.<sup>44</sup>

19. We questioned the Department about how future changes might affect how the science budget is managed and whether they could put scientific outcomes at risk. The Department told us that the changes present both opportunities and risks which will need to be managed carefully. It also said that it would need to be sufficiently clear about the new frameworks that Ministers want to put in place.<sup>45</sup> In a separate submission to us, the Wellcome Trust commented that the new integrated research organisation could play a key role in defining the UK’s future capital roadmap and in providing more strategic oversight and management of national, international, multi-disciplinary and cross-research council facilities.<sup>46</sup>

20. We asked HEFCE whether the establishment of an Office for Students could reduce focus on investment in science. HEFCE told us that it wanted to work closely with government to make a case for spending on research. It also expressed its view on the importance of having one organisation that has an overview of the higher education sector as a whole; including an understanding of how research income, fee income, and income from international students come together and how that is all then articulated and works in the context of devolution through local enterprise partnerships and combined authorities.<sup>47</sup>

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40 [Qq 112–114](#)

41 [Qq 112–115](#)

42 [Q 100](#); Sir Paul Nurse, *Ensuring a successful UK science endeavour: A review of the UK research councils*, November 2015.

43 Department for Business, Innovation & Skills, *Fulfilling our potential: Teaching excellence, social mobility and student choice*, November 2015.

44 [Q 100](#); Department for Business, Innovation & Skills, *Success as a knowledge economy: Teaching Excellence, Social Mobility and Student Choice*, May 2016,

45 [Qq 100–102](#)

46 Wellcome Trust, [\(SCS0002\)](#) para 7

47 [Qq 103, 105](#)

# Formal Minutes

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**Wednesday 15 June 2016**

Members present:

Meg Hillier, in the Chair

Mr Richard Bacon	Stephen Phillips
Chris Evans	John Pugh
Mr Stewart Jackson	Karin Smyth
David Mowat	

Draft Report (*Capital investment in science projects*), proposed by the Chair, brought up and read.

*Ordered*, That the draft Report be read a second time, paragraph by paragraph.

Paragraphs 1 to 20 read and agreed to.

Introduction agreed to.

Conclusions and recommendations agreed to.

Summary agreed to.

*Resolved*, That the Report be the Fifth Report of the Committee to the House.

*Ordered*, That the Chair make the Report to the House.

*Ordered*, That embargoed copies of the Report be made available, in accordance with the provisions of Standing Order No. 134.

[Adjourned till Monday 27 June 2016 at 4.30pm]

## Witnesses

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The following witnesses gave evidence. Transcripts can be viewed on the [inquiry publications page](#) of the Committee's website.

**Tuesday 27 April 2016**

*Question number*

**Professor Madeleine Atkins CBE**, Chief Executive, Higher Education Funding Council for England (HEFCE), **Gareth Davies**, Director General, Business and Science, Department for Business, Innovation and Skills, **Martin Donnelly**, Permanent Secretary, Department for Business, Innovation and Skills, and **Hilary Reynolds**, Executive Director, Research Councils UK

[Q1–123](#)

**Martin Donnelly**, Permanent Secretary, Department for Business, Innovation and Skills

[Q124–154](#)

## Published written evidence

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The following written evidence was received and can be viewed on the [inquiry publications page](#) of the Committee's website.

SCS numbers are generated by the evidence processing system and so may not be complete.

- 1 Academy of Medical Sciences ([SCS0001](#))
- 2 Department for Business, Innovation and Skills ([SCS0004](#))
- 3 Research Councils UK ([SCS0003](#))
- 4 Wellcome Trust ([SCS0002](#))

## List of Reports from the Committee during the current session

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All publications from the Committee are available on the [publications page](#) of the Committee's website.

### Session 2016–17

First Report	Efficiency in the criminal justice system	HC 72
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Third Report	Training new teachers	HC 73
Fourth Report	Entitlement to free early education and childcare	HC 224

# Public Accounts Committee

## Oral evidence: Science Capital Spend, HC 908

Wednesday 27 April 2016

Ordered by the House of Commons to be published on 09 March 2016

Watch the meeting: <http://www.parliamentlive.tv/Event/Index/8e66785a-0902-45e6-822d-f83de06ef6cb>

Members present: Meg Hillier (Chair), Mr Richard Bacon, Deidre Brock, Chris Evans, Caroline Flint, Kevin Foster, Nigel Mills, David Mowat, Karin Smyth, Mrs Anne-Marie Trevelyan

Sir Amyas Morse, Comptroller and Auditor General, National Audit Office, Adrian Jenner, Director of Parliamentary Relations, National Audit Office, Peter Gray, Director of Business, Innovation and Skills Value for Money Work, National Audit Office, and Richard Brown, Alternate Treasury Officer of Accounts, were in attendance.

*Witnesses:* Professor Madeleine Atkins CBE, Chief Executive, Higher Education Funding Council for England (HEFCE), Gareth Davies, Director General, Business and Science, Department for Business, Innovation and Skills, Martin Donnelly, Permanent Secretary, Department for Business, Innovation and Skills, and Hilary Reynolds, Executive Director, Research Councils UK, gave evidence.

**Chair:** Welcome to the Public Accounts Committee. We are here today to take evidence on the basis of the National Audit Office's Report on capital investment in science projects by the Department for Business, Innovation and Skills. The hashtag is #sciencespends for anyone who is following on Twitter.

We have been really interested in this Report—we are interested in every Report—because it shows clearly that in the past many operational projects have been delivered extremely well and some really good work has been done by BIS in evaluating projects and their benefits over time, but as figure 10 on pages 24 and 25 underlines, on more recent investments there has been a marked decline in the quality of information that you use, Mr Donnelly, to decide what projects to invest in and how you take decisions about them. One big concern we have is about how much projects will cost to run over time. Just focusing on that figure for a moment on page 25, under “Running costs estimated and funding/affordability confirmed”, seven are red and five are green, which is a bit of a worry.

I will hand over to David Mowat, who is going to kick off for us today, but first let me introduce the witnesses. Hilary Reynolds is from Research Councils UK, where she is executive

director. Martin Donnelly, a frequent flyer with us, is permanent secretary at BIS. Gareth Davies is also from BIS, where he is director general for business and science. Finally, let me welcome Professor Madeleine Atkins CBE from the Higher Education Funding Council in England, where she is the chief executive. Welcome to you all. David, over to you.

**Q1 David Mowat:** Thank you, and welcome to you all. As the Chair said, there is a lot of good stuff in here. My first observation would be that the spend at the BIS level is split into two halves, one for HEFCE and the other for the Research Councils. In terms of the thrust of the Report, there are two paragraphs on HEFCE, which are complimentary, so we will say, “Well done” for that and come back and talk more about that later. Most of the issues are around the Research Councils stuff, which are admittedly the higher value things. When you read the Report and see all the interesting things, it is hard not to be enthused about graphene and all the other things you are doing at the Crick Institute and all the good stuff; the issue, of course, is what is not here that might have been. Is the stuff that should have been here not here because it was not evaluated as part of your process to find it? That takes us to whether your processes to find the right projects are the right processes.

Broadly, the NAO conclusion appears to be that you had a very robust mechanism for doing that up to about 2010. I cannot paraphrase the words but I think that is on page 8, paragraph 11. In 2010, there was something of a step change in how BIS and the Research Councils addressed this. The NAO explanation of that was that you were told there was going to be less money going forward and perhaps thought, “We don’t need the process,” and then, when projects did come forward, they came forward in an ad hoc way. If you read paragraph 11, it says: “Prior to 2014 BIS did not have a plan for prioritising its capital investment.” That is quite a big statement in that sense. Did you agree that? Mr Donnelly, first.

**Martin Donnelly:** May I say first that we are very proud to be working with British science and research, which has delivered this? We know that our job is to try to help. It is deeply impressive that British science is still at the world’s cutting edge, and indeed on some measures is becoming more so. It puts a lot of responsibility on us to get this right. I give that as background because it is important for us. We are learning from this process and this is a helpful Report for us too.

I would not share that conclusion. I will let the NAO speak for themselves, but it is true that in the 2010 spending review we had a 40% cut in our capital settlement, which we had to adjust to; that was major change. We were able to draw on the large facilities road map, which the Research Councils had in place, to do that work. We were then able to renew the strategic investment framework by 2012; we had the eight great technologies, which you may remember. We also worked to improve our investment appraisal with our investment gateway process and so on. My headline answer is that we handled that as well as we could at a difficult time.

There were issues about the relative quality of all the business cases, which we have worked on and the Report picks up, although we can argue about whether something should be red or not and the precise comparisons used before 2010. There are some issues that come out. We have tightened our controls on value for money, but we have also made sure that the start of the process is scientific excellence.

**Q2 David Mowat:** If we go to figure 10, which is what you are talking about. As I said, the NAO point made in the Report is that something happened to your processes in about 2010-11, possibly in response to the fact that your expectation was that there was going to be less money,

fewer projects and everything else, and in the end there turned out to be a bit more projects than you expected. Figure 10 kind of shows that, doesn't it? The left hand side of the page, which is nearly all green, is what was happening up until about 2010 or 2011. The right hand side of the page is nearly all red, and notwithstanding the fact that you may not agree with a couple of them or whatever, that implies that something happened there—that your processes changed and that, from that point onward, you were not systematically evaluating things in the way that you had done.

In figure 8, which is just before that, there is a list of projects. I think the NAO use the phrase “ad hoc” more. It is suggested that that was possibly even announcement-driven—maybe Ministers wanted to announce things and you didn't have stuff to announce. There was not the robustness around it—that is the accusation. Do you want to comment on that? Do you accept it?

**Martin Donnelly:** No, not entirely. I do not think that our processes have got worse. I think we stuck to working with scientific excellence, plus the overall strategic priorities set by Ministers, consistent with Haldane and so on. We have further developed our processes. Part of the answer to that is the fact that, since the previous Report in 2007, more of our projects are being delivered on time and our processes for checking them have become more robust.

**Q3 David Mowat:** In fairness, I don't think it is about delivery; it is about what you are delivering. For an example, go to figure 10 again. The right hand side shows the period during which, the NAO has suggested, your processes changed. Approximately half of them had some kind of option analysis. That is not about delivery. That is about you doing some work to ensure that the project that you eventually end up doing is the right one. That is what we are talking about now.

I actually think that your delivery track record is quite good, but we are not talking about that. We are talking about whether we are happy that you are delivering the right things—whether there are some people out there who said, “Gosh, if they'd only listened to me, we'd have done this, this and this, and it would have been better,” and whether you have a counter to that. I will read the NAO's point again—it is meant to be an agreed Report—and they say, “BIS did not have a plan for prioritising its capital investment”. That is a very big statement. I would have thought that you might have tried to get that adjusted.

**Martin Donnelly:** It depends on what you mean by plan. There comes a point when it is more helpful to let the word stand than to talk about what we mean. We feel that all the projects we put forward referred to scientific excellence. We can talk about individual ones. We also feel that we have looked rigorously at the business cases for them and the output so far reflects that. Gareth, do you want to add anything?

**Gareth Davies:** If I can build on that point, in 2010 we asked the Research Councils to produce their large facilities road map. That led to the funding of eight projects based on scientific consultation. In 2012, they had their strategic framework, which set out things including the eight great technologies. A series of projects were financed from that. In 2014, we had a very extensive capital consultation, with over 400 submissions from a range of academic institutes from around the country. It is fair to say—I think this was reflected in the NAO Report—that there are some projects that do not appear either in the 2010 document or those from 2012 or 2014. However, in all cases, those projects came from scientific submissions to Government.

**Q4 David Mowat:** Okay. You are perhaps closer to this. What are the big projects you did not do that you might have done?

**Gareth Davies:** There is always a long list of projects that come through.

**Q5 David Mowat:** Do any spring to mind? I mean, these are the ones that won, as it were, and got the funding. As a list it looks like a good list, but I don't know how you can tell it is a good list unless you know what you haven't done. The fact that, apparently, no option analysis has been done implies that it may not have been as rigorous as it could have been.

**Gareth Davies:** Just stepping back a bit to the consultation, the 2014 capital consultation is important here. In spending review 2013, BIS was allocated the £6.9 billion capital fund. At that point, we launched a capital consultation, which went to a large number of academic institutions. It was an open consultation, so a number of private individuals also came forward with proposals for scientific facilities. Also, they came forward with proposals for how to split the funding between specific new facilities and improving what we are calling world-class labs—the ongoing care and maintenance of our asset base. That process included scientific input.

They were then assessed against a range of criteria, which included affordability, but also impact, leverage and the impact on skills. That then led into the allocation of projects, as set out in the long list of the 15 projects that were funded in 2014. That was the way in which we made sure that the funding went to the best possible projects at that point in time.

**Q6 Mr Bacon:** How did you do that? You are referring to the consultation that I think started earlier in 2014 and concluded by December 2014. If you look at paragraphs 2.9 and 2.10 of the Report on page 21 and onwards, they talk about the £5.9 billion of capital expenditure, but it says: “We”—the NAO—“identified weaknesses in how BIS used the responses it received...In particular: BIS did not specify the information it needed respondents to provide...and BIS did not have a clear rationale for how it scored the projects”. The Report states that “over half were not scored on what they would cost to run”, “information on running costs may not have been provided on a consistent basis” and “BIS has committed to some projects without determining how it will fund ongoing costs.” So how did you reach the conclusion that these were the best projects? That is what we don't understand, and neither does the NAO.

**Gareth Davies:** We had a consultation process, as I have said, with over 400 responses. We then assessed the submissions against the criteria I have set out: affordability, impact, skills, leverage. This was an initial screen. This is the important thing to say in terms of what I would call the lines of defence or the control gates we have for all these projects. First, there was an initial screen for the 15 projects. They were the ones that were announced in December 2014. However, that was an initial screen on initial acceptability.

Each individual project then went through a business case assessment in the Department. That then went through the investment gateway, which is chaired by our director general of finance, along with strategy analysis and other colleagues. Projects larger than £50 million subsequently go to the Treasury for sign-off and then a formal ministerial sign-off. At that point, the responsibility is passed on, normally to the Research Councils or, potentially, to HEFCE.

**Mr Bacon:** So they didn't need an outline business case to make it past stage one.

**Q7 David Mowat:** Just to develop Mr Bacon's point, if you go to paragraph 2.23, it says, "BIS instructed the research councils to take a 'lighter touch' to business cases." It says that there were "shorter" business cases with "fewer...options", given that some of the projects had "already been announced". Again, that does not imply that the projects we invested these hundreds of millions of pounds in were ones that had come from a bottom-up approach of rigour and analysis. It implies a little bit that announcements were made and then they thought, "We've announced the Graphene Institute to people. There's no point doing a business case now, because it's been announced; the Chancellor has said it." That implies there is a project and that there is not the robust process that you said, and it implies that the NAO conclusion is reasonable.

**Gareth Davies:** From all of the 15 projects identified through the capital road map and the capital consultations, there are detailed science cases. These projects did not just come into being just after we announced consultation. In terms of the scientific process, there will be a large consensus among individual disciplines about where the big new facilities should be.

If you look within the medical community, there has been a discussion over long years about the benefit of what we now call the Crick Institute but, essentially, a biomechanical facility in London linked to hospitals. These come through. If I look at the Square Kilometre Array, the scientific case for that runs over two volumes; it has more than 2000 pages<sup>1</sup>. These are significant scientific endeavours to pull these cases together.

**Martin Donnelly:** On graphene, because you pointed that out, the Government did make a strategic decision about graphene. It was not that there was not a business case; there was. We were also in touch with the University of Manchester about running costs and so on. We ensured that the detail was subject to a business case.

**Chair:** May I bring in Peter Gray from the NAO?

**Peter Gray:** I think there is an important distinction here. Reference has been made to the science case. We are not questioning the science case; that would not be for us. We are referring to the criteria that are listed on the top of figure 10, which are drawn from the Green Book. They are very much more about the business elements that would deliver that facility, which is based on the science case. I think that is quite an important distinction to make.

**Chair:** We may want to talk about some individual ones.

**Q8 David Mowat:** Thank you for that. In terms of transparency, we can see these projects, and it is very difficult to complain about them and, as we have said, they have been delivered. If we were to ask for the next 30 candidates, do you have a process for showing us what they would have been? If we asked you to write to us and tell us what are the near-miss projects—I asked that earlier and haven't had an answer—that might have happened but you made decisions that caused them not to happen, could you do that? Is that a fair question?

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<sup>1</sup> Comments clarified by witness in correspondence to Committee, 9th May 2016

**Martin Donnelly:** We can go back, in this case, to what the Research Councils have given us as a list of priorities. I think it is fair to say, Hilary, that your list is a bit longer than the ones that we were able to finance.

**Hilary Reynolds:** Each Research Council, following the capital consultation and in line with the investing for growth framework, which we had in 2012, has a plan for how it would like to invest in capital, and those are prioritised within councils against their own strategic plans.

**Q9 David Mowat:** One issue that struck me in terms of the process was that you have seven Research Councils. Life being as it is, there might be a tendency to try to ensure that you get a project for each Research Council, particularly if you have not got a very robust framework for analysing a business case, therefore to make that comparison, if you see what I mean. You just said that they all come to the meeting and they have all got a project and you say, "Right, we'll have one of each." Is that what happens?

**Hilary Reynolds:** No.

**Q10 David Mowat:** Did any Research Council not get any projects?

**Hilary Reynolds:** Not all of the councils have big capital infrastructure.

**Q11 David Mowat:** So I am wrong when I say that. Your role is to sit above the Research Councils.

**Hilary Reynolds:** I support the collective activities.

**David Mowat:** You do that, okay.

**Q12 Mr Bacon:** I am looking at a House of Lords 2013 report on the science base, which concluded in paragraph 17: "At present, there is no single long-term investment strategy or plan for scientific infrastructure in the UK. There are various documents setting out proposed investment needs, but there is no single document or forum which sets strategy. As the Government themselves told us: 'There is no single national strategy for national scientific infrastructure in the UK. This is in contrast to some other countries such as France and Germany where a national strategy is managed by a single Government Department.' The Government maintain that 'the UK's scientific excellence thrives under the current governance model'; however, the evidence we received suggests that planning and governance could be improved upon. Our attention was repeatedly drawn during this inquiry to the Research Councils UK publication, *Investing for Growth: Capital Infrastructure for the 21st Century*, but equally, we were made aware that this document, quite deliberately, did not set priorities and does not therefore constitute a national strategy or investment plan."

Is it your evidence that you do not need a national strategy or investment plan, and that this "let a thousand flowers bloom" approach works better than what happens in France or Germany?

**Martin Donnelly:** I think it is a good challenge, and I don't think we should ever be too definitive about it. The evidence so far of the effectiveness of our scientific research suggests that the model we have is delivering effectively, but it is right to go on asking ourselves the question you raised, Mr Mowat, about whether we are sure that we really are rigorously choosing between different areas of science and—Professor Atkins might want to come in on this point—whether we are funding enough of the science infrastructure across universities, which delivers so much of the base that we can then use for our science.

**Professor Atkins:** From the point of view of that overview of the infrastructure of the research estate across our universities, which as Martin Donnelly has said is a very important substrate on which almost all of this depends, we take on a periodic basis an independent view of how robust that estate is and what shape it is in. We calculate, as we did when preparing evidence for the 2014 capital consultation, whether a significant backlog is building, which over time might have a deleterious impact on research in this country. We present that evidence to BIS and to Government, and we also put it into spending review cases.

It is quite important that we understand that there are overviews of that kind in place and that we are very live to changes, for example in disciplines, that might mean that the way research has been conducted in the last five years is going to change radically and that there will need to be new equipment, new techniques and so on if this country is to keep up with the world stage. There are some quite careful appraisals made on a periodic basis—

**Q13 Mr Bacon:** How periodic? How frequent?

**Professor Atkins:** The last one was in 2014, and the one before that was in 2010.

**Q14 Mr Bacon:** This is looking specifically at capital investment in the science space?

**Professor Atkins:** This is looking at the research estate across universities—for example, what sort of condition the laboratories are in.

**Q15 Chair:** We see in this list a number of announcements. Figure 8 shows announcements made by the Chancellor on a regular basis about new institutes. When those sorts of discussions take place, are you approached to see what existing facilities might be able to absorb a new institute? I ask because there seem to be an awful lot of new physical buildings being built and I just wonder whether they are always necessary.

**Professor Atkins:** BIS co-ordinates intelligence not just from us, but from Research Councils and Innovate UK, and we feed into the discussions and decisions that are being held in BIS on those items.

**Q16 David Mowat:** Let me ask you a question, Professor Atkins, because I don't really understand. Figure 1 on page 5 shows a total of £1.1 billion, and the initial split is £287 million for your side and £756 million for the Research Councils. What was the basis for that decision? If it was out by, say, £50 million either way, how would that point be discussed and debated?

**Gareth Davies:** Let me go through the process. It will inevitably be a judgment call, because there is no mathematical way in which a precise number can pop out of a calculation. The way we approached it in the 2015 spending review was by going to our delivery partners—Professor Atkins and Hilary Reynolds—and asking them what their capital needs were over the forthcoming spending review period. That was obviously subject to an amount of challenge and discussion internally, so that we understood the baseline of those numbers. We tested what the assumptions were behind that and the implicit need for additional capital funding for maintenance. Once we had established that number, we identified the amount of capital available for new projects, so new grand challenge funds. We looked at the overall quantum of demand and compared that with the £5.9 billion total funding we had from the Treasury. We then had a series of iterative conversations to make the demand meet the supply.

**Q17 David Mowat:** Are you effectively evaluating projects against each other from either side of that line? Could you have a project in the HEFCE area being evaluated or pushed out by a project on the Research Councils area because it had a better business case and vice versa?

**Gareth Davies:** No, the sequencing works this way: we take the £5.9 billion and then decide the allocation between what we call world-class labs—that is the maintenance of the existing estate—and the amount of funding that we want for what we call grand challenges, that is, essentially new facilities. That was being informed on the basis of the capital consultation and the information we got back through the consultation in 2014.

We take that as the starting point and our first judgment. We then get the information in from both sides around the running capital needs, the baseline capital requirements, and tension those against each other. The tension, if it exists, is between the running costs—

**Q18 David Mowat:** You mentioned the existing estate. One of the NAO conclusions is that there is a lot more work done on understanding the infrastructure, which is another way of putting existing estate, on the higher education end, than there is on the research council end. Do you agree with that?

**Gareth Davies:** I refer back to the scale of the infrastructure owned on both the higher education side and the research council side. I think it is an order of magnitude difference in terms of value.

**Q19 David Mowat:** So, what you are saying is that it is harder to do but the conclusion is right.

**Gareth Davies:** It is a lot more important given the scale of the assets they are both managing.

**Q20 Mr Bacon:** Given the evidence in this Report, I still do not feel that I have a full answer to Mr Mowat's question about the rationale for how much goes to Professor Atkins, the £287 million, and how much goes to the seven research councils, the £756 million. You have described this process but, based on what the Report says, the unprejudiced layperson would be inclined to

give more to HEFCE and less to the rest. HEFCE comes out of this rather well. To quote paragraph 2.18: “We found that HEFCE had collected the evidence it needed to support its investment decisions in all of the cases we reviewed. In particular, HEFCE requires evidence that the project’s funding sources for operating and research costs are sustainable”—whereas the Report is also clear that the other side of that chart, the BIS side if you like, does not do that. Shouldn’t we take some of the money away from these research councils and give it to HEFCE because it will spend it better?

**Gareth Davies:** The critical point is that there are different types of projects. It is part of the dual funding system for science, which is a combination of strategic investments, which will always be made through the Haldane principle, where Ministers ultimately decide on the strategic priorities, informed on the science case, of big new facilities—things such as the Diamond Synchrotron at Harwell. On the HEFCE side, the focus is on the existing capital infrastructure and improving that. Those are very different types of capital and decision-making processes that sit behind it.

**Q21 David Mowat:** But in the evidence, the figure 10 analysis applies to the non-HEFCE bit, but they also do that in HEFCE, broadly speaking. The various options here in terms of running costs, business case and all the rest of it, they do that in HEFCE as well.

**Professor Atkins:** There is one rather clear distinction, at least as far as the in-scope work of the Report is concerned, which is the UK Research Partnership side of what we do. This is different in as much as there is a requirement of co-investment 2:1, so for every pound of public money there has to be £2 from another source, preferably from private industry but also allowed from charitable and benefactor sources. My understanding is that when this scheme was introduced, in a sense it was to see whether it was possible to leverage in that kind of additionality into the research base of this country in ways that would be highly beneficial both for industry and for the university sector, but it was not known how successful that was going to be.

**Q22 David Mowat:** It is reassuring to hear of that matched funding or whatever you call it, but you could argue that the private sector or charitable foundations such as the Wellcome Trust are more demanding than Government that they get proper business cases or they do not invest. That is a bit of an indictment if you see it that way. Because what you are saying is that the reason that HEFCE apparently is doing it all so well is because you have to be, that the private sector requires that discipline or it will not invest, while the Government do not.

**Martin Donnelly:** I would make two points on that. As Madeleine said, it has been a very successful experiment, which inevitably works better for areas that are potentially closer to the market. We need to make sure that we are also funding areas, such as quantum technologies and so on, that are a long way away from that stage and where the funding, if it is going to happen, has to be, at least initially, very largely public sector. I would also stress that we do through our internal BIS processes make sure every project has a business case, which we examine, but we do need to make sure we are funding some genuinely blue-skies research.

**David Mowat:** You do, but funnily enough, in a sense that makes the need for discipline even more important, because you have the choice between what you might call ultra-pure science and much more applied science.

**Q23 Chair:** David, I am going to bring in the NAO here, just to inform our discussion, and then you can come to your question.

**Peter Gray:** To help the Committee to understand the prioritisation process, certainly for the big projects there is at least a two-stage process. For example, there was the exercise reported in December 2014 where effectively there was the long list of projects. That was based on a consultation with the sector; people were invited to come forward with projects and ideas. Our concern about that is that they were not specific about exactly what information they might need to support those proposals, and on the running-cost issue we highlight some gaps in figure 9. That is the point where you are drawing your line on that long list. You are saying, "Right. These are our priorities, based on the science and the business elements of the project. That is our long list, so there are projects that are not going to get through that sift." We had concerns about the information that was available and the ability to make those priority decisions at that point.

Once that is done, there is a second stage, which is the business cases. That is where the more rigorous attention is paid to detail, and our concerns are outlined in figure 10. The prioritisation happens at the initial point. There is also an opportunity for prioritisation at the business case point.

**Sir Amyas Morse:** One other thing that I hope will be helpful to Mr Mowat is this. As I understand it, there was a change of responsibility. With the change of funding, there was a change in responsibility. As I understand it, the Research Councils took the preparation of the case further. You ask yourself when you look at the left hand side of figure 10: why were all these questions, largely speaking, being answered at one stage, and then we see these gaps in the information on the right hand side? It appears to me that the reason for that is that the Research Councils had more responsibility for bringing the case to maturity before making a submission to the Department under the previous system; that has now changed.

**Peter Gray:** That is the system outlined in figure 15.

**Q24 David Mowat:** Would you like to comment on that point? It's quite an interesting point that has been made. That is how we started, in a sense: I said that there had been a step change or a different approach taken in 2010-11, which had caused this difference in the two parts of figure 10. Mr Donnelly, you didn't really accept that had happened. Your evidence to us was that you thought the statement on page 8 was potentially wrong. Now perhaps Mrs Reynolds will give us her view.

**Hilary Reynolds:** I have been in the Research Councils for a year now, and clearly people in the Research Councils have been a great deal more expert on their individual cases than I am. I would say that irrespective of the source of the initial proposal, whether it was through the consultation, a Government strategic proposal or a bottom-up responsive one, the Research Councils have always focused first on the science case and then on the full range of business case areas, and they have always met all the requirements of BIS for business cases, the Treasury and, sometimes, the Cabinet Office. It is core to the Research Councils' being that they make sure the investment is the best possible one for the advancement of discovery science and applied science.

The other thing I want to get across is that the Research Councils' capital investment, slightly differently from HEFCE's, is frequently at the absolute cutting edge, not only in complexity and scale, but frequently in extreme places.

**Q25 David Mowat:** I was about to ask about the difference between applied science and discovery science. The fact is that they are so different—they are so different to monetise and so hard to monetise; I accept that. That seems to me to suggest even more of a need for some kind of rigour in this, such that you can justify a decision. I would have thought you have lots of people whose projects have not been accepted, to whom you have to explain why not. In the absence of some of the things that the NAO is saying are not there, it must be quite hard to do that sometimes.

**Hilary Reynolds:** Research Councils operate competitive funding and use a lot of peer review, in which expert academics from this country and elsewhere challenge and support, and differentiate between what we should fund and what we shouldn't. That approach is taken in thinking about capital investment, as well as project investment. I would say that it feels pretty rigorous, with the amount of challenge, testing and analysis that goes on.

**Q26 Mr Bacon:** Really? That chart sort of says the opposite. Do you accept the underlying message of that chart? This is figure 10 on pages 24 and 25. It shows on the left what used to happen and on the right what has happened more recently. The criteria include the assessment of alternative options, running costs, potential demand evaluation, sensitivity analysis of costs and benefits, planning for the tracking and assessing of benefits realisation, and the return on the estimated investment. For all of those, or nearly all of them, there is a lot more of it going on on the left and a lot less of it going on on the right. That's why it's much more orange on the right. Do you broadly accept the picture that is painted by that?

**Hilary Reynolds:** I have read the NAO Report and we have accepted its findings.

**Mr Bacon:** So you do broadly accept that characterisation.

**Hilary Reynolds:** I believe that the Research Councils apply all the rigour they are asked to and meet every single aspect.

**Q27 Mr Bacon:** Of course, it depends what they are asked to apply, doesn't it?

**Hilary Reynolds:** That's what we're asked to do.

**Mr Bacon:** Indeed.

**Chair:** Figure 8.

**Q28 Mr Bacon:** Thank you. The bullet point that I was referring to before was actually in paragraph 2.10, but the Chair points to figure 8. It does depend what the Research Councils are asked to do. "BIS did not specify the information it needed respondents to provide" and it "did not have a clear rationale for how it scored the projects." You are obviously going to do what is required of you and not necessarily do things that you have not been asked to do, although if you wanted your project to score better than somebody else's, one would hope you would provide some of that information anyway. You are basically saying you weren't asked to provide it.

**Hilary Reynolds:** I believe that Research Councils take their business case analysis really, really seriously.

**David Mowat:** Just on the point that Mr Bacon is talking about, it says: “BIS advised the research councils that the length of the business case should recognise where investments had already been announced and the strategic case had already been...accepted.” That kind of says there was a different process.

**Chair:** A strategic political process.

**Q29 David Mowat:** Yes. In a sense, I think we have covered this.

I know Mr Bacon will cover the business case stuff in a minute, but I want to come back to one answer that I think I received from Mr Davies. I was asking about infrastructure and knowledge of the existing stuff, and we heard that the NAO made the point that HEFCE did it well and it was patchier on the other side. You were making the point to me, which I did not fully understand, that one of them was an order of magnitude different from the other.

**Gareth Davies:** Exactly. Apologies if I was not clear. The HEFCE side are responsible for the vast majority of the research infrastructure in this country—at a rough estimate, it is about £200 billion compared to around £20 billion.

**David Mowat:** In terms of labs and stuff like that.

**Gareth Davies:** Exactly, because of their responsibility for the universities, whereas the Research Councils have a much smaller number of specific institutes.

**Q30 David Mowat:** Okay. Is that not even more reason to know what they’ve got? If they’ve got less of them, it’s an easier job. Therefore, the point that they apparently don’t know is a more serious point.

**Gareth Davies:** I will let Ms Reynolds come in.

**Hilary Reynolds:** I am not sure I understand, because we know—

**Q31 David Mowat:** One of the recommendations that the NAO made in its Report was that more work should be done on understanding the existing infrastructure on your side of the line, whereas HEFCE apparently did it well. Mr Davies has just told us that it is a bigger job for HEFCE—maybe your material matters more, but nevertheless it is a bigger job for HEFCE—so I am interested why that is not the case on the other side of the line. I guess we are talking about places like Daresbury.

**Hilary Reynolds:** We have clear maps of where all our infrastructure is—our labs, institutes and so on. In fact, we published a map of our landscape in February this year, which I can send you the link for. We know absolutely where all our infrastructure is and where our capital is.

**Q32 David Mowat:** Okay. I have a final question before we move on to the business case. Is geography in any way relevant to where these projects happen and where this money is spent?

**Hilary Reynolds:** For the research councils, scientific excellence and research excellence are where we start our case for science. The mapping that we have done quite recently shows a very good distribution across the UK, and indeed in international collaboration.

**Q33 David Mowat:** But that is just a happy coincidence—there is no effort to make that happen. Or is there?

**Hilary Reynolds:** We start with excellence in research, irrespective of where—

**Chair:** Let me bring in Deidre Brock on that point.

**Q34 Deidre Brock:** I represent a Scottish constituency. Concerns have been raised with me that, although our Scottish universities certainly punch well above their weight in attracting funding from Research Councils, we are not doing well at attracting funding from the UK Government in Westminster—from their infrastructure spend on R&D. Do you have any comments on that? Could you also go into a little more detail on how the mapping is done?

**Hilary Reynolds:** I would have to write to you with details of the investment in Scotland, although it is set out in our publication.

**Deidre Brock:** Mr Donnelly?

**Martin Donnelly:** I just want to add a point on geography. First, I underline what Hilary said: we have to focus on excellence. We also have to make sure that we are making the best of the connections in regions across the country: between research, between universities and between centres of innovation, especially as those grow up. We are doing some work around that now—starting in the south-west, I think?

**Gareth Davies:** That's right.

**Professor Atkins:** May I just make one point on the UKRPIF? Until now, research excellence has been a threshold—there has to be that—but geography has not been a particular criterion beyond that. Now, for rounds 5 and 6—the current round, which has just started, and the next round—we are encouraged to take into account local collaboration, for example between a group of universities and small and medium-sized enterprises in the same area, where they may come together and seek to develop some global strengths and become more competitive as an area. That is new for the UKRPIF round 5. The first call for it has just closed, and I am delighted to say that this April we have had double the number of proposals that we had in previous rounds.

**Q35 David Mowat:** I once asked a Science Minister a question about this—I won't say who it was. He told me, "They always talk about excellence as the first thing. That's a euphemism for the golden triangle of Oxford, Imperial and Cambridge." I think I might have been asking him why we decided to put the Crick Institute in London—that was before I knew it was going to be on the Crossrail 2 site, but we might get on to that later. He explained that the strength of Imperial College,

Cambridge and Oxford as ultra-world-class science universities—three of the best universities in the world—tends to mean that there is a pool there. Would you care to comment on that?

**Professor Atkins:** Looking at the UKRPIF projects that have been decided, you can see from the list in the back of the NAO Report that Manchester, for example, has achieved. We have five in Scotland, two in Wales and one in Northern Ireland; it is a UK-wide scheme and 22 different institutions have benefited from it. I think that has been reasonable, but now we—

**Q36 David Mowat:** It does look a little odd to have the Crick Institute in the middle of London, et cetera.

**Professor Atkins:** That is not a question for me, I am afraid.

**David Mowat:** Who is it for?

**Q37 Chair:** Who is responsible? Mr Davies? Mr Donnelly, since you are in charge of everything?

**Martin Donnelly:** We have to go with excellence. It would not be sensible to say that we are not going to put things in a particular place because other things are there. In the case of the Crick Institute, it is pretty much a groundbreaking structural partnership between the Government, the third sector, charities and so on, and a very exciting one.

The decision was made very clearly, but I echo the point about other parts of the country, whether it is Edinburgh on medicine or Strathclyde, which does interesting work on materials linked into innovation. We are very aware of the fact that excellence changes, just as new sectors emerge, and we really do look out for that.

**Q38 Mr Bacon:** On that point, are you aware of the golden triangle between Cambridge, the Norwich Research Park, which has the largest concentration of food and plant scientists in Europe, and Martlesham near Ipswich, where the BT labs use more electricity than the average small town?

**David Mowat:** It is a different triangle.

**Mrs Trevelyan:** It is a smaller triangle.

**Mr Bacon:** Actually, geographically, it is a bigger triangle. In terms of the business case, the greatest strength is because, for example, land prices are lower. Are you aware of that triangle?

**Martin Donnelly:** I have always thought of it as the East Anglian dynamo.

**Q39 Mr Bacon:** Ben Gummer copyrighted the phrase “the new California,” but are you aware of the investment potential in that triangle, because at the moment, as shown on your splendid chart in figure 25, there are a lot of numbers that are suspiciously round—£30 million, £75 million, £225 million, £75 million, £120 million, £50 million, £60 million and £50 million. The Norwich research park gets £26 million, which I am grateful for because it is one of the places in my

constituency where you will always find a broadband signal. We would like other centres in South Norfolk also to have broadband, but I am not sure that will be your criterion.

In seriousness, are you aware of the potential of that triangle? Cambridge is trying to compete with Harvard. Lab technicians do not get paid a fortune even at Cambridge, and they need somewhere to live—they need cheap housing.

**Chair:** You have made your pitch, Mr Bacon.

**Q40 Mr Bacon:** When you are looking at the overheated parts of the country, should that not be part of the case in terms of benefits realisation?

**Martin Donnelly:** It is also interesting how Norwich and Cambridge are beginning to connect along that axis. We have to work this into our infrastructure decisions, because that is very important too, but you are right that we have to make the most of it. The other point I would make very briefly is that we have to ensure that we are linking all the pure science into innovation ever more effectively. That is something we are looking at in the next stage of reform of the Research Councils.

**Q41 David Mowat:** I have a final question on figure 10, which is the red and the green on the left hand side of the chart. Would you, Mr Donnelly and Mr Davies, commit to this next time you come to us? When the NAO has looked at your processes, we would expect a lot more green than red, rather like it is on the left hand side of the page, as it was before 2010. Is that a reasonable thing for us to ask you to do?

**Martin Donnelly:** On a like-for-like basis, yes. I believe we are getting better at this. I would add one point: it is genuinely difficult to do sum returns on investment in a very blue-skies area. I do not want us to produce figures that look accurate but are spurious.

**David Mowat:** I don't want that either.

**Martin Donnelly:** We have to be honest when there is uncertainty.

**Q42 David Mowat:** Now you have said that, I am going to ask another question. Are you doing more blue skies stuff now than you were doing five years ago?

**Chair:** For the record, Hilary Reynolds is shaking her head.

**Q43 David Mowat:** Your answer would have been rational had that been the case. If you use a little more red, the reason is that you do not do things quite so rigorously as you used to; it is not because you do more blue skies stuff.

**Martin Donnelly:** The reason I made the point—we accept the message and we want to go on getting better—is that our experts tell us that some of those cases on the left were a bit more straightforward than some of the ones of the right. I do not want to overstate that.

**David Mowat:** Thank you.

**Q44 Mr Bacon:** I would just like to go into this question of the business case and what information is required. It says in paragraph 2.11 that, of the 15 new projects that BIS selected from consultation responses, over half were not scored on what they would cost to run. If you turn over to page 22, you will see a chart—figure 9—that has running score costs down the right hand side. There are some numbers, but mostly there are just dashes because no scoring was done. Why wouldn't you, in asking the question, "Shall we fund this?" ask about the running costs? Why wouldn't you do that?

**Gareth Davies:** As part of the business case process, we typically will look at the running costs issue.

**Mr Bacon:** Over half were not, it says.

**Gareth Davies:** There are two points that I would make. One is that we tightened our business case process from 2013 with the introduction of the investment gateway and the standard use of the five-factor model of business cases. That is now formalised.

**Mr Bacon:** I'm sorry. Can you say that again more slowly so I can understand what you're saying?

**Gareth Davies:** I apologise. Since 2013, we have introduced an investment gateway in the Department, with a standard business case approach.

**Q45 Mr Bacon:** Which includes running costs.

**Gareth Davies:** Exactly.

**Q46 Mr Bacon:** So back to my question, why would you not include running costs? In the pre-2013 period, why were running costs not included in over half of cases?

**Gareth Davies:** Sometimes it is a reflection that something has been missed. We take that lesson from the NAO; we recognised that we needed to improve. However, in some cases, we are funding different types of science projects that have different needs. Sometimes we have commitments from the universities or the research councils that the running costs will be met from within their existing budgets. Sometimes—especially on international subscriptions—

**Mr Bacon:** Did you say commitments or assumptions?

**Gareth Davies:** Commitments, to be absolutely clear. Sometimes on international subscriptions the running costs are not appropriate. The way in which the negotiations are—

**Q47 Mr Bacon:** Yes. I noticed that there was £28 million somewhere for international subscriptions. These are for a variety of international bodies to which the UK is a subscribing member. That is all good stuff, but it is relatively small beer compared with the total amount of

money we are talking about. When will you provide evidence that the 2015 spending review settlement will cover the cost of running projects?

**Gareth Davies:** What we have done as part of the process I talked about before, where we went through the allocations on the spending review between the research councils and HEFCE, is to understand the running costs required for all of the capital projects—both those announced in 2014 and the longer list of world-class lab facilities that we have announced. Our analysis suggests that it is £140 million a year—that is on average; it moves, obviously.

**Mr Bacon:** Sorry, £140 million—

**Gareth Davies:** Of running costs.

**Q48 Mr Bacon:** By “on average”, do you mean on average each year?

**Gareth Davies:** On average each year.

**Q49 Mr Bacon:** For the totality of the funded projects.

**Gareth Davies:** Yes. So that is 3% of the resource budget or the running cost budget that we give to HEFCE and the research councils. We see that as affordable. That is part of the conversation in the spending review to tackle this. One of the issues with running costs is that they fall over different spending review periods. That is always going to be a problem within the Government accounting protocols, because you are going to run up to that.

**Q50 Mr Bacon:** There is a bigger issue. If you haven't analysed to start with what the running costs are going to be, and you acknowledge that you were not doing that pre-2013, when you get an idea of what they are they turn out to be slightly larger than expected, that is going to end up distorting the research priorities of those Research Councils—it can't not, given that the Research Councils are operating within a given budget. They will have less money to spend on research than they originally thought. Isn't that true?

**Gareth Davies:** I come back to the figure. In terms of the orders of magnitude—the actual size of the required running costs—we estimate that it is about £140 million, which is about 3% of the overall resource budget for research, both on the HEFCE side and the Research Councils side.

**Q51 Chair:** Just to be clear for the record, you do acknowledge that the NAO was right and you should have done more to look at running costs in the business case.

**Gareth Davies:** Yes.

**Q52 Chair:** We like it when people agree with what is written down.

**Sir Amyas Morse:** A very quick comment on this for information. It is not so much the relationship between this and the rest of the research budget; it is more the fact that it gobbles up your discretionary funding in the budget—I see that you agree with me, Ms Reynolds. That is a real problem, because often in budgets for institutions of this kind, the discretionary funding is vanishingly small in the first place, and events happen that you need to respond to. That is the problem. I agree with you that it is not a vast proportion, but tactically it is very significant.

**Martin Donnelly:** I accept that point. I believe that, as Gareth said, we have reset the position satisfactorily following the spending review. Our responsibility now is not to allow it to get it out of line.

**Chair:** Good. I am pleased to hear that.

**Q53 Mr Bacon:** On the Research Councils, Mr Davies mentioned that the approach varies for different types of research. The Report refers to the fact that some have been very directly involved, either through receiving quarterly reports to their board or actually having a representative on the board of the relevant entity, and other are much less involved. Hilary Reynolds, are you satisfied that the current architecture is now adequate in all cases?

**Hilary Reynolds:** For our capital projects?

**Q54 Mr Bacon:** Yes. Is there further tightening up that you would like to see? If so, where?

**Hilary Reynolds:** I am thinking about this in another role as part of a high-risk programme review of the MPA. I think the Research Councils have come a really long way in the last few years in strengthening the governance, accountability and transparency of what they are doing. They now have a SRO, with the training and wherewithal, and project management is now really very good; they spend a lot of time making sure that the councils, which are the governing bodies, understand the nature of their investment, their risk and issues and all of that. So I would say it is really very good for some pretty serious, complex and very long-running programmes.

**Q55 Mr Bacon:** You mention the MPA. How many of the people running these entities have been through the Major Projects Authority process? We as a Committee have visited the MPA—the Chair and I have visited it twice—so we know something about the way it works. We have seen Mr Manzoni, and then Mr Meggs, here routinely. How many people have qualified and are MPA graduates?

**Hilary Reynolds:** I will have to come back to you on that.

**Mr Bacon:** Can you?

**Hilary Reynolds:** Some of them are certainly going through it at this moment—

**Q56 Mr Bacon:** Yes, it would be helpful to know how many in total, how much exposure each person has had and how many what you might call fully fledged graduates there are. If you could write to us with that, it would be helpful.

Do you think you can learn anything from HEFCE? The Report says that, from the NAO's sample, HEFCE's process appears to be consistently more rigorous.

**Hilary Reynolds:** As I was saying, absolutely, I think we can learn from HEFCE, particularly from its very systematic approach. We do very different things but there are ways in which we can improve, working more closely on that.

**Q57 Mr Bacon:** Professor Atkins? Are you so marvellous you have nothing to improve on or can you also still improve?

**Professor Atkins:** Heaven forfend that we should be complacent. We have, for example, accepted the recommendation in paragraph 2.19 in the NAO Report: when we ask for business case information, we should get a range of estimated costs on running costs, not just a single figure. We implemented that straightaway, in the round for RPIF that has just commenced.

The other thing we have done this year is to ask KPMG to audit all the RPIF projects. There have been some very positive findings from that. We are still awaiting the final report, but they have pointed to a couple of areas where we can tighten up and improve further. We have already implemented one, which was to change the pattern of payments to the projects so that the funding goes out monthly on receipt of expenditure evidence. The other interesting and quite difficult point that we need to grip a little more firmly is where the investor has made some of the co-investment in kind. There are a vast range of ways in which that has been done, although it is a very small percentage of the overall co-investment. I think KPMG will recommend to us that we tighten up our guidance to bidders on how that should be evidenced and recorded. That is just two examples of ways on the co-investment side where we could be better still.

**Q58 Mr Bacon:** Mr Donnelly, Professor Atkins referred to paragraph 2.19, which talks about the sensitivity analysis of costs and benefits. Your Department, however, is taken to task in paragraph 3.14 for not having a systematic approach to assessing benefits at all. Out of 20 business cases the NAO reviewed, "9 did not include a plan for realising benefits once the project was operational" and although "many projects are expected to lead to economic benefits...BIS does not always calculate the economic benefits arising." Gateway 5 reviews are "usually carried out only 1 year after the project becomes operational." What have you got to learn in terms of improving your focus on benefits realisation?

**Martin Donnelly:** That last point is a very specific way in which we can and are going to improve. It is clear that looking at a lot of these projects just one year after they are in place is far too early. We have to move that back, and we will do that. The other question is how we go on checking years later. In classic areas like lasers—we had some work on that being shown off in the Department today—they are still producing new medical research innovations from research that took place 20-odd years ago and has come through. We need to make sure that we do not stop at an arbitrary point. What we must not do is do it too quickly. We must also make sure we are picking up the full range of social, health and other related benefits—not just narrowly economic, if I can put it that way.

**Mr Bacon:** I have one more question—

**Q59 David Mowat:** I was just going to make a point. I think we agree with the fact that the Gateway 5 review carried out after one year is too soon, and you say that is something that you will fix. However, of the 17 projects they looked at, only three had had a Gateway 5 review at all. So that is a second point, actually. At least doing one after one year is something. The majority of them did not even have that.

**Martin Donnelly:** And we have tightened up our procedures so that from now on this cannot happen, but it is a point that in the past we were not as rigorously consistent as we needed to be across all of these projects.

**Q60 Mr Bacon:** It is easy to be critical—constructively critical; that is what we are here for—but I am looking at a chart of Nobel prizes by country and this country comes second after the United States, which has 323 in total. This may be a slightly old chart from the BBC, but it is not that old. The United Kingdom has 117 and Germany 103. We have more than double the number of France, which has 57. Most of ours—not all—are in chemistry, physics and physiology or medicine. I know it is a crude index, but obviously that is a reflection of cutting edge research that has made a significant difference. As a criterion for where you ought to be putting your money, it is not a bad one. To what extent, in a broad top-level sense, are you trying to make sure that the right proportion of the totality goes into what you might call cutting edge research that will make a real difference and lead to Nobel prizes down the road, among other things? A Nobel prize is a reflection, an acknowledgement that something has happened of importance. It is an after-the-event thing. To what extent is that the approach?

**Martin Donnelly:** That is a massive question, and I think both Hilary and Madeleine may want to come in. I would just say that we do have to focus on excellence, and Nobel prizes are a nice, if slightly anecdotal, way of getting there. We also need to focus on impact. Someone said that applied science was just pure science further down the line, which is why we need to keep a close eye on what happens from the pure science all the way through. We also need to make sure that we are attracting the right people into research here—they have got the right facilities; we are funding them to use the facilities effectively; we are setting up the right teams; we are building on success—and also that we who are not experts do not end up making those decisions. Our system is quite good at ensuring that the experts tell us what is going on in the science community. We can challenge that and talk about it, but we are not deciding it ourselves.

**Mr Bacon:** Perhaps Professor Atkins will comment.

**Professor Atkins:** I think it is a little too easy to say you have got pure research and then you have got applied research. On the ground it is more complex than that. The two interweave and they feed off each other. Applied research can yield questions that are pure research questions and so on. That is the first point I want to make.

The second point, certainly with regard to the UK RPIF funding, is that it is deliberately designed to bring academic researchers and industry-based researchers together, working—in almost all cases here—in the same premises, sharing thoughts, sharing ideas, sharing the excitement, the passion, the commitment. If I may back up something that Martin has just said, one of the things that we focus on a lot in the RPIF selection process is the calibre of the teams that are going to be undertaking the work and the evidence of that passion that they have.

For us, one of the other criteria in the first four rounds has actually been disciplinary spread. While it is indeed vital for this country in the life sciences, in aerospace and so on, that we maintain world-leading positions—and in some cases we know we are not quite as good as the US and if we invested in this area we could actually make that up—given the grand challenges, the really big, tricky, social economic issues that the country and indeed the world faces, it is no good ignoring all the other disciplines, because you do need people who understand how communities work, who understand something about history and politics, who understand about trade, alongside the engineers and the scientists and so on, if we are actually going to have a very successful attack.

**Mr Bacon:** Before you know it you will be redesigning our education system.

**Professor Atkins:** Well—

**Q61 David Mowat:** That might be true, Professor Atkins, what you just said: you need people who understand how communities work and how politics works; but you don't necessarily need to fund them from a science budget.

**Professor Atkins:** The UK RPIF is a research budget. It is not just purely a science budget, and many of these new projects are multidisciplinary, so you do actually have in the same building people from different disciplinary backgrounds, who are very good, with their backgrounds coming together, looking together at some of these intractable problems. So we would say it is important to keep health in our disciplinary base.

**Q62 David Mowat:** Yes, you see, I asked a question earlier which was sort of getting at this point, which is that you have seven Research Councils, and, given that you have that, there will be a pressure to give them all some projects, not necessarily based on business case; and in fact there was a project that caught my eye, which was, I think, the baby one.

**Caroline Flint:** The life study.

**David Mowat:** The life study one. It was economic and social. I was a little bit surprised that that was being funded by this process; and I guess the reason was that they have a research council and they put the thing in and it got agreed, because otherwise they make a big fuss at the meeting, or something. I know this particular one did not go that well, and that is another matter—that sometimes happens. Would you claim, though, given the fact that we were doing it at all, that it would have been subject to the same rigour, business case, evaluation, as everything else? Would you just put my mind at rest on that?

**Hilary Reynolds:** Yes, it was, and one of the reasons why the decision was taken to discontinue was the governance and the external review and challenge.

**Q63 David Mowat:** So the life project that is looking at that stuff would have been evaluated against, inter alia—I don't know, the National Graphene Institute; because the same requirements in terms of eventually producing a cutting-edge UK contribution to Nobel prizewinners or GVA or something would have been applied to it.

**Hilary Reynolds:** Same framework.

**Q64 Chair:** Can we just look at figure 8 on page 20? I thought, going back to paragraph, 2.24, that the number of light-touch business cases was interesting, because it was already announced. An awful lot of these are announced in Budgets or Autumn Statements, I note; but let's take, for example, the Alan Turing Institute. At the point it was announced in the Budget in 2014—you might want to refer to page 25 as well, because it is also instructive, I think—how much of a business case had it gone through? I do not know who wants to answer that. Mr Donnelly or Mr Davies? Who is the Alan Turing Institute person among you?

**Gareth Davies:** The background to this is that the proposal came out of the Council for Science and Technology. So this came out of the Prime Minister's Council for Science and Technology, chaired by Sir Mark Walport and Dame Nancy Rothwell, on the back of a report called "The age of algorithms". There is a wide consensus across the scientific community about the importance of data analytics, machine learning and algorithmic learning, in terms of both UK industry and—

**Q65 Chair:** Okay, so it came out of that. When was that?

**Gareth Davies:** That was 2013.

**Q66 Chair:** So 2013. So it came up as an idea and between 2013 and 2014 how much of a business case did it go through?

**Gareth Davies:** In terms of the Budget 2014, Ministers announced a strategic decision to go ahead with this. At that point—I think this is the important point: Ministers will announce a project based on a scientific case and it will be subject to a business case. So following that announcement we took it through the business case process.

**Chair:** It got an approval in June 2014, in the Budget. I forget the exact date, but it would have been March, wouldn't it, 2014? In three months had it gone through the whole business case?

**Gareth Davies:** The approval at the Budget in 2014 was at the strategic level, so it was only a decision in principle. It is always, at these fiscal events, subject to a full business case.

**Q67 David Mowat:** You would have to be quite brave to go back to the Minister and tell him it failed, after he had announced it, wouldn't you?

**Gareth Davies:** Can I give two examples of where we have done that? We stopped two of the projects from the 2014 capital consultation that were announced by Ministers and, again, were subject to full business cases.

**Q68 David Mowat:** Which ones?

**Gareth Davies:** Wind engineering—there was a £10 million project there—and engineering structures and systems.

**Q69 Chair:** Was wind engineering a DECC announcement?

**Gareth Davies:** No, that was from us. As part of the capital consultation, it was a research project around wind engineering.

**Q70 Chair:** And the other one?

**Gareth Davies:** Engineering structures and systems, which was led by EPSRC. Both of those were subsequently stopped.

**Q71 David Mowat:** So you are telling us that those looked like they might be goers at the roadmap level. They were then announced by the Chancellor and you said, “Sorry, we’ve looked at it a bit more and we’re not doing it.”

**Gareth Davies:** At that point, yes. For example, on the engineering structures and systems, we looked at the existing capacity in the UK, building on the evidence from both HEFCE and the research councils. We looked at where best to use the marginal investment, and we felt this was not appropriate, given the other investment that was in place.

**Q72 Chair:** So you had a suite of things and they were announced from your high-level list.

**Gareth Davies:** Yes.

**Q73 Chair:** I picked the Alan Turing Institute particularly because in figure 10 on page 25, it gets red, red, red, red. In fact, oddly, it does not get red for return on investment estimated; that is a peculiar one. But it does not do very well on alternative options or running costs. I won’t list them all, because we have done that already. The worry is—the NAO picks up on this—that the announcement is made and then it is backfilled; “Well, we’ve got to make this succeed because it’s been announced.” You say you have turned down two. I hear the arguments for doing what you say. I can see why that would be appealing and important, but it has not done very well on this evaluation.

**Gareth Davies:** I think I would focus on the extent of work that had been done in the scientific community on the importance of having a centre of excellence and a community around algorithmic learning and machine learning. Often the announcement will happen, which will in many ways hide the large discussions already going on in the scientific community, below the radar, in terms of ministerial announcements. This was a broad consensus. We had funding, subject to the business case, and since that announcement in 2014, the institute is now fully up and running with a chief exec and chair and is a very successful part of the—

**Q74 Chair:** Just to be clear about the Prime Minister’s council—were they listening to you, to HEFCE and to the research councils in their discussions before making the decision to go ahead with this or to make the recommendation in 2013?

**Gareth Davies:** It is an independent body.

**Q75 Chair:** But does it go down to that level of science? What are its criteria for saying, “This should go ahead”? BIS is in charge of this, but the council is another body. We all know how Prime Ministers, of whatever party, have their little groups that get together on things. They make a decision. How much are they drawing on what you and all the scientific advisers had suggested?

**Martin Donnelly:** This is a very eminent and independent body of senior scientists who get to take a bit of an overview. It comes back to the point about how we make sure we are picking up new developments that we have to look at. I emphasise, as Gareth has said, that in this case we went to competitive tender. We had bids from a whole range of universities to be involved.

**Q76 Chair:** It is an eminent group of scientists. I am not doubting their eminence, but they came up with this suggestion. How much had that been on your radar—the four of you—before then? How much did they draw on data, information and science from professional or academic experts in the area?

**Martin Donnelly:** We had certainly been aware of it.

**Q77 Chair:** So it was bubbling around as an idea, but they picked it up.

**Hilary Reynolds:** There was a common sense of needing to invest in big data in algorithms—absolutely.

**Q78 Chair:** So they said, “We think this is a runner.”

**Martin Donnelly:** It is also true that it was becoming rapidly more important. Big data has absolutely mushroomed in the last three or four years.

**Q79 Chair:** So really it was because that body said, “Go ahead with it” that the Chancellor then announced £42 million in the Budget in 2014.

**Martin Donnelly:** He took a strategic decision. We then made sure we were delivering that with value for money, competitive tender and international peer review. Nobody got any money for projects that were not really scientifically top notch.

**Q80 Chair:** So even at the point when it was announced in 2014, you could have stopped it if you felt it was not—

**Martin Donnelly:** Yes.

**Q81 Chair:** Can you just be clear about what exactly was approved by June 2014? Had it gone through all its rigorous business case by then?

**Gareth Davies:** It was announced in the 2014 Budget.

**Q82 Chair:** Three months later it was approved?

**Gareth Davies:** Three months later. We then went through the business case process and then went to competitive tenders.

**Q83 Chair:** All in three months? That is pretty quick. What is the average time for getting that done?

**Martin Donnelly:** The final business case, after we had been out for expressions of interest, was April 2015.

**Chair:** Okay.

**Gareth Davies:** We had been through the key stages—

**Q84 Chair:** They suggest it and two years later it was up and running, which was about a year after the Chancellor had announced it. So, not actually three months, just to be clear?

**Gareth Davies:** Exactly.

**Q85 Chair:** What is the average time it takes to get one of these announcements out? Obviously, that would depend on the stage at which the announcement is made.

**Hilary Reynolds:** It depends.

**Q86 Chair:** As long as a piece of string, isn't it, but can you give us a range?

**Hilary Reynolds:** Most capital projects take at least a year to 18 months at minimum, because you have to work out all of the science and economic cases, you have got to have the ideas peer-reviewed—frequently internationally—and a lot of work goes into procurement and thinking. Some are really complex ones at the cutting edge. I know the NAO Report mentions the Halley VI modular building in Antarctica. That is the first of its kind, and is using new technologies that had not been invented. That was first proposed in a high-level case in 2003.

**Q87 Chair:** In 2003?

**Hilary Reynolds:** In 2003, and it was producing science of a very high quality in 2013.

**Chair:** That is a decade.

**Hilary Reynolds:** A lot happened in between.

**Q88 Chair:** I will not go through the whole list—figure 8—but are there any in that list that did not go ahead? I have not quite done the cost analysis. The National Graphene Institute did—

**Gareth Davies:** All those did go ahead.

**Q89 Chair:** How are you evaluating the success of those now? If they are being announced by the Chancellor there is a bit more political capital invested in their success. Does that mean that, if something is going wrong, they get more money thrown at them?

**Gareth Davies:** No—

**Q90 Chair:** I said that provocatively, but seriously?

**Gareth Davies:** The way it works is that we have an in-principle announcement that then goes through the business case in the Department—normal processes. Post-2013 it went through the investment gateway, which is another check. It then passed to the relevant Research Councils. As Hilary Reynolds has already said, they then put in place the projects and programme management structures. We then have two further ongoing checks. The first is through a capital board, which I chair, on a monthly basis. We essentially review where we are, in terms of overall portfolio and delivery. The second is the normal quarterly returns from the Research Councils back up to the BIS board.

**Q91 Chair:** What percentage of projects do not go ahead? We heard about the life cohort being stopped. What is the percentage failure rate? Have you any idea? If you have any information back at base, you can let us know.

**Gareth Davies:** I might. I can come back to you on that.

**Q92 David Mowat:** When Mr Bacon asked you about the section on post-project review, Mr Donnelly—we talked a little bit about the gateway 5 bit of it—you implied that you were not happy about how that was being done now, and that it was an area that you could make progress on.

**Martin Donnelly:** We are seeking to improve—

**Q93 David Mowat:** It seems to me that section 3.14 of the Report, on page 39, is quite concerning, in the sense that not an awful lot of work is done on looking at whether or not the science case or the business case were delivered. If we think about local growth funds and local deals, a lot of work goes into identifying the numbers of jobs, houses, or whatever it is that you are supposed to get. I can see that it is harder to do that for science—sometimes it may be very hard to

do—but there ought to be a pretty clear process, at least going back to the objectives, if they are pure science objectives, to see whether or not we delivered. This section implies that we do not really do it. Do you agree with that?

**Martin Donnelly:** I would say that we have done it, but in too decentralised a way, and not sufficiently systematically. What we are now doing is putting in place a structure so that everyone is doing it in the same way. We are pulling that information together.

**Q94 David Mowat:** Right. So you are saying that you think it may or not have been done, but the centre does not know about it?

**Hilary Reynolds:** Research Councils try to evaluate every project. They do it in different ways, because the projects are different. Our impact reports, which the Research Councils publish, give a lot of information about the impact and evaluation that individual projects have had. There is not a BIS-wide systematic approach that we are forced within, but the Research Councils themselves need to know whether what they have invested in is making that difference.

**Q95 David Mowat:** Do you know what other countries do in this sort of space? It seems to me an area in which there must be international best practice. Other countries spend money on science—discovery science, applied science and all the rest of it. Have you looked at that?

**Hilary Reynolds:** The individual research councils undoubtedly do an awful lot of international work. I would be happy to come back to you on the extent to which we share best practice on evaluation, but we certainly share a lot of best practice on choosing investments and peer review, where we are regarded as the world leaders in some—

**Q96 David Mowat:** I suppose what you can have is this. You can do a very good project—a leading-edge, cutting-edge project—which you deliver on time and on budget, and it all works, but actually it does not deliver much in the way of economic benefits or economic growth, which is kind of the reason, notwithstanding the point about Nobel prize winners, why we are doing all this, because in the end, science needs to play a part in increasing productivity and GVA. So really it is a BIS thing, rather than a Research Councils thing, to have that overview, isn't it? Would you accept that?

**Martin Donnelly:** And I think there are two levels. One is that I think Gareth's capital board is pulling together outputs more systematically from this summer. The other one is work we are doing to make sure we are picking up the full range of benefits, direct and indirect. We have some analytic capacity on this. It is quite a complex project, but we are working at it and we are making progress.

**Q97 David Mowat:** It may not always be possible to identify economic benefits. I can see that, but there must be a closed-loop way of doing this stuff, so you are properly going back, rigorously, and learning from it; otherwise, you make the same mistakes again.

**Gareth Davies:** The benefit realisation framework is important, but as you say, it is conceptually difficult. There are long and variable lags in terms of work. For example, I was at Rolls-

Royce two weeks ago and we were talking about the development cycle for their new engines. They say that from initial idea, design and looking at the new materials right the way through to the life cycle of the engine is 35 years end to end, so if you think about it, research spend that was happening in probably the mid to late '60s is still in play and delivering economic benefits to the country now.

**Q98 Chair:** Which brings me to this question. I remember that some years ago there was a real threat to one part of the science budget—I think it was the social science budget—in Departments, and people in Mr Donnelly's position were thinking, "Oh, I have to cut my budget. That's a nice easy thing to lose." But continuity was lost. How are you embedding this sort of evaluation so that over these long cycles—given that this is a major part of Government policy for productivity, and part of it is measuring jobs and growth through maybe a 35-year process, have you a system in place that does not alter, so that you have consistency of measurement? If our children become Ministers, Mr Donnelly—you might not still be there—how will they know, with a track-back?

**Martin Donnelly:** That is a good challenge. It comes back to Gareth's point: we have to keep the timescales right; this is not something we can do within a five-year financial framework. I will just underline one other point, and others may want to add to it. What you say about different disciplines is very important, and as Madeleine said earlier, it is clear that a lot of teams are benefiting from having social scientists in some form in them, whether they are looking at effective vaccination, effective design or whatever. How these things play into our projects becomes very, very important, so we have to be clear that we don't become too siloed with our science.

**Q99 Chair:** You talk about the importance of long-term evaluation, but how are you ensuring that it is in place?

**Martin Donnelly:** We will be doing it through the new system of evaluation we are working on now, which will be partly implemented in the summer and, I hope, fully implemented next year, in terms of picking up all the benefits across health and wellbeing through to the harder-edged economic and financial outputs. And we will keep on coming back. We want to work with the NAO on the point about further gateways. Is the gateway the right model? Are there some areas we need to look at much more often than others?

**Sir Amyas Morse:** I have been reflecting on your interesting point about the length of the research period. Having a little bit of familiarity with Rolls-Royce, I guess some of that is about perceived commercial opportunity, so it is not actually the elapsed time of the research project for developing a particular thing. They have a lot of different ideas for propulsion—it is the main thing they do—and some of those will have sat on a shelf for quite long periods of time and then suddenly move forward again. It is important to realise that generally there is an array of ideas in these areas that get their time and then move forward. It is worth adjusting—it is not 35 years of continuous effort. You won't need—

**Gareth Davies:** I was not suggesting it is 35 years of continual effort. In some ways, it makes the process even harder for the evaluation because often it might be a three-year period of effort and then the benefits start to be realised 10 or 20 years later. You see that particularly in biosciences and also in algorithms, for example. Some of the work on mathematics, which can be seen as

incredibly basic science, is now actually being used to underpin encryption technology. When people designed that, they were not expecting these outcomes to happen.

**Q100 Chair:** I am going to keep this a bit tight now—that is a fair point that has been made. We have got 15 minutes until a vote and we do have another issue that we want to discuss with Mr Donnelly, so we will probably pause at that point and then come back for that.

I want to cover a couple of issues around the Nurse review. I guess that will affect you, Hilary Reynolds. We have basically got big changes coming through. Seven Research Councils are likely, if the Nurse review is adopted, to become Research UK. There is also some discussion, Professor Atkins, about scrapping HEFCE and establishing the Office for Students.

First, Mr Donnelly, there is a lot of risk coming down the line. Just as you have acknowledged that there have been problems, but you are getting back on track—you hope and we hope too—what about all of these other things coming? Isn't this going to upset the apple cart again?

**Martin Donnelly:** No, I think there are opportunities and, obviously, we have to manage them carefully because any change involves risk. It is important to maintain a dialogue, as we are doing, with institutions. It is also important that we are clear about the new frameworks that Ministers want to put in place.

**Q101 Chair:** There is this Research Excellence Framework as well, so there is another thing coming. Hilary Reynolds, how do Research Councils UK feel about Research UK and the prospects?

**Hilary Reynolds:** Sir Paul Nurse, in his review, was very clear that the current way we operate in delivering excellent research was world-class, and that he wanted to ensure his recommendations built on those strengths. One of his recommendations was about having a much clearer single strategic voice of science and research into Government and out into the communities. The Research Councils have very strongly supported that direction of travel, of having that clear strategic voice, and we look forward to seeing the Government response to the Green Paper and the Nurse recommendations.

**Q102 Chair:** Do you think it will work? Some of the areas of science that we have been talking about are very niche, very specialist, so will their voice be weakened in a bigger Research UK?

**Hilary Reynolds:** Sir Paul Nurse was very clear about the importance both of that strategic voice and of the need to maintain the strength of the disciplines and the strength of disciplines working together to create those new scientific opportunities that come from collaboration across disciplines. He was really clear about both parts.

**Q103 Chair:** I am sure he was clear. I just wonder whether it will actually happen. That is something perhaps the Science Committee may take up. Professor Atkins, what about the Office for Students instead of HEFCE?

**Professor Atkins:** Indeed. We are waiting to see the analysis of the responses to the Green Paper—which Business are due to produce very soon—and also then, of course, a White Paper potentially, and an HE Bill.

**Q104 Chair:** How do you feel about it though? That is the process.

**Professor Atkins:** It is a little premature to comment on that at the moment, I think. What I would say, in relation to our work this afternoon, is that of course we want to work as closely as we can with the Government to justify whatever the country can afford to be spent on research, to make sure that that case is as robust as possible and, from our point of view, to make sure that the environment in which our academic staff are working on—whether you want to call it—pure, applied, or a combination of those two types of research remains as groundbreaking and as transformational as we can make it.

**Q105 Chair:** Do you think, if we have an Office for Students, it is going to have any chance of removing focus from science investment? So, losing your expertise—

**Professor Atkins:** The important point that we have made is this: there needs to be one organisation in the landscape, however the landscape is drawn, that has the overview of the sector as a whole and of individual providers and that really understands how research income, fee income, income from international students, comes together at the institutional point and how all of that is then articulated and—often, now—played into the devolved agenda through the LEPs and through the combined authorities. You need an organisation that really understands how all these dynamics are working on the ground across England.

**Chair:** Sounds like HEFCE.

**Professor Atkins:** If the research side is somewhere else, there needs to be a very clear way in which the analysis and the understanding that comes through that is fed into that oversight, otherwise the Government will have much less clarity about the sector.

**Q106 Chair:** Mr Donnelly is sitting next to you and can hear that, so hopefully that will be reflected when the Government come up with their plans.

Can I just ask my last point before asking Richard Bacon to come in? We issued a Report today about EU funding, in which we highlight that the UK has won European Research Council grants valued at €1.7 billion. Perhaps I will start with Professor Atkins. If Britain were to leave the EU, would that loss of funding that you have so successfully bid for be a real blow to British science, or could you cope?

**Professor Atkins:** It is not clear what would happen to the funding that is going into Europe currently. A lot would depend on that. I think it would be fair to say that the sector is very worried about the loss of European funding. That is not just the research-based funding from frameworks and so on; of course, many universities work with their local organisations—the other place makers locally—around the structural funds as well.

**Hilary Reynolds:** Like Madeleine, we are not sure what the effect will be, but we have an awful lot of collaboration, both within Europe and internationally, on research and all the Research Councils would want to see that continue.

**Martin Donnelly:** The size of the funding that we are talking about is clearly very important for our research effort, wherever it comes from.

**Q107 Mr Bacon:** I wanted to ask a couple more questions, quickly. One is about the Francis Crick Institute. There was a lot of concern expressed last year about the railway stations and the fact that they would interfere with the electromagnetic fields and the quality of the experiments undertaken by the Francis Crick Institute. I gather this was referred to briefly while I was out, and I do apologise for having had to leave the room briefly, but has that been solved or not? It would not be beyond the capability of Her Majesty's Government to spend a huge amount of money on something and then discover that it was a waste and have to completely change tack, because that has happened on many occasions in the last 50 years. Is there going to be an adequate solution for this problem?

**Martin Donnelly:** It is an issue we are very aware of, as you know. I visited the basement and had a look at it myself. Gareth, is there anything you want to say?

**Q108 Mr Bacon:** It was a year ago. The thing I found on the internet that talks about it is a year old—March 2015. It is now 14 months later. What progress has been made?

**Gareth Davies:** We are working closely with DFT on this issue. You are right: it is not resolved, but we are working with them as they progress on the Crossrail 2 proposals and any potential implications. We are working with them. It is explicitly stated on the Government risk register, so this is not something that is below the radar; people are very clear.

**Q109 Mr Bacon:** Good. When do you think it will be solved?

**Gareth Davies:** We are working with DFT.

**Q110 Mr Bacon:** When will it be solved?

**Gareth Davies:** I'm sorry; I don't have a timescale, but I can certainly come back to the Committee with—

**Q111 Deidre Brock:** What potential solutions are there to address the problem? I know they have got objections—

**Gareth Davies:** Yes. I am speaking off my brief, but as part of Crossrail 2, they are certainly looking the options for routes across London.

**Q112 David Mowat:** Finally, there was an article over the weekend about graphene IPR—you may know the issue—and China. It made me think not about whether it is happening or not, but about how BIS has spent—I don't know—£40 million on the Graphene Institute and things. Who would be accountable if the IPR were lost in some way, obviously to the detriment of the UK economy? Who's accountable for that? It can't just be the academics concerned; there must be a BIS element of that, if you are spending all this money on the Graphene Institute and all the rest of it. Do you manage that process too? It is clearly potentially an event of national significance, in a way.

**Martin Donnelly:** Our understanding is that Manchester University has rejected all of the allegations made in *The Times*. There are clear processes for maintaining the intellectual property generated in the research, as opposed to what may be agreed in specific work-related activities, where researchers from outside are working in these institutions—

**Q113 David Mowat:** It made me think not so much whether it has happened, but where the accountability lies. It ought to be with you, Mr Donnelly, at BIS, as the accounting officer in a sense. We are spending £40 million and part of that must be the protection of IPR.

**Martin Donnelly:** We are very concerned about IPR. It is also the case that universities take a set of different approaches to the research they do and that produces good results. Southampton takes a very different approach from some other universities, for example. We also, of course, have our intellectual property organisation as part of BIS. It is something we watch. We do need to make sure that it is possible to make a good win-win commercial deal—

**Q114 David Mowat:** No, it is. What I am saying—we will leave it at this—is that it is the sort of issue that I would expect you to be all over.

**Martin Donnelly:** We are. We are concerned about it.

**Q115 Mr Bacon:** On that point, you said the universities take a set of different approaches, which produces a good result. One might have thought that a set of different approaches would produce different results, some better than others. I have had a detailed constituency case—I sent a dossier to the National Audit Office on it some years ago—from a professor who was concerned that his invention had, in effect, been nabbed by a clever investor, who hadn't invested that much but had managed to get hold of it. The professor ended up having an employment dispute with the university concerned. Part of his problem was the desire of the university to hide its own ineptitude in allowing a significant chunk of intellectual property to go overseas, without having secured hardly any economic recompense for it. I have talked to the NAO about doing something more broadly on this. Apart from the specific issue of graphene, how across this whole space are you as a Department? I think it is a growing problem.

**Martin Donnelly:** It is a very complex area. It is one that we do watch. We look at what other countries do. Speaking personally, it is not clear to me that centralised models do produce more value added over time, because different solutions work in different places. We are also conscious that universities are independent and they will want to come to their own conclusions, but we do need them to learn from each other and we try to participate in that debate.

**Q116 Mr Bacon:** I have one more question about the naming of the polar research vessel. Apparently, one of the suggestions came forward from someone called Sandeep Korotana, who modestly put forward the idea of calling it the RRS Sandeep Korotana. Some of the other suggestions were RRS Its Bloody Cold Here, RRS What Iceberg?, RRS Captain Haddock and the RRS Big Metal Floaty Thingy-Thing. Can you tell us which one won the contest?

**Martin Donnelly:** I can tell you first of all that we are very pleased that this has raised a lot of popular interest in polar research.

**Q117 Mr Bacon:** Will you just state for the record which one won?

**Martin Donnelly:** I don't think a decision has been taken by Ministers.

**Q118 Mr Bacon:** No, that's not my question. Which name won the contest?

**Martin Donnelly:** I don't think it was a contest to decide on the name. The final decision is taken by Ministers—

**Q119 Mr Bacon:** Which name won the poll, Mr Donnelly?

**Martin Donnelly:** I believe Boaty McBoatface.

**Q120 Mr Bacon:** I just wanted you to say that on the record.

**Martin Donnelly:** I know you did.

**Mr Bacon:** And you did.

**Chair:** Okay. I am just aware of the time. Caroline Flint and David Mowat.

**Q121 Caroline Flint:** I have two points to Hilary Reynolds and Professor Atkins. How important is the spending in R&D, particularly in science, for both sparking the imagination of young people to study these subjects, and creating the employment framework for those who have their qualifications to find a career in the sector?

**Hilary Reynolds:** I think it is amazingly important. Part of the mission of all the research councils is to engage the population and society in science and research. Boaty McBoatface engaged hundreds of thousands of people in the importance of marine Arctic research. It was brilliant engagement. It is absolutely vital that people understand the importance of both the pure discovery factors and the application of research for human good in all sorts of areas.

**Professor Atkins:** I would certainly endorse that, on a slightly narrower frame, in terms of the success criteria or the objectives that we measure for the success of the projects. That is things like how many new PhD positions there are and how many positions there are for those who have completed their doctorate. Often they find that next phase—the post-doctoral—very difficult in

career terms. It is also such things as how well the new projects are conceptualising the career pathways through the project funding they are securing. That is one of the things that we look at. In terms of the evaluation criteria, we are also concerned about how many new companies have been started up as a consequence of this and how many existing small and micro-companies have been assisted and so on. It is really important.

**Q122 Caroline Flint:** I appreciate those answers, but I find it worrying, whether we remain in or leave the European Union, that we are 12th in the EU in terms of the percentage of our gross domestic that is expenditure on R and D. There are 11 countries ahead of us. In terms of what you have expressed about how it captures people's imagination and gets young people to study—there is also the job pipeline coming through—do you think there should be more discussion about how we go from 1.67% of GDP up to the 3% that the European Union is recommending is seriously looked at by 2020? [*Interruption.*] You are not going to be saved by the bell; we have eight minutes to get down there.

**Hilary Reynolds:** The set of stats I have is that the UK has 1% of the world's population, 3% of the funding globally that goes into research, 4% of the researchers and 8% of published research globally. We have 16% of the highest quality research globally. With the investment we have, we are a world leader. Think what we could do with more.

**Q123 Caroline Flint:** We are always complaining about the lack of children studying science.

**Martin Donnelly:** Particularly girls.

**Q124 Chair:** We also need more science-qualified teachers, which we have covered previously.

**Hilary Reynolds:** There is a hugely fruitful place to build from.

**Chair:** I will not prolong this, because the bell has gone. Unfortunately, we have two votes. Thank you all for coming. Our transcript will be up in the next couple of days on the website. Our report may not be out until June; we have various recesses and so on. We will send you a copy.

I ask Martin Donnelly, the permanent secretary at BIS, to stay. You know that we are briefly going to talk to you again about an office closure proposed in Sheffield. Apologies that we are having to come back. It is two votes, so we will be out for about 20 minutes. I urge the colleagues who I know are going to talk about this and at least one other to come back, as we need to be quorate. I thank Hilary Reynolds, Gareth Davies and Professor Atkins for their time. We look forward to sending you our report.

*Sitting suspended for Divisions in the House.*

*On resuming—*

#### **Examination of Witness**

Martin Donnelly, gave evidence.

**Chair:** Welcome back to the Public Accounts Committee. We have concluded the main part of our business.

Thank you, Mr Donnelly, for the letter that you wrote to me and Iain Wright on 21 April about the issue we touched on at the end of our previous session with you, the proposed closure of the Sheffield office. I will ask Caroline Flint to come in first, and then David Mowat.

**Q125 Caroline Flint:** Thanks for the letter, Mr Donnelly. It gives us an outline of the running costs at the Sheffield office and the potential savings if that office completely goes. What we do not have is something that looks at the other costs of moving people from Sheffield to London, what enhanced payments might be involved, and, looking at it the other way round, maybe even moving more people from London to Sheffield, dare I say it, to provide this function.

Can you give us some more information around projected savings that works both ways? In particular, I'd like to come next to some of the costs that you've outlined here and what they really mean, because some of them are maybe not as clear as they might be. This is about the projected savings.

**Martin Donnelly:** It is about cost and effectiveness. That is what our business model is aiming to deliver, so I have to put it in that context. It is not just about the cost of individual posts, it is about how many we need in our new, more flexible model. What we don't have yet is a view, were this decision to go ahead, on how many of the posts would permanently move to London. That obviously drives the overall cost, because it will drive the transition costs in terms of redundancies. Since we last spoke, we have opened a new voluntary exit scheme, potentially for people in Sheffield were this proposal to go ahead. There would be some transition costs there, and we could give you some figures on that.

**Q126 Caroline Flint:** The last time we saw you, you said—and you have just repeated it today—that this is about providing the best possible service. One would think that if you were that clear about how the service might be improved, you would be able to give us more detail about what the headcount will be, what the skills of the people you want to pull together are and why uniting them together in some form or other—whatever shape that might be—in London is the best proposition.

**Martin Donnelly:** Yes, and I can. First, on the inefficiency side, it is not helpful to try to do policy work on 14 sites, which is what we do at the moment. Sheffield is the second largest after London, with about 10%, but there is a range of other sites as well. That makes it more difficult for us to do an effective and flexible job.

There is also the question of how we get the best benefit from our teams working together. There is quite a lot of evidence that shows that when you put people together, you get more creativity and innovation, and you can manage them better. Those things produce non-monetary outputs, but they are very important in terms of the quality of work that we do. That is what we seek to achieve, because we need to be smaller, more flexible and effective.

**Q127 Caroline Flint:** I appreciate that, but from what I understand from our last session, your staff in Sheffield, who I think are working particularly on apprenticeships and skills—not

necessarily exclusively—are in the same building as people from the DFE who are working on policy in that area, as was confirmed to us last time, and the Skills Funding Agency. Given the point you are making about collaboration and creative discussion and thinking, surely that’s a really good place for the people who cover that function at BIS to be with those other two partners.

**Martin Donnelly:** There is some connectivity there, but not that much. People in Sheffield cover a very wide range of jobs, and the Skills Funding Agency is spread across the country, although it is true that we have a joint apprenticeships unit up there. We don’t manage so easily all of the connectivity with other teams across the Department. For example, we have more than 80 people working for at least some of their time on the steel crisis. We can have people backfilling, moving around and filling jobs. Inevitably, that is more difficult, despite lots of good will, if you have people more than 100 miles away.

**Q128 David Mowat:** “Policy” is a wide word. How many people do you have on policy in those 14 locations? What does policy mean to you?

**Martin Donnelly:** We’ve got about 1,600 people doing policy work as we understand it. Obviously there is a bit of a fuzzy boundary, and it plays over into delivery too. About 10% of those people are in Sheffield, and we’ve got about 40 spread over a lot of other sites.

**Q129 David Mowat:** I understand that, but the point that you make, which on the face of it is reasonable, is that policy should be done in one place—or certainly not in 14 places. I could kind of understand that if it were a policy group of 50 or 40, but when it’s a policy group of 1,600, I think that probably loses some of its effectiveness. I just wanted to say that. Ms Flint can carry on again now, but that’s my response to that.

**Martin Donnelly:** May I say that I don’t agree, on the evidence that we have? We see a lot of other companies, from Vodafone and Google to AECOM and UBS, producing very large headquarters unit, because they find that putting a lot of people together gets you more creativity.

**David Mowat:** I can quote companies as well, such as Accenture and others, which don’t have large headquarters units and have 350,000 employees around virtual. Again, it depends on what is called policy. I’m just making the point to you that 1,600 people doing this thing that you call policy is different from what you might describe as a tighter policy team, which clearly might have been better if it was all in one place. Saying that you have to have 1,600 people in one place is a different argument. I just wanted to make that point.

**Q130 Chair:** Mr Donnelly, you said, “on the evidence that we have”, and you cite a few private companies, but can you be clear what evidence you have?

**Martin Donnelly:** There is work going back 30 or 40 years about what I think is called the Allen curve, which shows that the frequency of communication between people drops off the further away they go.

**Q131 Chair:** But 30 or 40 years ago, the internet did not exist.

**Martin Donnelly:** That's true, but what is interesting is that it applies to all forms of communication, so just being digitally in touch is not as effective at building teams and communicating informally as more personal contact is. There has been recent work in the *Harvard Business Review*—

**Q132 Chair:** So it's the water cooler argument, is it? That's the reason why you are closing the Sheffield office.

**Martin Donnelly:** Yes. The evidence seems to be that informal contact is actually very important for building teams and sparking ideas.

**Q133 David Mowat:** I repeat the point that it must depend on how many people you need for that informal contact. If it is 50, or even 100, it is different from 1,600. That is the point. The fact that 1,600 people are doing what you are defining as policy implies quite a loose definition of policy. I say again that a lot of organisations that are much bigger than BIS can rub along quite well without having to have their 1,600 most senior people in one place.

**Martin Donnelly:** Let me make two very brief points on that. First, we do have to work closely with Ministers, Parliament and the centre of Whitehall, and that affects our efficiency and is relevant to place. The other point is that we do need to move people around between functions more and more.

**Q134 David Mowat:** But on the first point you have just made, my understanding is that other permanent secretaries do not feel the need to have their top 1,600 people all in one place. I know that each Department is different, but nevertheless that's the case. If it was a pervasive requirement, which I don't accept anyway, you would expect other Departments to have stumbled on that eternal truth as well. It appears that they haven't.

**Martin Donnelly:** It does depend on what you're doing and your business model.

**Chair:** Well, I'm really interested to know what is so different at BIS, but we are going to spend only around 10 more minutes on this, so we will go back to Caroline Flint. I know that Kevin Foster wants to come in as well.

**Q135 Caroline Flint:** Can I ask a couple of questions to clarify the figures you have provided a bit more? The rent, rates and maintenance costing in your letter covers the whole building. How is that affected by the sharing of the building with, as I understand it, the Skills Funding Agency and DFE? Is that the total figure or just your share?

**Martin Donnelly:** That is our share. That is the relevant part of the costs that BIS pays for having people in Sheffield.

**Q136 Caroline Flint:** I think your letter says that £890,000 is the cost of rent, rates and maintenance at St Paul's Place.

**Martin Donnelly:** Yes, that is my understanding.

**Q137 Caroline Flint:** And on the rail travel that you have identified, does that cover the cost of travel just between Sheffield and London, or does it cover travel elsewhere in the country?

**Martin Donnelly:** My understanding—I will double check and write to you if this is not correct—is that it is the Sheffield to London travel.

**Q138 Caroline Flint:** Okay. The amount you have there is quite interesting, because at around £100 per trip, Sheffield to London and London to Sheffield, that is 4,600 trips, which is more than 18 each a year for the 250 policy people in Sheffield.

**Martin Donnelly:** That sounds entirely plausible. Some will obviously do more than others.

**Q139 Caroline Flint:** In terms of the travel to London, where they are getting together to discuss policy, how much of that includes travel for training, as opposed to coming together in the policy creative hubs?

**Martin Donnelly:** Some training will take place in or near Sheffield; other courses will be in London. I do not have a breakdown of the figures on that.

**Q140 Caroline Flint:** Okay. On the other figure in your letter, the cost of staff, has the relative difficulty of recruiting in London and the possible need to raise salary levels been factored into your thoughts about where is the best place to have a service being provided, in terms of both output and costs?

**Martin Donnelly:** That figure is just an average of staff costs in Sheffield. Clearly there are recruitment issues in London. We have not sought to put a price on those.

**Q141 Kevin Foster:** I have a couple of quick questions and a quick comment to start with. In the past, there has been criticism of the fact that accommodation is reviewed only when either the roof falls in or a lease comes to an end. Were either of those the driver of this move, or was it a genuine case of wanting to look at your accommodation and save cash?

**Martin Donnelly:** We realised that in order to take the next step of efficiency, and if we are going to save £350 million for the taxpayer, we had to look at our entire estate. We have got 80 sites—that is down a lot over the last five years—but we are now saying, we've really got to rationalise that, because otherwise we cannot drive both the financial savings and the efficiency of management savings of having a single structure.

**Q142 Kevin Foster:** So it was a proactive decision to do it, rather than forced.

**Martin Donnelly:** It was proactive.

**Q143 Kevin Foster:** Secondly, ignoring location for the minute, is the idea of the hub to deliver more longer-term savings in terms of headcount, or to keep the current employment level stable?

**Martin Donnelly:** We have got to find 30% to 40% operating costs savings, and that will produce a broadly similar reduction in headcount over time. The challenge is to do that without losing effectiveness of delivery.

**Q144 Chair:** Mr Donnelly, you talk about not losing effectiveness, but you have some experienced staff in a part of the country which, though beautiful and interesting, is not equivalent to London in terms of cost. The Minister—I cannot remember her constituency—Anna Soubry, said to the House in response to the urgent question: “We are confident that many of the workers will choose to take new jobs down in London.” I know you are going through a redundancy process, but you also have documents, which we have had the chance to see, that show that you have made some estimates of the cost of losing staff from Sheffield. But, seriously, are you telling us that you agree with the Minister? I suppose you have to agree with the Minister, because she is the Minister, but should she be confident in that statement that many of the workers will choose to take new jobs down in London? Unless you are offering a very generous relocation package, I cannot see how that is practicably feasible.

**Martin Donnelly:** It is difficult for me to comment on issues—

**Q145 Chair:** I appreciate that you cannot comment on individual cases, but just on the general point, let us take a theoretical—how many people living in Sheffield could buy an equivalent home in London?

**Martin Donnelly:** We know the gap, and it is a point that you rightly raised before. There is also the fact that, over time, we will be reducing the number of policy posts in London as well—we need people to work differently and to be more skilled and more flexible, so the number of policy jobs will decline in London. That means that there will be, I think, if we go ahead with this process, a significant reduction over time in the posts that permanently transfer, but we do not have figures for that yet—they depend on the needs of individual business areas, which we are working through.

**Q146 David Mowat:** To summarise, it doesn't smell right. That is not a very scientific observation, but actually your letter is not that scientific either. It doesn't smell right. I do not believe that realising £350 million per annum—and I have no problem with that as an objective—is particularly facilitated by moving 250 people from Sheffield to London. To be fair, your letter says that, because it distinguishes between a need for £350 million in savings and being more effective in delivering ministerial priorities. It is that phrase I guess we are talking about, in a sense, but I do not believe that you have to have 1,600 people in one place, or that it will make that big a difference. I am a bit concerned that there has been implementation of a model—at the last sitting, you called it a hub and spoke model—without necessarily thinking about some derivatives of that model. You might have not 14 locations, but two or three. You do not need to be absolutist—I leave that with you.

I am not sure if you know this yet, but a number of us who were interested in this as an issue, including a constituency MP for Sheffield, raised this with quite a few Members, and there will be a debate—I see that you do know this—in the House on, I think, Monday week. It is a three-hour debate on the subject, which I think has a votable motion as well, asking us to look at the cost-effectiveness and efficacy of what is being done. I am sure you will be listening to that debate with interest. It is on the eve of your BIS board meeting—

**Chair:** Is that right? May we confirm that the BIS board meeting is on 10 May?

**Martin Donnelly:** It certainly is before we will have the board—

**Chair:** It would be helpful if you could just write to us to confirm the date of that meeting.

**Q147 David Mowat:** What we would like you to do, or will be expecting you to do—those of us who will be speaking in the debate, which, judging by how it is shaping up, could be quite a lot of us—is look at or listen to that, and reflect on it, prior to your reaching a final decision.

**Martin Donnelly:** This has been true through the consultation: we are always open to discussing these issues, and we have tried to do so, including with the trade unions and with colleagues. These are very difficult issues, and I do not forget or underestimate the personal challenge and the problems that this sort of change programme poses. I am committed—as are all of us on the team—to working through those effectively and supportively with people involved.

I would just say that last summer, we stepped back and looked at the 20,000 people that we in BIS pay for across the country, and 18,000 of those are still across the country, from Darlington to Glasgow, Bristol and so on. This is one small part of this, which is important for the people involved—

**Q148 David Mowat:** That is true, and we accept that, but that does not make the decision right. I would go back to the phrase I used as to whether you are being a little bit too absolutist in how you are choosing to implement what you call the hub and spoke model. You may want to think about that as well over the next couple of weeks. I say that in the spirit of advice.

**Martin Donnelly:** Thank you—we will. If I may, I would make the same point the other way. The model we are putting forward is a sensible one. It may not be the only model—it is isn't the only model—but we believe it is the best sustainable model for delivering effectiveness as well as lower cost. That is why we are putting it forward. There is no other reason for doing it.

**Chair:** Mr Donnelly, before we went to vote we spent the last hour and a half discussing some of the Government's industrial strategy through the science capital budget, and we talked a bit about geographical spread. Mr Mowat has just highlighted that point. In Sheffield, where there are threats to other industries, these jobs are particularly valuable, and that needs to be factored in.

**Q149 Deidre Brock:** I seek a bit of clarification. In her response to questions, Anna Soubry spoke of one or two higher education student finance centres, as part of the regional centres being proposed, initially in Glasgow and Darlington. I think I raised the "initially" point with you last time

we spoke about this. Does that mean that the existing Student Loans Company HQ will be added to, or will it expand? Could you give us some clarification?

**Martin Donnelly:** I cannot go beyond what we have said about that already. The Student Loans Company will continue to perform the absolutely vital role that it plays. We want to assist with its process of becoming more digital and so on, and that will continue, but, as with all of the partner organisations, we will be having a dialogue about how they become more efficient—perhaps smaller over time—while still delivering the service that we need. We have to do this across the BIS group.

**Q150 Deidre Brock:** I am sure it was referred to as a centre of excellence, so how does that fit in with making it smaller in the future? I am still slightly alarmed by the “initially in Glasgow and Darlington” comment from the Minister.

**Martin Donnelly:** The point was to underline that we do not have any plans to change that at present. Over time we will continue to look at that, as at all of the functions that we are carrying out, to check that we are doing them in the most efficient way, in the most efficient place. As we become more digital, we would be able to expect to be able to shrink the number of people involved in some services.

**Q151 Deidre Brock:** Right. So the centre of excellence that was referred to is talking about improving digital services for the Glasgow HQ.

**Martin Donnelly:** We are looking at how we deliver that single grants platform and common technology more effectively, yes.

**Q152 Chair:** I am sure that Deidre will find other ways of coming back on that issue. Before you finish, with reference to the Student Loans Company, you talked about partner organisations. I would call it an arm’s length body. Is this new terminology, or are you talking about something different?

**Martin Donnelly:** What we are doing is saying our new model cannot use that “arm’s length” terminology. If we are going to squeeze all the efficiencies out, we have got to work as a group. That does not mean that people do not have their own management structures and so on to deliver what they have to deliver, but we are seeking to get all the efficiencies we can out of the 20,000 people who work across the BIS partners that are not trading funds and our BIS HQ, to ensure that we are delivering those services really effectively.

**Q153 Chair:** Has anything changed in how they are created? They are arm’s length bodies in the BIS Department, under your umbrella, so you have some oversight and Ministers are responsible. So partner organisations is just a phrase that you are using—nothing else has changed. Is that right?

**Martin Donnelly:** What is changing is not statutory but the way that we do things. So we are bringing some members of key partners on to our internal BIS management committees to help us take this process of change forward in headquarters, and also in the group.

**Q154 Chair:** You say “key partners”, but you are talking about arm’s length bodies.

***Martin Donnelly:*** That is right.

**Chair:** Okay. I am a bit puzzled but the terminology there, but thank you very much for taking the time to answer us.