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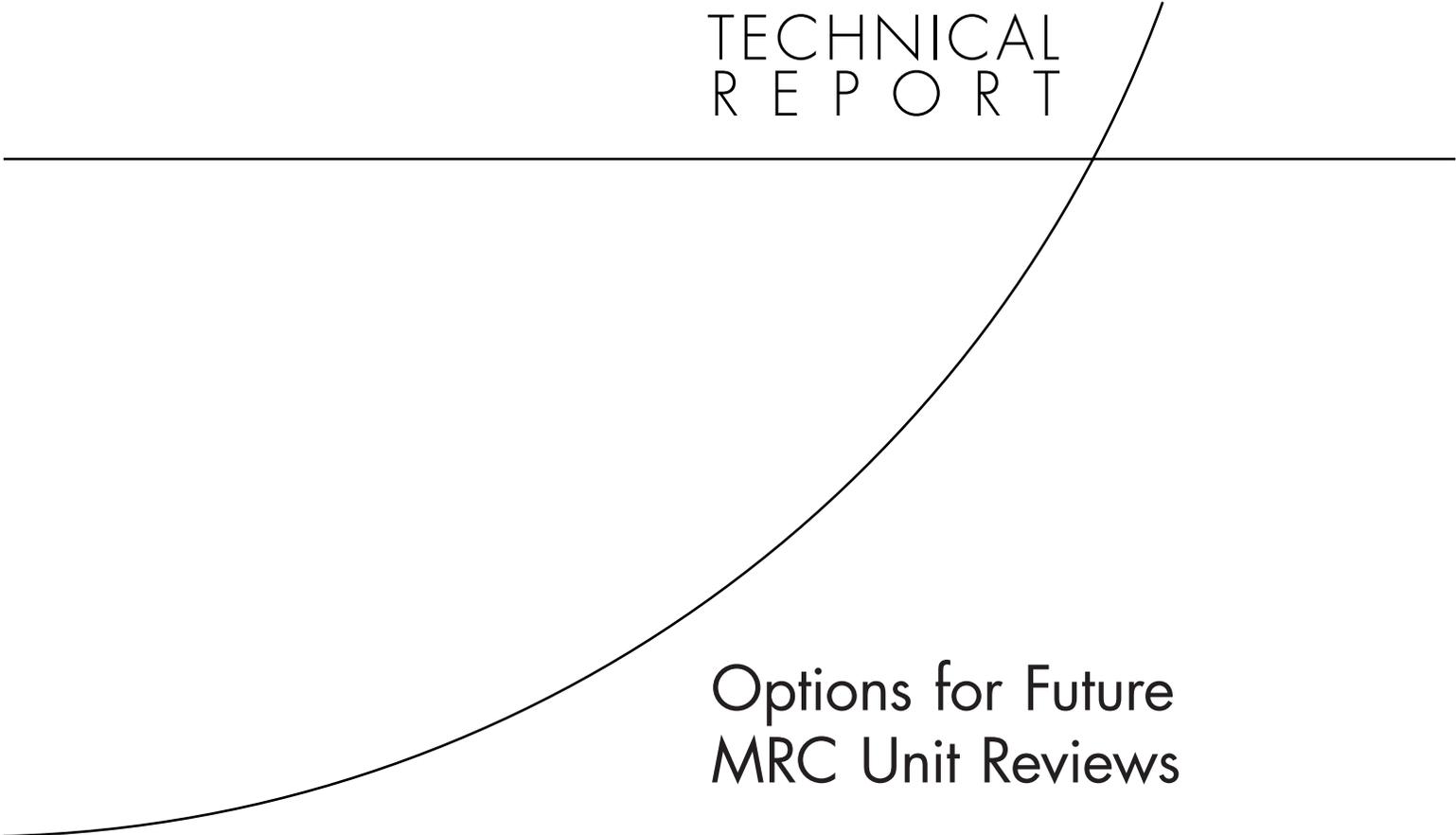
Options for Future
MRC Unit Reviews

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RAND EUROPE

The research described in this report was prepared for the UK Medical Research Council.

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Preface

This report, prepared for and funded by the UK Medical Research Council (MRC), proposes and appraises two options for reviewing Units. It is intended to inform the Steering Group on Units and University Partnerships' (SGU&UP) recommendations to MRC Council. The options are not proposals nor are they mutually exclusive; it is likely that elements of each are combined to produce a preferred model. Two options are described:

- **Option A: Scientific track record**, reviewed via site visits over variable time scales. Overall Unit synergy is assessed, with award of funding envelope allocated to research groups by Director.

- **Option B: Future scientific strategy** is assessed using Strategic Audits, metrics and Directors' science strategy. Site visit is optional and determined by Quinquennial Review Subcommittee. Units will only supported if there is a strategic need.

These options were developed from an issues analysis of the current Quinquennial Review of Units. From the issues analysis, five approaches were developed to brigade and distil these ideas, and these were tested in three stakeholder workshops held in December 2004, and a further round of interviews with senior university managers. From the workshop analysis we were able to develop the two options proposed in this report. By their very nature the options have their own strengths and weaknesses, so as well as describing the options in this report we also appraise their suitability, feasibility and acceptability.

The report is primarily for members of the SGU&UP and for MRC Council, but will be of wider interest to other staff and members of the MRC, Unit Directors, scientific referees and other funding agencies. In addition, the method employed may be of interest to those concerned with consultative policy-making.

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Summary

1 The Medical Research Council (MRC) is the UK's largest public funder of biomedical research. In 2002/03 its total expenditure was £430m; £200m of this was intramural support for research centres, including MRC Units. Currently, there are 35 MRC Units covering the range of biomedical disciplines – from the Protein Phosphorylation Unit in Dundee, to the Clinical Trials Unit in London.

2 MRC Units are wholly funded by the MRC in competition with programmes in universities. Most Units are attached to universities and are reviewed every five years by a panel of national and international experts who consider past achievements, current work and proposals for the next five years. The review process allows the MRC to respond to research priorities by creating, disbanding or restructuring its establishments and/or research groups accordingly.

3 In 2003, the new Chief Executive of the MRC, Professor Colin Blakemore, instigated a review of all forms of MRC funding including intramural support. The Steering Group on Units and University Partnerships (SGU&UP) was established to oversee and draw together a number of current policy and strategic issues in relation to intramural support and university partnerships more generally. This included a "consultation on and development of new approaches to Units Reviews".

Developing new approaches and options to Unit Reviews

4 The SGU&UP asked RAND Europe to support its work. The study was broken down into three phases. The first phase resulted in a prioritised summary of key issues that needed to be considered in improving the assessment of Units. This was based on key informant interviews, a stakeholder survey and comparisons with other UK and international research funders.

5 Our initial work, published in July 2004, showed that there was widespread confidence that the use of peer review conducted every five or so years could give the scientific community, wider stakeholders and the public confidence that public money was being used to support exceptional science. However, there were also some concerns about the review process. First, although there was support for Units, there was ambiguity about their purpose. Since then, the MRC has produced its draft criteria for intramural support and these have been used in developing the options reported here. Second, there were genuinely held differences of opinion on the best way to review Units; an observation confirmed in our subsequent work. Finally, it was felt that if the purpose of Units is in part to help the MRC meet its strategic priorities,

there needed to be a more effective way of ensuring that these priorities were actively used in the review process and when considering future funding.

6   The second phase drew on methods developed for scenario analysis, and resulted in five approaches for Unit Reviews. These approaches were published in an interim Working Paper in November 2004. In order to avoid instinctive judgements on the strengths and weaknesses of each approach we labelled them after five professions or trades – the Tailor, Communicator, Entrepreneur, Surveyor and Horse Whisperer. The purpose of the approaches was to stimulate a debate on the best way to review Units. They were neither predictions nor proposals, but used brigaded and distilled ideas given to us in interviews and other interactions with key stakeholders.

7   The debate was managed through the third phase of the study, which involved a series of stakeholder workshops and interviews with senior university managers. For the study we clustered stakeholders into three groups: MRC Head Office Staff, Unit Directors, and Scientific Evaluators, including members of MRC Boards. The purpose of the workshops and interviews was to test the strengths and weaknesses of the approaches and to develop hybrid options that could be appraised and considered by the SGU&UP and MRC Council.

8   The output of this process were the two new options that are described below, and appraised in Table S.1. It should be noted that the options are not intended to be 'either/or' alternatives but serve to identify issues for discussion and action while suggesting two different ways in which each issue could be taken forward. Clearly, the SGU&UP and MRC may wish to opt for one or other option, select aspects from each option, or for a continuation of the status quo.

Option A: Scientific track record reviewed via site visits

9   The Review will be dominated by the Unit's track record in producing high calibre science and meeting the scientific strategic need for long-term support, set out in the (draft) criteria for intramural support. Review Committees will be instructed to make an overall score of the Unit. Inputs into the review will be a Research Report, which is largely produced from a continuously updated website detailing the Unit's activity, Referees' comments on specific science and science-related activities of the Unit, an in-depth two-day site visit, and the Review Committee's expert judgement. The Review Committee will produce a Summary Report at the Site Visit setting out its recommendations. The Review Committee will recommend whether the Unit should be supported or not, based on the calibre of past science and science-related activities, whether they provided value for money, and the likelihood of continued success. If support for the Unit is forthcoming, the Director and MRC Head Office staff will develop a financial plan based on the principle of zero-based budgeting. This budget will be awarded from a ring-fenced 'intramural' pot of funding that will establish competition for funds between Units (and Centres and Institutes) and be administered by a dedicated Intramural Support Team within MRC Head Office. In addition to making funding recommendations, the Review Committee will establish timescales for the next Review. In cases where a Unit is established and has a long track record of producing high quality science the review period could be extended to eight years.

Option B: Future scientific strategy assessed using a combination of methods

10 Every five years a Subcommittee of an MRC Board will review a Unit. Inputs into the Review will include (new) Strategic Audits, a Unit Scorecard Report using metrics derived from the OST Performance Framework, and a Unit Director's Proposal of his or her future programme. The Strategic Audits will provide relative indications of the value for money achieved from intramural versus extramural support in a given area, and establish a strategic direction for MRC funding. The metric-based assessment will give an indication of track record of the Unit and be aligned with OST indicators. The Director's Proposal will set out the vision and how it relates to the MRC strategy. Referees will review the Director's Proposal. On the basis of these inputs the Subcommittee can make a decision on whether to visit the Unit. Subcommittee assessment will be based on the quality of science and the strategic fit of the Unit. A QQR decision framework will be used to decide on the outcome of the QQR. Inevitably, some Units producing science of the highest calibre will no longer be supported, as they do not fit the strategic requirements of the MRC.

Option appraisal

11 In Table S.1 we summarise the strengths and weaknesses of the two options, using an appraisal framework looking at their suitability, feasibility and acceptability. For each criteria we have made an overall judgement on a scale of one to four, where one indicates that the criteria is not met, and four indicates that it is met in full.

Concluding comment

12 In presenting and appraising these two options, it is worth noting that they have been developed through a series of consultations with the key stakeholders involved in the Unit Review process. Over the two studies, we have conducted 36 key informant interviews, facilitated 4 workshops with 35 participants, and have had 50 survey responses.

13 The work presented here has taken the issues identified in our earlier findings and developed these into two appraised options with different, but not mutually exclusive, responses. In the final chapter of this report, we have identified 25 key questions that need to be answered before an improved Unit Review process can be finalised. We have suggested how the two options respond to these questions, but stress that these choices are best made by the MRC with wider interests to consider and balance. We hope that this report will support these deliberations and judgements.

Table S.1: Summary of options appraisal

Option A	Option B
Suitability – *Does the Option assess whether a Unit meets the criteria for intramural support?*	
• Evolution of current system subject to similar weaknesses, including lack of emphasis on scientific strategic need. • May enable Units to take long-term view. • Accountability achieved through intramural pot of funding, alongside financial planning and zero-based budgeting. • Enhanced transparency of process. ✓ ✓	• Allows MRC Units to be assessed against rationale/criteria for intramural support. • Provides mechanisms for benchmarking Units against one another. • Short review cycle. • Enhanced transparency of process. ✓ ✓ ✓ ✓
Feasibility – *Can the Option be implemented?*	
• Skills and competencies for process already exist. • Need to develop skills for Unit-based websites, financial planning and zero-based budgeting. ✓ ✓ ✓	• Need to introduce *Strategic Audits* and *Unit Scorecards*. ✓ ✓
Acceptability – *Will the three key stakeholder groups support the Option?*	
• Natural progression of existing process, therefore unlikely to raise strong concerns. • Concern that the process would not provide strategic accountability as expected for a public sector body. ✓ ✓ ✓	• Support for ability to demonstrate accountability of MRC activities. • Concern about too great emphasis on top-down management of science and scepticism about metrics. ✓ ✓

Acknowledgments

Introduction

Following his appointment as Chief Executive of the Medical Research Council (MRC) in October 2003, Professor Colin Blakemore indicated that he would ask the Council to review, and to consult widely on, all MRC forms of support. The review would include: grants schemes for universities; training and career schemes; and intramural support. New grants schemes have already been introduced and a review of training and career awards is underway.

This report contributes to the review of intramural support. It proposes and appraises two options for improving the Unit Review process. The options were developed from an initial issues analysis, a series of stakeholder workshops that assessed the strengths and weaknesses of five approaches to Unit Reviews, and interviews with senior university managers.

The remainder of this chapter sets out the background to the study, how we went about developing the two options, and how these were appraised. The two chapters following this introduction describe in detail the options. Chapter Four discusses the implications of the options. In the Appendix we describe in detail the study methodology, outline the initial five approaches to Unit Reviews, and present the results of the stakeholder workshop and interviews with senior university managers.

1.1 The Steering Group on Units and University Partnerships

In May 2004, the MRC established the Steering Group on Units and University Partnerships (SGU&UP) to oversee and draw together a number of current policy and strategic issues in relation to intramural support and to university partnerships more generally[1]. As illustrated in Box 1.1, the Terms of Reference included "consultation on and development of new approaches to Unit Reviews".

To support this work, the SGU&UP asked RAND Europe to provide a prioritised summary of key issues that needed to be considered in revising the assessment and funding of Units. On the basis of key informant interviews, a stakeholder survey and comparisons with other UK and international research funders, in July 2004 we reported that[2]:

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[1] See http://www.mrc.ac.uk/index/about/about-organisation/about-bodies_and_members/about-sguup.htm

[2] Ling et al (2004). MRC Review of the assessment and funding of Units. RAND Europe, Cambridge.

- Science was well reviewed, but value for money was not;

- There was widespread support for Units, but ambiguity about their purpose;

- There were genuinely held differences of opinion on the best way to review Units;

- Articulating the work of Units to the priorities of the MRC, whilst simultaneously supporting innovative science, was seen to be both important and difficult.

Partly as a result of this issues analysis, the MRC subsequently developed draft criteria for intramural support and these are presented in Box 1.2.

1.2   Developing new approaches and options for Unit Reviews[3]

Building on the earlier issues analysis, and the draft criteria in Box 1.2, we developed five approaches for reviewing Units. These approaches were published in an interim Working Paper in November 2004[4]. In order to avoid instinctive judgements on the strengths and weaknesses of each approach we labelled them after five professions or trades:

- **The Tailor's Approach**. Bespoke reviews to fit the science; recognising and supporting diversity in science;

- **The Communicator's Approach**. Continuity of process with enhanced communication; fairness and clarity for all;

- **The Entrepreneur's Approach**. Clarity of purpose and dynamic science in a business-like planning cycle; rewarding success, re-energising flagging science and managing out failure;

- **The Surveyor's Approach.** Funding and evaluation to support the whole scientific field; supporting a creative scientific community;

- **The Horse Whisperer's Approach**. Light-touch evaluation to support creativity and innovation; autonomy is the reward for success.

The purpose of the approaches was to stimulate a debate on the best way to review Units. They were neither predictions nor proposals, but used brigaded and distilled ideas given to us in interviews and other interactions with key stakeholders. The debate was managed through a series of stakeholder workshops and interviews with senior university managers. We clustered stakeholders into three groups: MRC Head Office Staff, Unit Directors, and Scientific Evaluators, including members of MRC Boards.

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[3] See Appendix for further detail on the study methodology.

[4] RAND Europe (2004). Five approaches for Unit Reviews: A consultative document from RAND Europe on behalf of the MRC. RAND. [WR-200; available from www.randeurope.org]

Box 1.1: Terms of Reference for the Steering Group on Unit and University Partnerships

To oversee and ensure co-ordination and delivery of the following sub-projects:

1. Consultation on and development of new approaches to **Unit Reviews**

2. Development and implementation of a new **internal communication** model between:

> Units and HQ

> Units and Boards, SCoPE, Council

> Units and units

3. Development of a plan for the reducing/phasing out of the **external scientific staff (ESS)** cadre

4. Analysis of best practice in current **partnerships with universities** in MRC Units/Centres, development of possible models of best practice for the future and an implementation plan. Including a revision of current criteria for `direct support'.

Box 1.2: Rationale/criteria for intramural support – a draft policy statement for the future.

MRC's mission is to support research with the aim of maintaining and improving human health. Intramural research is one of the vehicles we have for taking forward long-term, strategic initiatives that are essential to delivery of the mission. Specifically, intramural support delivers high-quality and cost-effective full-time research capability as follows:

Institutes: These have a broad and cohesive inter/multi-disciplinary approach, developing critical mass that avoids traditional University-style departmental boundaries and offers maximum flexibility to engage in innovative `risky' research.

Units: All Units meet a scientific strategic need for long-term support in the context of the MRC's overall mission. They can be broadly divided into two categories:

Scientific strategic need. These Units are generally designed to meet national need, often by developing/nurturing new or under-represented fields and/or disease areas. They also have the potential to enable MRC to address sudden health developments rapidly and/or to provide special capability for translation of research into health care/practice. They represent flagship/leading entities in the UK, with a critical mass of individuals able to focus full-time on vital long-term research, acting as magnets for high-quality people in the field.

Resources/services/facilities strategic need. These Units are intended to provide a range of essential resources, services or facilities for various different stakeholder groups, especially where there is a national need which can only be met by national public sector investment.

Three stakeholder workshops were held in the first two weeks of December 2004. In total 35 people attended the workshops. The workshops were split into three sessions. The first session involved participants in voting on the most important characteristics of a Unit Review process. There was consensus amongst the three stakeholder groups that the Unit

Review process should be objective, scientific and evidence-based; non-biased and independent; and capable of making tough decisions[5]. As described in the Appendix, the participants were then asked to identify the 'good' and 'bad' features of the five approaches. Using this material and keeping in mind the characteristics of a review process, the final session involved participants in developing an improved hybrid system for Unit Reviews. MRC Head Office staff gravitated towards a 'Surveyor' type model, with integrated strategic field assessments, and elements of the 'Horse Whisperer'. The Unit Directors formed a strong consensus around the 'Communicator', advocating an evolved version of the current quinquennial review. The Scientific Evaluators preferred the 'Communicator' with elements of the 'Tailor'. Accordingly, the two options that are described and appraised in this report originate from the 'Communicator' and the 'Surveyor' with, where appropriate, desirable elements being included from the other approaches.

In addition, between 8th December 2004 and 5th January 2005, we interviewed ten senior university managers. Again the purpose of the interview was to assess the five approaches, but also to explore in more detail the options developed in this report and the impact and implications of them on Universities and wider MRC extramural support.

Using these three inputs, and our knowledge of the Unit Review process built up over the two studies, we then developed the two options described in detail in Chapters Two and Three of this report:

- **Scientific track record**, reviewed via site visits over variable time scales. Overall Unit synergy assessed, with award of funding envelope allocated to research groups by Director.

- **Future scientific strategy** assessed using (new) Strategic Audits, metric-based assessments and Directors' science strategy. Site visit is optional and determined by Quinquennial Review Subcommittee. Units will not be supported unless there is a strategic need.

Each option begins with a summary and statement of purpose of the review process. For Option A, this is then followed by a description of the review process, including a detailed process diagram. For Option B, we begin by describing the review inputs – that is, the Strategic Audits, Unit Scorecard Report, and Directors' proposal – and then follow a similar structure to Option A. Both options conclude with an appraisal of their suitability, feasibility and acceptability.

In the final chapter of the report we examine how each of the options addresses the key questions to be answered in taking the work of the SGU&UP forward. However, it is very important to note that it is not intended that the elements of Option A and Option B are regarded as mutually exclusive; it may be that elements from each are combined to produce the preferred model. As a result, in the final chapter we also provide a framework within

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[5] See Figure A.2, in the Appendix, for a graph illustrating the full results of the workshop voting.

which the SGU&UP and MRC can compare and contrast different elements of the two options.

CHAPTER 2 Scientific track record reviewed via site visits (Option A)

The Review will be dominated by the Unit's track record in producing high calibre science and meeting the scientific strategic need for long-term support, set out in the (draft) criteria for intramural support. Review Committees[6] will be instructed to make an overall score of the Unit. Inputs into the review will be a Research Report, which is largely produced from a continuously updated website detailing the Unit's activity, Referees' comments on specific science and science-related activities of the Unit, an in-depth two-day site visit, and the Review Committee's expert judgement. The Review Committee will produce a Summary Report at the Site Visit setting out its recommendations. The Review Committee will recommend whether the Unit is should be supported or not, based on the calibre of past science and science-related activities, whether they provided value for money, and the likelihood of continued success. If support for the Unit is forthcoming, the Director and MRC Head Office staff will develop a financial plan based on the principle of zero-based budgeting. This budget will be awarded from a ring-fenced 'intramural' pot of funding that will establish competition for funds between Units (and Centres and Institutes) and be administered by a dedicated Intramural Support Team within MRC Head Office. In addition to making funding recommendations, the Review Committee will establish timescales for the next Review. In cases where a Unit is established and has a long track record of producing high quality science the review period could be extended to eight years.

2.1 Purpose and objectives of the review

The primary purpose of the Review is to allow Council to satisfy itself as to the quality of science being carried out by the Unit. Specific objectives include:

- Evaluate whether the scientific track record of the Unit is of the highest international calibre, and/or is meeting a scientific strategic need for long-term support in the context of the MRC's overall mission[7];

- Recommend when the next review should take place, and if necessary, identify mechanisms for monitoring the research in the interim.

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[6] We have deliberately chosen not to use existing terminology in the presentation of the options. Thus in Box 2.9 we provide a glossary of terms used in this Chapter.

[7] As set out in the 'draft criteria for intramural support' (Box 1.2) in Chapter 1.

2.2   **Review process**

In order to achieve these objectives the MRC will review Units, according to the process outlined in Figure 2.1. The Review will be organised and managed by a newly formed Intramural Support Team (IST), led by a senior Programme Manager. The IST will manage a new intramural pot of funding that will be overseen by the Council's Subcommittee on Strategy, Corporate Policy, and Evaluation (SCoPE). The purpose of the dedicated IST is manifold. First, it is to ensure consistency between Reviews. Second, it will allow the IST to implement learning in subsequent reviews, ideally leading to improved effectiveness and efficiency in the process. Third, it will ensure continuity and senior representation of MRC Head Office staff in dealings with Unit Directors.

Reviews will continue to be scheduled on the quinquennial basis as currently planned. Subsequent Reviews will depend on the recommendations of the Review Committee and may occur between three to eight years later.

Below we detail the individual elements of the Review as set out in Figure 2.1.

2.2.1   **Review briefing**

The Unit Review process will begin with a briefing session for the Unit Director and his or her senior staff. This will normally occur about fifteen months before the Site Visit. The purpose of the briefing will be to deal with administrative and organisational matters pertaining to the Review. This will include a detailed description of the Review process, critical deadlines and events, the roles and responsibilities of the Director, the IST, reviewers, etc. A member of the IST will be appointed Review Manager and a commitment will be made that the person will see through the process that will last approximately 21 months.

2.2.2   **Unit and review website**

The MRC will establish a standard Unit website that provides a 'living testimony' of the Unit's activities, with the intention that the Units update this on a regular basis including main areas of science and science-related activities, research outputs (i.e. publications or other relevant material), career progression, etc. At the time of the Review, a feature will allow the Director to download the information and generate the bulk of the *Research Report* (defined below). By mandating that all Units use the website, the MRC Head Office will be increasing the transparency of its activities (as the website will be open access), spreading the burden of the Review process (as the information will be synthesised on a rolling basis) and provide a portal for the Review process.

The Review Portal will have open and limited access pages; the open pages will allow the lodgement of all relevant outputs of the process (marked as in Figure 2.1) including, for example, the *Research Report* and the *Summary Report*. The limited access area will be established for the Review Committee and the External Referees to lodge their assessments and exchange information on the review as needed.

Figure 2.1: Review process for Option A

Unit Review Briefing	*The Unit Review process begins with a briefing session for the Unit Director and his/her senior staff, discussing a detailed discription of the process, critical deadlines and events, roles and responsibilities. A member of the IST will be appointed Review Manager.*	**T₀-15**

T_0-15

Unit

Review Briefing

The Unit Review process begins with a briefing session for the Unit Director and his/her senior staff, discussing a detailed discription of the process, critical deadlines and events, roles and responsibilities. A member of the IST will be appointed Review Manager.

MRC Unit — Establish a review-specific section of website

T_0-12

Statement of Scientific Achievements

The Director submits a 3-page 'Statement of Scientific Achievements' (SSA) that focuses on the Unit's track record since the previous Unit Review.

MRC Board — Board meeting

The Unit updates this website on a regular basis including main areas of science and science-related activities, research outputs, career progression, etc.

Review-specific section of website

IST — Assembling longlist of External Referees

The IST suggests Referee nominations based on the Statement of Scientific Achievements and suggestions by the Board

Unit Director — Nomination of External Referees

Longlist of External Referees

IST will recruit members who have an internationally recognised expert knowledge of the Unit's activities. Selection is based on input from the Board meeting and the Statement of Scientific Achievements. The Unit Director may comment on and challenge the proposed composition of the Committee.

IST — Formation of Review Committee

T_0-9

First meeting of the Review Committee. This meeting could be a telephone or video conference

IST — Briefing of the Review Committee

T_0-6

During the first meeting of the Review Committee likely Lead Reviewers will be agreed

Review Committee — Nomination Lead Reviewers

A feature will allow the Director to download information and generate the bulk of the Research Report from the website

Unit Director — Downloading information from website

Legend	
☐	Process and responsible actor
☐	Documentation as output of a process
T₀	The date of the Site Visit
T₀-15	15 months prior to the Site Visit

Unit Director will submit the Research report four months prior to the Site Visit

Research Report

T_0-4

During the second meeting (phone/ video conference) the Lead Reviewer and Referees will be confirmed. Referees will be sent a copy of the SSA, the Research Report, an explanation of the Review process, their role, the timetable and deadlines, and the likely time commitments

Review Committee

Selection of final list Referees and Lead Reviewers

T$_0$-3

Referees will be sent the Research Report, and an explanation of what the Review Committee would like them to focus on. They will be given 4-6 weeks to respond.

Referees

Assessment of Research Report

T$_0$-2.5

The IST will receive the comments from the Referees 4-6 weeks prior to the Site Visit.

Comments from External Referees

T$_0$-1.5

At the same time the comments will be sent to the Review Committee and the Unit Director (with remarks confidential to the Review Committee removed)

IST

Distributing Referees' comments

The Unit Director will be given the opportunity to respond to the Referees' comments at the Site Visit.

Unit Director

Review of Referees' comments

Review Committee

Assessment of Referees' comments

T$_0$-1

Provisional assessment of Unit

Lead Reviewers will be asked to submit a provisional contribution for the Summary Report, based on their expert judgement and the Referees' comments.

T$_0$-0.5

The Site Visit will occur over two days. The Lead Reviewer will lead the questioning of the relevant aspects of the Review and be responsible for revising the relevant sections in the provisional assessment

Review Committee

Site Visit

T$_0$

On the second day of the Site Visit, the Review Committee will draft a Summary Report that sets out its high level findings and conclusions about the science and science-related activities, including an overall score for the Unit.

Summary Report

The IST will prepare a report of the Review within two weeks of the Site Visit. This draft Final Report is circulated to the Chair and then all members of the Review Committee.

IST

Preparation of Final Report

Final Report

T₀+0.5

The Unit Director is asked to comment on any factual inaccuracies, and respond to the draft Final Report if he/ she wishes to do so.

Unit Director

Clearance

The Final report and the Director's response will be finished within 6 weeks of the Site Visit. The Director's response will accompany the Final Report when it is submitted to SCoPE within three months of the Site Visit.

Director's response

T₀+1.5

SCoPE will make a decision on whether it wishes to continue to support the Unit based on the assessment of the science and science-related activities.

SCoPE

Financial Planning

Final Budget

T₀+3

Review Committee

Final clearance of budget proposal

T₀+4.5

MRC staff

Consultation on implications for staff

MRC Council

Funding decision

T₀+6

Selection of reviewers

Approximately twelve months before the Site Visit, the Director will be asked to submit a three-page *Statement of Scientific Achievements* that focuses on the Unit's track record since the previous Unit Review; as explained in Box 2.1 the statement will allow the IST to select members of the Review Committee and Referees. The size of the Review Committee will, in part, be determined by the breadth of science to be reviewed, but would normally be between four to eight expert members, plus MRC Head Office staff.

Box 2.1: Draft guidance for the *Statement of Scientific Achievement*

> The *Statement of Scientific Achievement* will be no longer than three pages. It will be used to brief the IST, the Review Committee, Referees and other stakeholders involved in the process, on the Unit and its track record. Its aim is to: set out the mission and objectives of the Unit in the preceding Review period; to provide a description on how these objectives were met, including highlights of key achievements; and to provide summary input, output and outcome data. This could include the overall budget, number of papers published, number of PhDs published, number of patents/licences or other non-commercial forms of knowledge transfer.

The IST will recruit members who have an expert knowledge of the activities of the Unit; in addition to scientific expertise this could include related activities such as public engagement, knowledge transfer, etc. (In cases where these science-related activities are not represented on the Review Committee, the IST will normally seek expert input from Referees). The Review Committee will normally be selected from internationally recognised scientists/experts from the UK and abroad. It will not include members of formal or informal Unit Advisory Boards[8]. The Chair of the Review Committee will be a member of a relevant MRC Board. The Unit Director will be given the opportunity to comment on and challenge the proposed composition of the Review Committee.

The Review Committee will be formed nine months before the Site Visit.

In recognition of the potential burden placed upon the Review Committee, at the outset members will be informed of the likely number of days the Review will take and paid an institutional *honorarium* of £500 per day[9]. It is anticipated that each Review will involve around five days for members and ten days for the Chair, including a full two-day site visit.

The Review Committee will be asked to sign 'non-disclosure agreements' and where appropriate, and with the advice and endorsement of MRCT, the Director can request

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[8] This is because there is a potential conflict of interest between advising the MRC Head Office, and this is advising the Unit Director. Nevertheless, although outside the remit of this study, it is worth noting that the Unit Advisory Board an important part of a Unit's governance structure and thus should be encouraged.

[9] The intention is that the honorarium will support activities such a symposia, post-gradate fellowships, travel grants etc.

that competitively sensitive areas are declared and protected under a 'safe haven' agreement.

Once the Review Committee has been formed it will, on the basis of the *Statement of Scientific Achievements*, be asked to nominate possible Referees. In addition the Unit Director will be asked for nominations along with suggestions identified by the IST and from the wider MRC corporate knowledge. If no member of the Review Committee has expertise in relevant science-related activities – such as public engagement, knowledge transfer, etc. – then the IST will identify and nominate such Referees. Two types of Referee will be identified. The first will be asked to look at specific aspects of the Unit – for example a programme or an activity (such as public engagement); the second will be asked to look at how the Unit meets the (draft) criteria for intramural support (set out in Box 1.2).

Referees will be contacted and asked if they are willing and able to take part in the Review. They will be sent a copy of the *Statement of Scientific Achievements*, an explanation of the Unit Review process, their role, the timetable including relevant deadlines, and the likely time commitment. External Referees will not be paid an *honorarium*, but they will be given feedback on the outcomes of the review process acknowledging their contribution. A list of likely Referees will be recruited three months before the Site Visit.

2.2.3 Preparation for Site Visit

Six months before the Site Visit, the IST will convene a meeting of the Review Committee. If needed this meeting could be a telephone or videoconference. The purpose of the meeting will be for the IST to brief the Review Committee on the Review process, each member's role and responsibility, MRC's mission and current scientific strategy. On the basis of the *Statement of Scientific Achievements* likely 'Lead Reviewers' will be agreed in the meeting. Lead Reviewers will be members of the Review Committee. As explained below, the role of the Lead Reviewer is to focus on a particular aspect of the Unit's science and science-related activities. Following submission of the Unit's *Research Report* (discussed below), these roles will be confirmed.

The Unit Director will submit a *Research Report* four months before the Site Visit. As outlined in Box 2.2, the *Research Report* will primarily focus on track record (that is about 80% of its volume), but it will also set out future proposals for work over the next Review Period (making up about 20% of its volume). The *Research Report* will typically be 150 pages long. The assumption is that the best predictor of future scientific achievement is a Unit's past productivity.

The *Research Report* will be sent immediately to the Review Committee and be followed up with a telephone or videoconference, no later than three months before the Site Visit. The purpose of the meeting will be to confirm who will act as Lead Reviewer for various aspects of the Review and to allocate Referees to various elements of the Review.

The Lead Reviewer will be expected to prepare in advance written comments on an assigned area, based on his or her expert assessment of the *Review Report* and relevant comments from Referees. As discussed below, at the Site Visit the Lead Reviewer will lead the questioning of the relevant aspects of the Review and be responsible for drafting the relevant sections in the *Summary Report* (discussed below).

As noted above, Referees will have one of two functions. One will be to focus on specific science and science-related activities identified in the *Research Report*. Specifically they will be asked to assess whether these activities are of the highest international calibre. They will be asked to identify the strengths and weaknesses of the activities, and likely areas for future development or improvement. A second group of Referees will be asked to look at the overall synergy of the Unit's science and science-related activities, and whether the Unit is meeting the scientific strategic need for long-term support as set out in the (draft) criteria for intramural support (see Box 1.2). Referees will be sent the *Research Report*, and an explanation of what the Review Committee would like them to focus on, ten weeks before the Site Visit. They will be given four to six weeks to respond. It is hoped that by informing them of this deadline when recruiting them three months earlier, they will be able to respond on time.

The Review Committee will receive comments from the Referees four to six weeks prior to the Site Visit. At the same time the comments will be sent to the Review Committee and the Unit Director (with remarks confidential to the Review Committee removed) who will be given the opportunity to respond at the Site Visit.

Lead Reviewers will be asked to submit a preliminary contribution, based on their expert assessment and that of the Referees, for the *Summary Report* at least two weeks in advance of the Site Visit. These will be circulated to the Review Committee in draft form. This contribution will be revised at the Site Visit, but its early submission will facilitate the writing of the *Summary Report*.

2.2.4 Review Committee Site Visit

The Site Visit will normally occur over two days. The Review Committee, including MRC Head Office staff, will ideally convene the evening before the Site Visit and have a private dinner discussion regarding initial comments raised by Lead Reviewers. The Chair will brief the Review Committee on the schedule for the Site Visit, and the MRC Head Office staff will brief the Review Committee on the MRC's current mission and strategic priorities.

A sample schedule for the Site Visit is set out in Box 2.3. In short the first day will focus on the science and science-related activities of the Unit. The second day will involve the private deliberations of the Review Committee, the draft of the *Summary Report*, and the debriefing of the Unit Director.

Important elements in the schedule include the first morning Scientific Session, which allows senior scientists in the Unit to present key work undertaken since the preceding Review. The purpose of the lunchtime Poster Sessions is to allow the Review Committee to interact with a larger group of (less senior) scientists. Following lunch there is a session dedicated to the science-related activities, such as public engagement, knowledge transfer etc. The final session of the day allows the Director to present his or her scientific strategy for the forthcoming review period. This will include outline research proposals with a demonstration of how they will fit into the MRC's strategic need and (draft) criteria for intramural support (Box 1.2). The Director will also present an indicative funding request informed by the previous Unit budget.

Box 2.2: Draft guidance for the *Research Report*

Section A:	Introduction and overview
	Building on the Statement of Scientific Achievement, the Director will set out the mission and objectives of the Unit over the preceding review period and how these are likely to change in the future. Importantly, the Director will be expected to set out how the Unit meets the rationale for intramural support described in Box 1.2[10].
	It is anticipated that this section would be around ten pages long.
Section B:	Progress report
	Using the Unit website reporting feature (see Section 2.2.2), the Director will download and generate a progress report on main areas of science and science-related activities, research outputs (i.e. publications or other relevant material), additional external funding, research students funded from overseas, career progression, etc.). It is envisaged that this will require little editing by the Director. Full papers, CVs, etc. will still be made available over the website.
	It is anticipated that this section would be around a hundred pages long.
Section C	Research Proposal
	A description of the science and science-related programmes that are anticipated for the future Review Period. This should be of sufficient detail for the Review Committee to make a judgement about the overall value of the proposed work, but should not be a series of specific proposals for research programmes.
	It is anticipated that this section would be around thirty pages long.
Section D:	Indicative funding request
	This section should provide a statement of the resources used in the preceding Review Period, and an indicative funding envelope anticipated for the future science and science-related programmes, with high-level justification for why the resources increased, decreased or stayed the same.
	It is anticipated that this section would be around ten pages long.
Section E:	Background material
	Background material, such as key publications, curriculum vitae, will be available on the Unit website.

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[10] If required, breaking down the draft criteria into specific questions could provide more specific guidance. For example, directors could be asked to explicitly demonstrate the number of 'high quality people' recruited to the Unit.

Box 2.3: Sample schedule for the Site Visit

Previous evening		Dinner discussion on site visit
Day 1:	09:00 – 12:00	Scientific session
	12:00 – 14:00	Lunch and poster session
	14:00 – 15:00	Related scientific activities
	15:00 – 17:00	Future research proposals
Day 2:	09:00 – 10:00	Private meeting of Review Committee
	10:00 – 11:00	Private meeting of Review Committee with Director
	11:00-13:00	Drafting of *Summary Report*
	14:00-15:00	Chair debriefing

The second day will begin with a private meeting of the Review Committee. They will identify areas for which further clarification is required, and then in the second session of the day, discuss these with the Unit Director. Following this session the Review will draft a *Summary Report* that sets out its high-level findings and conclusions about the science and science-related activities of the Unit (see

Box 2.4). The *Summary Report* will include an overall score for the Unit, based on the proposed scale set out in Box 2.5. It will also include a brief statement of where the Review Committee believes the Unit's priorities should lie if funding were either significantly increased (by say 20%), or significantly decreased.

The *Summary Report* will also include a recommendation of when the Unit needs to be reviewed again. For Units where there is some concern about their activity or strategic direction this may be within a relatively short period, say three to four years. For high-performing and well-established Units this may be up to eight years. In either case monitoring will be restricted to the minimum required to ensure a duty of care as an employer and to ensure the probity of the Unit's activities.

The Site Visit will conclude with a debriefing of the Review Committee's findings that will be attended by the Chair, the Unit Director and the Review Manager. The Director will be given a copy of the *Summary Report*.

Box 2.4: Draft guidance for the *Summary Report*

Section I:	Overview
	The Review Committee will draft a consensus statement that sets out an overall assessment of the international calibre of the Unit and how it is meeting the rationale for intramural support described in Box 1.2. Based on this assessment the Review Committee will provide an overall grade to the Unit, based on the system set out in Box 2.5. *The Review Committee will be expected to make a judgement on whether the preceding science and science-related work provided value for money and, based on that and the future proposals, whether the requested indicative budget is likely to provide value, or whether it should be revised and if so by how much. The Review Committee will also be asked what should be prioritised if funding for the Unit were significantly less or significantly more than existing expenditure.*
Section II:	Lead Reviewer statements
	This will normally take the form of bulleted points focusing on an assessment of the international calibre of science and science-related activities reviewed. In addition, the Lead Reviewer would be expected to comment on the direction of future lines of research, and highlight issues of concern raised in the site visit or by Referees.
Section III	Future Reviews
	The Summary Report will make a recommendation on when the next Review should occur and, if that is beyond five years or necessary, how the Unit should be monitored in the interim.

2.2.5 Review report

The IST will prepare a report of the Review within two weeks of the Site Visit. The *Full Report* will be based on the *Summary Report* and will be circulated to the Chair and then all members of the Review Committee. The Director will then be invited to comment on any factual inaccuracies and, if he or she wishes, to respond to the *Full Report*. The *Full Report* and the Director's comments will be completed within six weeks of the Site Visit.

The Director's comments will accompany the *Full Report* when it is submitted to Council within three months of the Site Visit[11]. SCoPE will make a decision on whether it wishes to continue to support the Unit based on the assessment of the science and science-related activities. If it does, then the IST and the Unit Director will begin to develop a financial plan for the forthcoming review period. If it does not, then the Unit will be closed. In this way the financial decisions are driven by decisions made about the science and science-related activities.

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[11] It was noted by a number of stakeholders in the first phase of the study that the 'post review' process was too long, and this was due to the length of time it takes to develop and present papers to Council and/or SCoPE. Whilst this is an internal matter for the MRC's Head Office, it would obviously be desirable if this part of the process could be made quicker.

Box 2.5: Proposed grading system

A single grade will be awarded for the overall Unit. The following classification is proposed:

Exceptional   At the leading edge internationally, setting scientific trends through pioneering work, which is clearly meeting national need through developing/nurturing new or under-represented fields and/or disease areas, or providing a range of essential resources, services or facilities.

Excellent   Internationally competitive and at the leading edge nationally. Meeting national need through developing/nurturing new or under-represented fields and/or disease areas, or providing a range of essential resources, services or facilities.

Good   At the leading edge nationally, with internationally competitive elements. Meeting national need through developing/nurturing new or under-represented fields and/or disease areas, or providing a range of essential resources, services or facilities.

Fair   Nationally competitive, but not meeting national need (i.e. through developing/nurturing new or under-represented fields and/or disease areas, or providing a range of essential resources, services or facilities), or national need being met via other funding.

Modest   Satisfactory work, but not meeting national need (i.e. through developing/nurturing new or under-represented fields and/or disease areas, or providing a range of essential resources, services or facilities), or national need being met via other funding.

Poor   Unsatisfactory work and not meeting national need (i.e. through developing/nurturing new or under-represented fields and/or disease areas, or providing a range of essential resources, services or facilities), or national need being met via other funding.

Following current MRC guidelines on the funding of Units, it is anticipated that Exceptional, Excellent and Good grades are fundable through intramural support ('Good' is considered fundable where it meets a national need).

2.2.6 Financial planning

Once SCoPE has made a judgement on continued support for the Unit, based on its past track record and likely future contribution, the IST and the MRC's Finance Department will work with the Unit Director to develop a financial plan for the forthcoming Review Period. To support this judgement, the Review Committee will have been asked to identify priorities at current expenditure and at significantly higher and significantly lower levels (for example, at 70%, 100% and 130% of current expenditure).

The final award will be made from a new 'ring-fenced' Intramural pot of funding. In this way Units will be explicitly competing for the same point of funding, with high-performing Units receiving additional support at the expense of under-performing Units.

In the *Research Report*, the Director will have already provided an indicative budget based on previous performance. The main purpose of this was to allow all parties involved in the Review process to be able to understand the financial context of past scientific activity and proposed future activities. For financial planning the principal of modified zero-based budgeting will be applied. That is, all expenditures will need to be justified for the funding period and not only proposed marginal changes (see Box 2.6 for more detail on modified zero-based budgeting). It is recognised, however, that this may take a modified form, with costs allocated into blocks.

Box 2.6: Financial information and modified zero-based budgets

> A fully-fledged, 'drains-up' zero-based budgeting system would involve every part of the Unit's budget being built from zero and this would impose an unnecessary burden on Units. What is proposed in Option A is a modified version which has the particular aim of ensuring that budgets relate to real activities and activities reflect as far as is practicable the reasons why the Units are funded. In Option A, financial information will need to be provided to show how resources have been used over the past quinquennium and what resources are being requested for the forthcoming review period, including all income and costs associated with external funding and other initiatives. Rather than showing a theoretical number of posts and quantum of cost, Units will be required to provide historical and future financial information year by year and in a form in which they are reported in management accounts. Non-financial information will also be required, such as headcount by function and band, and numbers of animals to be used, along will some specific analysis of the total cost of different scientific programmes. The impact of efficiency improvement initiatives, past and present, will need to be quantified explicitly. An accompanying commentary will be required to explain key trends and variances.

Proposed costs will be challenged and compared with internal benchmarks (including, in time, the costs of other Units). The purpose of this process is for the IST is to ensure that the MRC will get full value for money out of its investment; that is the scientific benefits anticipated from future funding outweigh the financial costs.

The final agreed modified zero-based budget would be sent to the Review Committee, no longer than six weeks after SCoPE's decision. The Review Committee will have no more than two weeks to raise any concerns with the agreed financial plan. Council will then ratify this and an award made to the Unit. The award will be in the form of a 'funding envelope' where the Director is given autonomy to vire from one line item to another.

2.3   Option appraisal

To appraise Option A, we have used a Suitability - Feasibility – Acceptability framework, defined in Box 2.7. We have made judgements against each of these criteria using the results of the initial issues analysis[12], the stakeholder workshops and interviews with senior university managers (see Appendix).

Box 2.7: Options appraisal framework

> **Suitability** examines whether the Option will allow the MRC to assess whether a Unit meets the draft rationale/criteria for intramural support (Box 1.2), and whether it addresses the issues identified in the first phase of analysis (Section 1.1).
>
> **Feasibility** examines whether the Option can be implemented, and what specific resources and competencies are required.
>
> **Acceptability** examines whether the Option will raise concerns from key stakeholder groups.

2.3.1   Suitability

As Option A is a natural evolution from the current QQR system, it is at risk of being subject to similar weaknesses identified in our initial issues analysis. For example, it is possible that some Units will continue to work in areas that are not of strategic importance to the MRC, especially when their research is deemed to be of the highest quality. On the other hand, since the Review is based on previous track record, this is likely to encourage Units to take a long-term view coupled with scientific risk-taking leading (it is assumed) to innovation, thereby adding value to the MRC's overall research portfolio.

From a value for money perspective, the introduction of an intramural pot of funding will establish overt competition for funds between Units. A further financial check and balance will be achieved through the introduction of modified zero-based budgeting allowing cost based comparisons and benchmarks to be made between Units.

Prior to the Review, the Review Briefing for Unit Director will ensure that all parties have clear and transparent information regarding what is expected. Further, the requirement that all Units use the Unit (and Review) website will increase the transparency of the MRC Head Office and Units activities.

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[12] Ling et al (2004). MRC Review of the assessment and funding of Units. RAND.

2.3.2 **Feasibility**

For some, one of the advantages of Option A is it is a natural evolution from the current system. Thus within the MRC Head Office, there already exists the skills and competencies required to implement this option and it would build upon existing experience and expertise. The formation of an IST should be relatively easy, with the biggest challenges being developing a standardised Unit website, and the introduction of the financial planning and zero-based budgeting. The demands on the Scientific Evaluators are similar to the current system, but their roles are made more explicit and transparent, and Review Committee members are rewarded for their time.

2.3.3 **Acceptability**

As noted in Box 2.8, Option A is likely to be acceptable to all three stakeholder communities.

Box 2.8: Perceptions assessment of Option A

> One perception of Option A would be that it fails to provide sufficient strategic direction to the work of the MRC as a whole and fails to adequately establish the criteria by which value for money might be assessed. However, because Option A is a natural evolution of the current system, it is unlikely to raise new concerns about the process, although it should be noted that: (a) the interim-based monitoring may be perceived as increasing the administrative burden for staff; and (b) the variable Unit Review timescales will increase management complexity. The fact that Option A does not provide strategic accountability could be seen as a drawback given that the direction of wider reforms in the public sector moving toward greater transparency and accountability based on metrics and performance targets.
>
> **Unit Directors** will support elements of Option A as it retains site visit and ensures a transparent process. Some Unit Directors were in favour of separating intramural and extramural budgets and hence are likely to welcome the 'intramural' pot of funding. The Review website could be perceived as an administrative burden given that it aims to be a 'living testimony' of the Unit's activity, which will require continual updating by each Unit. However the website could also reduce the amount of work in the *Research Report*. On the whole, Unit Directors may not welcome the variable review period, especially if their Unit requires a review more frequently than every five years. Unit Directors may perceive the Unit Review cycle of 21 months as too long.
>
> **Scientific Evaluators** are likely to have no strong views on Option A. Variable timescales will probably be welcomed given that they allow for potential problems to be picked up early.

Box 2.9: Glossary of terms used in Option A

Intramural Support Team	Unit Review management team led by Senior Programme Manager and MRC head office support to ensure consistency between Unit Reviews.
Full Report	Final report, based on the Summary Report, of the Review Committee, making recommendations for future funding.
Lead Reviewer	Member of the Review Committee who focuses on a particular aspect of the Unit's science *and* science-related activities.
Research Report	Report submitted by Unit Director four months prior to the site visit (See Box 2.2).
Review Committee	Assesses the science and science-related activities of the Unit, conducts site visit and gives Unit overall score. Committee made up of four to eight internationally recognised experts (from UK or abroad) plus MRC head office staff.
Referees	Internationally recognised experts from UK or abroad who give written feedback on a specific aspect of the Unit – either a programme or an activity, or how the Unit meets criteria for intramural support. Referees are not members of the Review Committee or MRC staff.
Site Visit	Two-day visit to the Unit by the Review Committee (See Box 2.3).
Statement of Scientific Achievement	Briefing submitted by the Unit Director approximately twelve months prior to site visit (See Box 2.1).
Summary report	Report submitted by the Review Committee, which includes an overall score for the Unit (See Box 2.4).
Zero-based budgeting	Method of budgeting in which all expenditures must be justified each review period, as opposed to only explaining the amounts requested in excess of the previous period's funding.

CHAPTER 3   **Future scientific strategy assessed using a combination of methods (Option B)**

Every five years a Subcommittee of an MRC Board will review a Unit. Inputs into the Review will include (new) Strategic Audits, a Unit Scorecard Report using metrics derived from the OST Performance Framework, and a Unit Director's Proposal of his or her future programme. The Strategic Audits will provide relative indications of the value for money achieved from intramural versus extramural support in a given area, and establish a strategic direction for MRC funding. The metric-based assessment will give an indication of track record of the Unit and be aligned with OST indicators. The Director's Proposal will set out the vision and how it relates the MRC strategy. Referees will review the Director's Proposal. On the basis of these inputs the Subcommittee can make a decision on whether to visit the Unit. Subcommittee assessment will be based on the quality of science and the strategic fit of the Unit. A QQR decision framework will be used to decide on the outcome of the QQR. Inevitably, some Units producing science of the highest calibre will no longer be supported as they do not fit the strategic requirements of the MRC.

3.1   Purpose and objectives of the review

The primary purpose of the Quinquennial Review (QQR) is to allow Council, every five years, to satisfy itself as to the quality and relevance of science being carried out by a Unit. Specific objectives include:

- To assess whether the proposed research carried out by the Unit is within the MRC's strategic goals and can best be delivered through intramural support;

- To assess the quality of the proposed research to be carried out by the Unit.

3.2   Synopsis

As illustrated in Figure 3.1, the Review is based on three inputs. Two of those inputs – the *Director's Proposal* and the *Unit Scorecard Report* – relate directly to the Unit. The third – the *Strategic Audits* – is itself a new process that will inform the decision not only with regard to Units, but also other MRC funding. Given this 'twin track' approach we begin by describing these three inputs, their purpose and how they are derived. We then describe the QQR process.

3.3   Review Inputs

3.3.1   Strategic Audits

The MRC will initiate a rolling programme of Strategic Audits. The specific objectives of each Audit will be bespoke, and set by the Council's Subcommittee on Strategy, Corporate Policy, and Evaluation (SCoPE). Typically the Audits will focus on the MRC's stated priorities such as Stem Cells, Autism, Military Health[13]. The remit of the Audit could be disease-specific (such as cardiovascular research) or activity-specific (such as knowledge translation), or area-specific (such as public health research or neurology). Irrespective, each Audit will have three generic elements:

- Mapping: Describe the research activity, including research inputs and outputs, associated with the MRC's intramural and extramural research portfolios, other UK-based/supported research, and key international activity. Key sources of information will be a survey of other funders, both nationally and internationally, and bibliometric analysis.

- Assessment: Through a combination of peer-review and bibliometrics, make an assessment of the quality of research supported by the MRC, both intramurally and extramurally, other UK-based/supported research and internationally.

- Strategy: Through a planning process consider options for likely scientific priorities for the area under audit. This could include tools borrowed from long-term planning, such as running scenario-based workshops, etc.

Each Strategic Audit will have a Steering Group appointed by SCoPE. Members of the Steering Group will include experts in the area to be audited. However, SCoPE will manage the risk that Steering Groups become advocates for the area of Audit, by including other 'non-interested' representatives. This could include, for example and where appropriate, patient groups, science policy experts, research users, etc. In addition, Audits will be based on a combination of expert input alongside independent evidence sources such as surveys, bibliometrics and international benchmarking.

3.3.2   Unit Scorecard Report

The MRC will develop a standard scorecard for monitoring Units. It is envisaged that the scorecard will be aligned with the current OST Performance Framework that is in development[14]. Indicators relevant to Units and identified in the OST Performance Framework are summarised in Table 3.1. In addition, the MRC may wish to consider other indicators as illustrated in Table 3.2. These are predominantly 'process indicators'. Units will be expected to report against the scorecard to MRC Head Office every year. Some of the information can be collected remotely (by MRC Head Office); other information will have to be provided by the Unit.

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[13] MRC website, visited 21 December 2004.

[14] The following suggestions are inevitably draft, as there is little point in finalising a Unit Scorecard until the OST's Performance Framework is finished and the MRC has completed its analysis on information availability.

The MRC will synthesise the Unit Scorecards for the QQR. In addition to providing trend data, where possible, the MRC will provide comparative data for the relevant indicators. Comparators will include other intramural support, extramural support, other Research Council support and internationally.

Table 3.1: Relevant indicators for MRC Units

Domain	Indicator
Scale	£ input per annum Number of publications produced per annum by Unit Number of PhD awards per annum funded from Unit Number of active researchers Additional non-intramural funding
Quality	Citations per publication Publications in verified quality journals Rate of PhD employment PhD completion rate Membership of networks
Agility	Rate of change in Unit spend between programmes Level of inter-disciplinary activity within and beyond Unit
Productivity / efficiency	Publications per £ PhDs per £ Publications per active researcher PhD per active researcher
Sustainability	Pattern of first destinations of new PhDs Unit staff turnover
User focus	Number of joint publications with business (and other stakeholders) Licence income

Source: OST Performance Framework

Table 3.2: Other possible indicators for monitoring Unit performance

Indicator	Comment
Budgetary control	Actual spend as a % of planned budget
Visited conferences	An indicator of networking and outreach
Diversity	Personnel structure (gender, ethnicity, age) of Unit
Safety incidents	Number of officially reported accidents
Training budget	Proportion of total budget spent on employee training
Staff satisfaction	Employee survey
Interactions with MRCT	Demonstrating awareness of knowledge transfer
Collaboration	Demonstrating partnership and collaborative working

3.3.3 Director's Proposal

The *Director's Proposal* will set out the Unit's science strategy and operation for the forthcoming quinquennium. This is very much a forward-looking document, with about 80% of it focused on the future, and 20% on past achievements. The *Director's Proposal* shall be no longer than 150 pages, and be contained in one integrated volume. The proposal shall take the form set out in Box 3.1.

Box 3.1: Draft guidance for the Director's Proposal

Section A:	Introduction and overview
	A summary of the Unit's research activities. The Director is encouraged to make reference to the Strategic Audits and Unit Scorecard Report, using the data to illustrate the Unit's major achievements (and areas that need improvement), and commenting on the strategic relevance of the Unit's work.
	Directors will also be encouraged to make use of diagrams to illustrate the conceptual model underpinning the Unit, and how intramural support is adding value to the sum of the component research activities.
	It is anticipated that this section would be around twenty pages long.
Section B:	Future Research Proposals
	A description of the work proposed to be undertaken over the next quinquennium for each programme of research. Each proposal should set out the aims, methodology (including use of animals and human subjects), technical feasibility and expected outputs and outcomes.
	In addition, each proposal should address the importance of the proposed research: for the immediate field and its relevance to MRC's strategic priorities; health and wealth creation activities resulting from knowledge transfer; public engagement and external communication activities. Directors will be asked to produce a balanced portfolio of high- and medium-risk work.
	For each stream of research, proposals would typically be around twenty pages.
Section C:	Justification for support
	This section should provide a statement of the resources required to deliver the scientific programmes, along with a detailed justification for all expenses, including staff, recurrent costs, equipment, accommodation, etc.
Section D:	Background material
	Background material, such as key publications, curriculum vitae, will be made available electronically on CDs or (confidential) website made available to the Subcommittee.

3.4   Review process

To achieve the QQR objectives in Section 3.1, the MRC will review Units according to the process set out in Figure 3.1. Below we detail the individual elements of the QQR.

3.4.1   QQR Briefing

The QQR will begin with a briefing session for the Unit Director and his or her senior staff. This will normally occur about eight months before the QQR Subcommittee's first meeting. The purpose of the briefing will be to deal with the administrative and organisational matters pertaining to the QQR. The Director will be asked to nominate members for the Subcommittee and External Referees. The Director will be informed of *Strategic Audits* that have covered elements of the Unit's work, and the *Unit Scorecard Report*. This will allow the Director to comment on both inputs in his or her *Director's Proposal*.

3.4.2   QQR Subcommittee

MRC Head Office will recruit and appoint a QQR Subcommittee. The Subcommittee will report to the appropriate MRC Board and be chaired by one of its existing members. Other members of the Subcommittee will be recruited on the basis of their expert knowledge of the activities of the Unit, including its science and science-related activities (such as public engagement and knowledge transfer). Ideally, membership will also reflect the broader stakeholder community, and where appropriate, include lay members, other Unit Directors, industry representatives, etc. The Subcommittee members will be informed of their roles and responsibilities at the outset of the process and the number of days of likely commitment. Typically this will be ten for the Chair, and five for other members. The Subcommittee will be recruited five months before its first meeting.

3.4.3   Referees

The Director, members of the Subcommittee and members of the relevant MRC Board, with support from MRC Head Office staff, will identify a long list of Referees four months before the Subcommittee's first meeting. Referees will be contacted and asked if they are willing and able to take part in the review. They will be given details of the QQR process, their role, the timetable including deadlines and time commitment. If they are able to participate in the process, they will be sent the *Director's Proposal*. Some External Referees will be able to comment on specific elements on the proposal – such as a programme of research where they have particular expertise – whilst others will assess the overall synergy and 'value added' of the Unit. Referees' reports will need to be returned one month before the Subcommittee's first meeting.

Figure 3.1: Review process for Option B

Figure 3.1: Review process for Option B

Subcommittee

Allocate elements
programmes

The Subcommittee will contact the Referees and give them details of the QQR process, their role, the timetable including deadlines and time commitment. This may take place via video or phoneconference.

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Referees

Review of Director's
Proposal

The External Referees will comment on the Director's Proposal and address these in a Referee's Report. Some Referees will be able to comment on specific elements of the proposal, whilst others will assess the overall synergy and value-added of the Unit.

Referee's
Reports

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Subcommittee

First meeting of
Subcommittee

Prior to the first meeting, the QQR Subcommittee will have received copies of the relevant Strategic Audits, Unit Scorecard Report , and the Director's Proposal with associated reports from the Referees. On the basis of these inputs the Subcommittee will make an assessment on the Unit's relevance and quality of the proposed science, and whether it provides value for money.

T_0

Sufficient
information for
decision?

No

At the meeting the Subcommittee can make a number of decisions. It can decide whether it wishes to visit the Unit and if so what the scope and focus of the visit would be. Alternatively, it could request a meeting with the Director and senior scientific colleagues at the MRC Head Office, again specifying the scope and focus of the meeting. If the Subcommittee feels that it has sufficient information visiting the Unit, it may make a decision on the QQR outcome at the first meeting.

Yes

Head Office

Drafting QQR
Report

Site Visit needed?   No

Yes

QQR Report

The QQR Report will be drafted within 4 weeks of the Subcommittee's first meeting. MRC Head Office staff in close co-operation with the Chair shall draft the report. Members of the Subcommittee will comment on the report.

T_0+1

Subcommittee

Outline issues to
address

Prior to the Site Visit or Director's presentation, the Subcommittee holds a (virtual) meeting to outline the issues to address at the Site Visit or Presentation day.

Subcommittee

Outline Issues to
address

The Site Visit will occur over one day and focus on those particular aspects requested by the Subcommittee at its first meeting.The Site Visiting Team will be accompanied by MRC Head Office staff. The Site Visiting Team will submit a short report to the Subcommittee on its findings

Site Visit Group

Site Visit

As an alternative to site visit, the Subcommittee may request a meeting with the Unit Director and his/her senior staff, held at the MRC Head Office. This Director 's Presentation could be attended by international members of the Subcommittee via videoconference

Subcommittee

Director's Presentation

T$_0$+2

Site Visit Report

Subcommittee

Virtual meeting

Head Office

Drafting QQR Report

The QQR Report will be drafted within 4 weeks of the Site Visit or the Director's presentation. MRC Head Office staff in close co-operation with the Chair shall draft the report. Members of the Subcommittee will comment on the report.

QQR Report

T$_0$+3

MRC Board

Review of QQR Report

T$_0$+4

MRC staff

Consultation on implicationsfor staff

3.4.4 QQR Sub-committee's first meeting

Prior to its first meeting, the QQR Sub-committee will have received copies of the relevant *Strategic Audit*s, *Unit Scorecard Report*, and the *Directors' Proposal*, with associated reports from the Referees. On the basis of these inputs, at its first meeting, the Sub-committee will make an assessment based on the Unit's relevance and quality of the proposed science, and whether this would provide value for the scale of resource requested. This meeting will typically last for one day and be based at MRC Head Office. At the meeting the Sub-committee can make a number of decisions. It can decide whether it wishes to visit the Unit and if so what would be the scope and focus of the visit. Alternatively, it could request a meeting with the Director and senior scientific colleagues at the MRC Head Office, again specifying the scope and focus of the meeting. As discussed below, the site visit/Director's meeting will occur within 2 months of the QQR Sub-committee's first meeting[15]. If the Sub-committee feels that it has sufficient information to make a decision without visiting the Unit, it can make a decision on the QQR outcome at the first meeting. As discussed in Section 3.4.8 (below), the possible QQR outcomes are derived from a combination of an assessment of scientific quality and strategic necessity of the Unit.

3.4.5 Possible Site Visit

Typically the Site Visit will occur (if it takes place at all) over one day and focus on those particular aspects requested by the Subcommittee at its first meeting. It will occur within two months of the Subcommittee's first meeting. The Site Visiting Team need not necessarily be the full Subcommittee as long as this was agreed at its first meeting. MRC Head Office staff will accompany the Site Visiting Team.

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[15] It is envisaged that the date of the possible site visit/Director's meeting will be 'pencilled-in' at the outset of the review process to ensure the availability of all the relevant parties.

The Site Visit will begin the evening before with an informal dinner discussion on the issues that need to be raised the following day and who is going to take a lead on questioning, etc. The Site Visiting Team, including MRC Head Office staff, will attend dinner. A sample schedule for the Site Visit is set out in Box 3.2.

The day will begin with a session that focuses on the scientific and scientific-related activities of the Unit. This will focus on future proposals for specific programmes of activity that have been highlighted as being of interest by the Subcommittee. It could include, for example, discussions regarding the Unit's public engagement or outreach work, or its technology transfer strategy. The session will give the Site Visiting Team the opportunity to probe the details of the proposal and the group's ability to deliver the research/activities. The lunchtime Poster Session will provide a focus for discussion between the Site Visiting Team and junior members of research teams. Again, prior to the visit the Subcommittee will indicate which aspects of the work it wishes to review at this session. Following lunch the Site Visiting Team will meet, in private, the Director to further clarify any outstanding issues. The visit will be finished with a private meeting of the Site Visiting Team to discuss and agree scientific quality and strategic fit ratings for the proposed work (using the framework discussed in Section 3.4.8, below). The Site Visiting Team will submit a short report to the Subcommittee on its findings.

Box 3.2: Sample schedule for the Site Visit

Previous evening	Dinner discussion on site visit
09:00 – 12:00	Scientific and related scientific-related activities
12:00 – 13:00	Lunch and poster session
13:00 – 15:0	Private meeting of Review Committee with Director
15:00– 16:00	Private meeting of Review Committee

3.4.6   **Director's presentation**

As an alternative to a site visit, the Subcommittee could request a meeting with the Director and his or her senior scientific staff. This would not be at the Unit, and would typically occur at MRC Head Office. The purpose of the Director's presentation will be defined by the Subcommittee in its first meeting, but should provide a mechanism for exploring in detail areas of concern. The Director would have been made aware of these areas of concern, and be expected to address them in his or her presentation to the Subcommittee. The Director's presentation will usually occur over a morning or afternoon and, if needed, could be attended by international members of the Subcommittee via videoconference.

3.4.7   **QQR Report**

The *QQR Report* will be drafted within four weeks of either the first Subcommittee meeting or the site visit/Director's meeting. MRC Head Office staff in close co-operation with the Chair will draft the report (see Box 3.3). Members of the Subcommittee will

comment on the report. The report shall set out the mission and objectives of the Unit, make an assessment of the strengths and weaknesses of the individual programmes, including their relevance to MRC strategy and the proposed quality of science, make an assessment of the value added of intramural Unit support, and conclude with a funding decision. The decisions available to the Subcommittee are discussed below.

Box 3.3: Draft guidance for the *QQR Report*

> Based upon the discussions of the QQR Sub-committee at its first meeting and/or (optional) the site visit or Directors Meeting, MRC Head Office will draft the *QQR Report*. The report will be circulated to the Subcommittee for comment.
>
> The *QQR Report* will include an overall assessment of the Unit, based on the quality and strategic fit of the proposed science using the decision framework set out in Section 3.4.8 and Figure 3.2. In addition, the *QQR Report* assesses individual programmes, using the quality criteria defined in Figure 3.2.

3.4.8 QQR decision framework and outcomes

To ensure that Units are assessed against the review objectives (Section 3.1), the QQR Subcommittee will be required to use the decision framework summarised in Figure 3.2. This involves allocating the Unit to one of eighteen cells, based on a matrix of six 'quality-of-science' outcomes and three 'strategic fit' outcomes. The quality-of-science criteria are self-explanatory and are based on the scoring system used by CRUK[16]. The Subcommittee will use its expert judgement and Referees' comments to come to a decision on the overall rating for the Unit (and individual programmes).

The strategic fit outcomes are informed by the (draft) criteria for intramural support (Box 1.2) and the recommendations of the *Strategic Audits*. This will be achieved through a two-step decision process. First the Subcommittee will determine whether the future research programme meets the criteria for intramural support. This means that it will need to meet "a scientific strategic need for long-term support" by either meeting a:

- "national need, often by developing/nurturing new or under-represented fields and/or disease areas. They also have the potential to enable MRC to address sudden health developments rapidly and/or to provide special capability for translation of research into health care/practice. They represent flagship/leading entities in the UK, with a critical mass of individuals able to focus full-time on vital long-term research, acting as magnets for high-quality people in the field".

Or by providing:

- "a range of essential resources, services or facilities for various different stakeholder groups, especially where there is a national need which can only be met by national public sector investment".

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[16] CRUK (2003). Quinquennial Review Guidelines For Visitors & Reviewers (v2.6.6.)

If neither of these criteria is met then, irrespective of the quality of the science, the Unit will no longer be supported. If the science is deemed to be of high quality (i.e. is outstanding or forefront) then the MRC will develop an exit strategy that leads to the continued funding of the science through extramural support or Centres.

If either of the criteria for intramural support is met, then the Subcommittee will consider the inputs from the *Strategic Audits*. If these indicate that the work of the Unit is of 'Strategic Importance' then in rare cases this may mean that 'Not competitive' research is supported but only with a clear plan to improve the quality of science, through restructuring the Unit. 'Satisfactory' research and above will be supported.

In cases where Strategic Audits do not conclude that the work of the Unit is of importance (or that the field has not been audited) but the Unit meets the criteria for intramural support, then the Subcommittee will conclude that the there is a 'Strategic Need' for the Unit. In cases where this coincides with a quality-of-science rating of 'Competitive' and above, the Unit will continue to be supported. In cases where the research is 'Satisfactory' the MRC will consider continued funding through extramural support of Centres.

3.5   Option appraisal

We appraised Option B using the Suitability – Feasibility – Acceptability framework defined in Box 2.7 (Chapter 2), using the results of the initial issues analysis, the stakeholder workshops and interviews with senior university mangers (see Appendix).
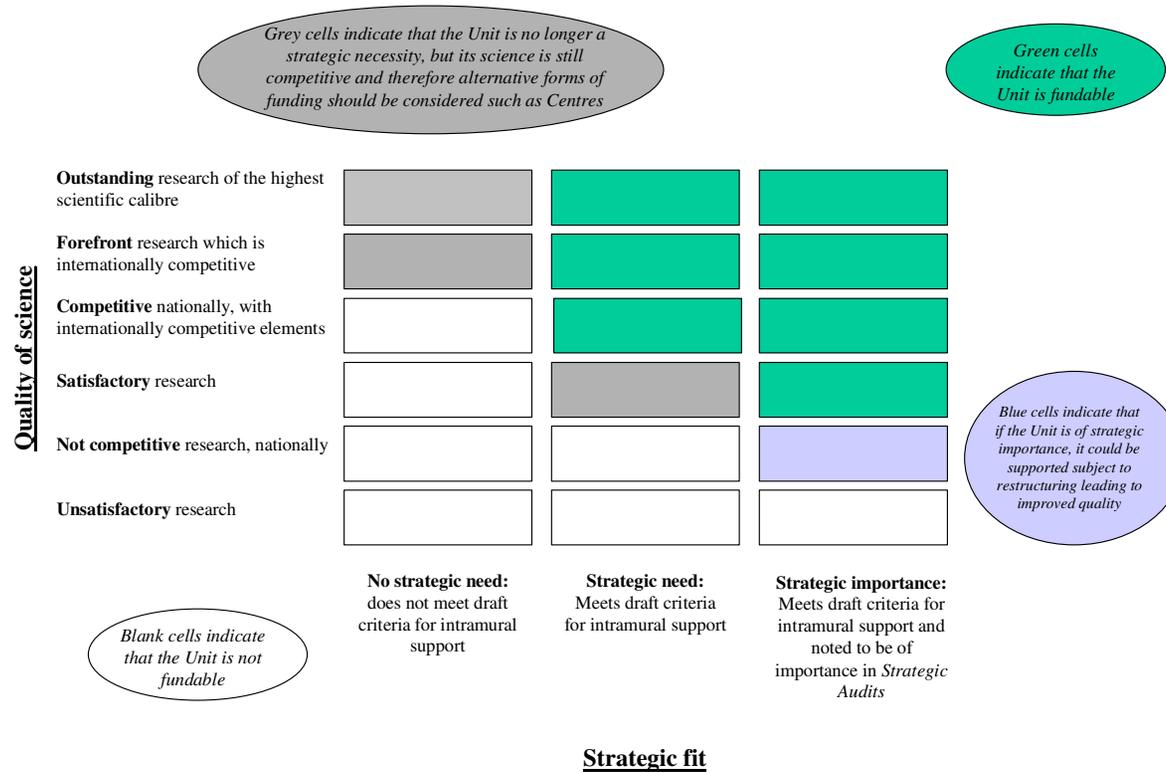
3.5.1   Suitability

The main advantage of Option B is that it allows the MRC to assess Units directly against the new (draft) criteria for intramural support (Box 1.2). The introduction of the QQR decision framework (Figure 3.2) ensures that awards are based on the quality of the science and the strategic scientific need of the Unit. Option B, therefore, provides a mechanism by which the MRC can manage intramural support in an open and accountable way. This is further enhanced through benchmarking Unit's performance against one another, extramural support and other Research Council support (where common indicators from the OST Performance Framework are used).

However, Option B may result in a number of new behaviours, including a move away from risky science that is not deemed to be a strategic need and the 'gaming' of metric-based assessments.[17] One of the notable advantages of Option A is the shorter Unit Review cycle of sixteen months.

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[17] If 'gaming' leads to changes in behaviour that are within the strategic remit of the MRC then this would be acceptable, and indeed could be a purpose for the metrics. However, care needs to be taken that perverse behaviour is not encouraged.

Figure 3.2: QQR decision framework

Grey cells indicate that the Unit is no longer a strategic necessity, but its science is still competitive and therefore alternative forms of funding should be considered such as Centres

Green cells indicate that the Unit is fundable

Blue cells indicate that if the Unit is of strategic importance, it could be supported subject to restructuring leading to improved quality

Blank cells indicate that the Unit is not fundable

Quality of science

Outstanding research of the highest scientific calibre

Forefront research which is internationally competitive

Competitive nationally, with internationally competitive elements

Satisfactory research

Not competitive research, nationally

Unsatisfactory research

No strategic need: does not meet draft criteria for intramural support

Strategic need: Meets draft criteria for intramural support

Strategic importance: Meets draft criteria for intramural support and noted to be of importance in *Strategic Audits*

Strategic fit

35

3.5.2 Feasibility

To fully implement Option B, the MRC will need to institutionalise a number of new processes including *Strategic Audits* and the *Unit Scorecard*. Work on the scorecard can be progressed alongside the OST Performance Framework. Although there are undoubted challenges in developing meaningful metrics, these will be common to both exercises. The introduction of *Strategic Audits* will be more demanding, as this will be a new (additional) workload for MRC Head Office staff. Conceivably some of the work could be outsourced but this also requires management time.

3.5.3 Acceptability

As summarised in Box 3.4, Option B is likely to meet the objectives of MRC corporately, in terms of the ability of the MRC to demonstrate accountability, but may raise some concern with Directors and, to a lesser extent, Scientific Evaluators.

Box 3.4: Perceptions assessment of Option B

This option should improve the **MRC**'s ability to demonstrate accountability of its activities. The optional site visit will reduce administrative burden, but on the other hand, the introduction of the *Strategic Audits* and *Unit Scorecards*, will increase workload.

There is a view held by **Directors** that science cannot be 'managed', and Option B may be perceived as an attempt to do that. Furthermore, there may be scepticism about the Unit Scorecard Report, although this will be dependent on whether the metrics are seen to accurately evaluate performance. The potential for Unit closure if the Unit strategic vision does not align with the MRC overall strategy is likely to raise concern with Unit staff.

Scientific Evaluators are likely to favour the site visit and lunchtime Poster Session by request of the QQR Subcommittee and the Unit Scorecard Report given that they allow for a lighter touch evaluation and are less labour intensive. Unit Scorecard Reports are only likely to be accepted if they can reflect the heterogeneous nature of research at MRC Units.

Box 3.5: Glossary of terms used in Option B

Director's Presentation	A meeting between the Sub-committee and Director with his or her senior scientific staff to explore areas of concern as defined by the Sub-committee.
Directors Proposal	Proposal submitted by Unit Director that sets the Units science strategy and operation for the forthcoming quinquennium. See Box 3.1
QQR	Quinquennial Review of Unit that takes place every 5 years
QQR Report	Report submitted by MRC Head Office and Chair, and commented on by Sub-committee, which assesses Unit and makes a funding decision (See Box 3.3).
Referees	Internationally recognised experts from UK or abroad who provide written feedback on a specific aspect of the Unit – either a programme or an activity; or how the Unit meets criteria for intramural support. Referees are not members of the Review Committee or MRC staff.
Site Visit	One-day visit to the Unit by Site Visiting Team (See Box 3.2)
Site Visiting Team	Selected members of the Subcommittee team who conduct the site visit
Strategic Audits	The process of mapping and assessing research activities supported by the MRC, other UK based/supported research and internationally; and considering options for likely scientific priorities for the area/activity/disease under audit.
QQR Subcommittee	Assesses the Unit's science and science-related activities. Members have expert knowledge of Unit's activities and are appointed by the MRC Head Office and report to the appropriate MRC Board.
Unit Scorecard Report	Standard process indicators relevant to Units and/or identified in the OST Performance Framework; predominantly focuses on non-scientific activities, which are used to monitor Units.

CHAPTER 4   **Discussion**

4.1   **Opening comments**

Our initial survey and interview findings published in July 2004 showed that there was widespread confidence that the use of peer review conducted every five or so years could give the scientific community, wider stakeholders and the public confidence that public money was being used to support exceptional science. However, there were also some concerns about the review process. First, although there was widespread support for Units, there was an anxiety that it was insufficiently clear why exceptional science should be supported in Units rather than through other funding mechanisms. More particularly, it was felt that the review process, by focusing on the science, might not fully capture the wider benefits of conducting science within Units. Since then, the MRC has produced its draft criteria for intramural support (see Box 1.2) and these have been used in developing the options reported here. Furthermore it was felt that if the purpose of Units is in part to help the MRC meet its strategic priorities, there needed to be a more effective way of ensuring that these priorities were actively used in the review process and when considering future funding. There was also a view that wider changes in public sector funding, accountability and transparency arrangements will require changes to the Unit Review process.

Our work since the summer of 2004 has allowed us to explore these issues in more depth. By developing five different 'what if' approaches and asking key stakeholders to evaluate these approaches we were able to identify the two options outlined here. These options are not intended to be 'either/or' alternatives but serve to identify issues for discussion and action while suggesting two different ways in which each issue could be taken forward. Clearly, the MRC may wish to opt for one or other option, for a third option of its own, or for a continuation of the status quo. It may also select some aspects from Option A and some from Option B. These options are not intended to be mutually exclusive (although, clearly, there needs to be some internal consistency in the overall approach). Instead, the intention is that they will provide a rich source of ideas to support the MRC's deliberations. In this context we have summarised the appraisals of the two options in Table 4.1, and outlined how the review processes compare in Table 4.2.

Table 4.1: Summary of options appraisals

	Option A	Option B
Suitability	Builds on existing practice and experiences. Offers limited strategic direction. May result in low priority science being funded but not high priority science Past record a good guide to future creativity. Competition between Units encourages improvement. Zero-based budgeting links financial planning to scientific priorities. Unit Review web-site improves transparency.	Explicitly uses the (draft) criteria for intramural support in the review process. QQR decision framework (Fig. 3.2) brings strategic priorities of MRC explicitly into the review process. Allows intra-mural support to be justified in an open and accountable way. Review processes coupled with greater use of metrics might encourage 'gaming' leading to conservative science and tactical target setting by Directors.
Feasibility	Builds on existing skills Creation of the Intra-mural Support Team relatively easy. Training and support required to implement zero-based budgeting Variable timescales for reviews might increase confusion	New processes required, in particular Strategic Audits and the Unit Scorecard. Creating feasible, suitable and acceptable metrics would be a further challenge. Would create additional demands on Head Office.
Acceptability	Concerns that it provides too limited strategic direction and might not meet anticipated expectations concerning accountability and transparency across the public sector. Concern that the 'living testimony' and web-site would be costly to maintain. Unit Review cycle may be seen as too long (21 months).	Appreciation of an approach that provides strategic direction but concerns that it would be too 'top-down' and stifle the creativity of the science. Unit Review cycle limited to 16 months may be preferred.

Table 4.2: Summary of process issues of Options A and B

	Initiation	Report Writing	Assessment	Decision making
Option A	Following briefing session, Director submits 'Statement of Scientific Achievements'. Referees nominated, agreed and appointed. Review section on website opened.	Director draws on 'living testimony' of websites. Review Committee writes its provisional assessment with Lead Reviewers contributing their own sections. On second day of site visit Summary Report is written, and developed by IST into Final Report.	Director invited to comment on Final Report and SCoPE makes assessment based on report. Focus on scientific track record.	SCoPE makes a decision and budgets are prepared in detail with Head Office Finance. This is passed to the Review Committee electronically and cleared before going to Council for a funding decision.
Option B	Head Office orchestrates production of Strategic Audits and collates scorecards and benchmark data on the Unit's performance. At the QQR briefing session senior scientists from the Unit will be informed of these. Directors and Head Office collaborate to produce Subcommittee and reviewers.	Director writes up Unit Report on the basis of Strategic Audits and scorecards, focusing on proposals for the coming five years. Referees comment on these to Subcommittee which will proceed to draft its report unless further information is needed. If so a site visit is possible before the final report is written.	Assessment is based on demonstrating the quality of the science and how closely the science fits with MRC priorities.	QQR report goes to Board for consideration and then to MRC Council for final decision.

4.2   Core issues for consideration

The issues arising from this type of comparison between the two options were discussed and clarified further at a meeting of the Steering Group on Units and University Partnerships (SGU&UP) held on 12ᵗʰ January 2005. In Table 4.3 we list 25 key questions grouped under five issues. This report provides a firm basis for answering these questions but answering each question also requires a judgement based upon the principles of the MRC and its understanding of the process of scientific discovery. It might be helpful at this stage to clarify our understanding of these principles, based on discussions with the SGU&UP:

- Peer review is essential to an effective review process.

- Assessing the quality of the science might be helped by discussing bespoke reviews, metrics (although probably not OST metrics), a focus on both track record and future plans, and on how to balance scientific creativity with public accountability.

- Whilst there have been recent improvements in how 'value for money' (VFM) is assessed in Reviews (and some of these are so recent that they have not been reflected in this Report), there is a need to develop this further.

- There is a clear requirement to be demonstrably fair to all recipients of MRC support and to be seen to not be favouring either intramural or extramural work. However, because Units to some extent fulfil different tasks it is acknowledged that 'fairness' does not mean that identical review processes would be appropriate. There is a resulting need for transparency and challenge.

- There is recognition that current arrangements for constructing Unit budgets and structuring the funding for Units needs to be addressed and that the review process would be one way of doing this.

- How MRC strategy shapes the review process requires attention by the SGU&UP (although where this relates to wider strategic questions it may not be possible for the SGU&UP to act on its own to resolve arising issues).

- There are various ways in which the review process could be improved ranging from the use of Head Office Staff through to arrangements for site visits and improved communications.

These principles can therefore be applied in addressing the following questions listed in Table 4.3.

Table 4.3: Issues for decision

Possible responses: Option A	Issues for discussion and action	Possible responses: Option B
1 **Assessing the quality of the science**		
The same review process for each review. 'One size fits all'	**I. How to balance bespoke reviews against 'one size fits all'?**	Reviews variable by timing, and focus (but all include peer review and need for strategic fit). 'Bespoke reviews'.
Metrics are used in a 'light-touch' way and always considered in the wider context	**II. What weight to give metrics in general and bibliometrics in particular?**	Scientific achievements and plans assessed against a balanced scorecard derived from OST Performance Framework.
Statement of Scientific Achievement provides succinct statement of past achievements. Research Report focuses 80% on past achievements.	**III. How should reviews balance the assessment of past performance against future plans?**	Director's Proposal focuses 80% on proposed future activities.
Capacity for scientific creativity assessed by past performance along with full accounts and management information.	**IV. How to balance the need for scientific creativity against the need for accountability?**	Creativity assessed using future proposals along with strategic fit.
Different Lead Reviewers assigned to review both over-arching and programme-based achievements.	**V. How to balance the need to review the Unit as a whole with the need to review each programme**	Director responsible for managing relationship between programmes and whole Unit and assessed on that basis.
2 **Assessing Value for Money**		
Intramural Support Team to ensure that Referees have relevant expertise on knowledge transfer, public engagement etc. One session on the wider 'health and wealth' benefits of the Unit.	**VI. How to evaluate contributions of the Units beyond their 'purely' scientific contribution?**	Balanced scorecard for each Review using metrics derived from OST Performance Framework. Head Office to ensure that Subcommittee members include people with wider VFM expertise.
Modified form of zero-based budgeting. Budgets built 'from below' to reflect scientific priorities. This includes capital expenditure. All budgets challenged and compared with internal MRC benchmarks. Subcommittee will identify priorities at current, 130% and 70% expenditure. SCoPE will make final decision on whether to fund and at what level and the final budget will be drawn up following collaboration between Head Office Finance and the Unit.	**VII. How to ensure that the strategic priorities of the MRC are reflected in how the Units spend their money? How should the costs of different scientific programmes best be weighed?**	All funding agreements firmly tied to Strategic Audits. Budgets drawn up in this framework. Evaluation of future plans against MRC priorities articulated through the Strategic Audits. Balance of expenditure within Units justified in Director's Report and assessed in the light of the overall achievement of Unit.
Ring-fenced intramural funding budget overseen by SCoPE. Full Economic Costs in extra-mural funding will make comparisons easier.	**VIII. How can the Unit Review process help to ensure that the balance of funding between intra-mural and extra-mural funding reflects MRC priorities?**	Balance arrived at through competition as both extramural and intramural applicants bid for same money and are assessed against their contribution to MRC priorities. Full Economic Costs will make comparisons easier.
Competition between Units for intramural funding forces each to justify their expenditures by the science they deliver	**IX. How to measure the value for money of the science delivered?**	Metrics include output per scientist, bibliometrics etc.

Possible responses: Option A	Issues for discussion and action	Possible responses: Option B
Opportunity in the Research Report to highlight past collaborations and their scientific benefits.	**X. How to measure the effectiveness of partnership working and how to measure the benefit gained?**	Unit required to justify its funding in relation to its contribution to the field as evidenced through shared publications, collaborations, etc. Focus on future plans.
3 **Maintaining fairness and parity across all recipients of MRC support**		
Once level of ring-fenced intramural funding has been established, Units compete against each other for funds. Criteria for intramural funding contained in existing draft criteria.	**XI. What assessment criteria should apply specifically to Units and Institutes and what weight should these be given?**	Units assessed against a clear strategy using metrics and scorecard. Criteria contained in existing draft criteria for intramural support.
SCoPE will establish balance of intramural and extramural funding using existing draft criteria for intramural support. This will inevitably involve discussions with the Boards.	**XII. How to ensure that the balance between intramural and extramural funding is both fair and seen to be fair?**	Judgements concerning balance between intramural and extramural funding made in light of Strategic Reviews. Comparative data from intra-murally funded research (and others) made available.
Ring-fence intramural funding and justify this to other recipients of MRC support.	**XIII. Ring-fence intramural funding or not?**	Intramural and extramural funding taken from same budget.
4 **Connecting Review to MRC Strategy**		
The logic of scientific discovery is an important driver of strategy (although within a strategic context established by MRC). Strategy is more emergent and responsive.	**XIV. What is the role of Council/SCoPE in identifying strategy within which Review judgements on 'strategic fit' can be made?**	SCoPE selects and contributes to Strategic Audits of whole areas and these are important criteria against which the strategic fit of a Unit is assessed. Strategy is more formal and directing.
Boards are the crucial intermediaries who negotiate and finally agree on the levels of funding to Units (and extramural activities) within their available resources.	**XV. What is the role of Boards in identifying strategy within which Review judgements on 'strategic fit' can be made?**	Boards contribute to Strategic Audits of whole areas and so steer from in front.
Improved communication ensures that Committee members are aware of strategic priorities and the implications of their decisions. A dedicated Intramural Support Team helps this.	**XVI. What is the role of the Review Committee (or equivalent) in identifying strategy within which Review judgements on 'strategic fit' are made?**	Subcommittee assessment is based on the quality of the proposed science and its fit with Strategic Audit. The QQR decision framework (Figure 3.2) supports this.
Unit Directors are encouraged to follow the unpredictable flow of scientific discovery within a more emergent view of 'strategic fit'.	**XVII. What is the role of the Unit Director in identifying strategy within which Review judgements on 'strategic fit' are made?**	Director defines strategy for next five years knowing that fit with Strategic Audit is crucial to success of bid.
5 **Delivering the Review Effectively, Efficiently and Sustainability**		
A dedicated Intramural Support Team led by a senior Programme Manager provides continuity and consistency. Honorarium to be paid to Review Committee members.	**XVIII. How best to use Head Office staff?**	Either Head Office develops more specialist skills in-house (e.g. on metrics, bibliometrics, knowledge transfer, etc.) or these are bought in.

Possible responses: Option A	Issues for discussion and action	Possible responses: Option B
Improved communication with reviewers. Meaningful and interesting site visits.	**XIX. How best to secure and maintain internationally-recognised and appropriate reviewers?**	Directors invited to nominate Subcommittee members and External Reviewers. Head Office staff to ensure that Subcommittee includes people with wider VFM experience.
'Lead Reviewers' assigned specific tasks for reviewing both science and other issues.	**XX. How best to use the reviewers?**	Reviewers supported by better quantitative data on performance of Unit (including benchmarking).
Review Committee sets variable timescales between three and eight years.	**XXI. What is the appropriate time between reviews?**	Reviews every five years.
'Living testimony' on Unit website will provide the bulk of the material needed to write report. Improved communication and clearer focus reduces administrative confusion.	**XXII. How to ease the administrative burden without compromising transparency and accountability?**	Subcommittee can choose not to have site visit if it has sufficient information. Alternatively Subcommittee might ask to meet with Director or not to meet at all. Clearer focus of review simplifies processes.
Two-day site visits. Presentations from senior scientists and lunchtime poster presentations from less senior scientists. Session to focus on non-science issues. Day two results in a draft Summary Report and recommendation for length of next review period. Briefing for Director and senior staff at start of process. Improved use of electronic communication.	**XXIII. How to manage site visits?**	As noted, Subcommittee can choose not to have site visit if it has sufficient information to form a judgement. If site visit goes ahead it takes place over one day (with dinner the night before), possibly with only some members of the Subcommittee.
Dedicated continuous Review Manager from IST. Unit website includes 'living testimony' and limited access portals for Research Report and Summary Report. Also used to communicate with Review Committee and External Referees. Director's Statement of Scientific Achievement focuses on clearly identifying past performance. All potential reviewers receive copy of Statement of Scientific Achievements at the outset. Increased use of telephone and video conferencing throughout.	**XXIV. How to improve communications within Review process?**	Clarity of focus on Strategic Audit reduces need for complicated communication. Briefing for Director and senior staff at start of process and relevant Strategic Audits identified.
A single grade will be awarded for the Unit's overall performance.	**XXV. How to maximise clarity about Unit's performance?**	Units assessed against a clear and transparent strategy.

4.3   Concluding thoughts

Table 4.2 identifies 25 key questions. By answering these questions within a coherent framework and set of values, it should be possible to build on the strengths of the existing approach, address some of its acknowledged weaknesses and engage with emerging new

challenges. The Options outlined in Chapters Two and Three offer different possible responses to these questions and these chapters also discuss our understanding of their suitability, acceptability and feasibility. Detailed examples of how each Option would address the question are put forward to support deliberations.

The evidence and discussion presented here fits with our earlier findings in July but it both takes the key issues much deeper and identifies wider questions. However, this Report is only one strand of work being conducted by the Steering Group on Units and University Partnerships. Furthermore, there are wider interests for the MRC to consider and balance. We hope that this Report will support these deliberations and judgements.

References

Cancer Research UK (2003) Quinquennial Review Guidelines For Visitors & Reviewers (v2.6.6.).

MRC (2004) http://www.mrc.ac.uk. Visited 21 December 2004.

MRC (2004) http://www.mrc.ac.uk/index/about/about-organisation/about-bodies_and_members/about-sguup.htm. Visited 14 December 2004.

Ling, Tom, Miriam Shergold, Stijn Hoorens, Wija Oortwijn, Neil Robinson and Jonathan Grant (2004). MRC Review of the assessment and funding of Units. RAND Europe, Cambridge.

RAND Europe (2004) Five approaches for Unit Reviews: A consultative document from RAND Europe on behalf of the MRC. WR -200-MRC, November 2004.

APPENDIX

Study methodology and results

The objective of the study was to define, develop, test and validate ideas for assessing Units. As illustrated in Figure A.1, we proposed an approach that began by developing a number of scenarios for future assessment and, on the basis of consultation, was refined to two options, each tested for its suitability, feasibility and acceptability.

Figure A.1: Project schema[18]

Stage 1: Scenario development   Stage 2: Testing & consultation   Stage 3: Option appraisal
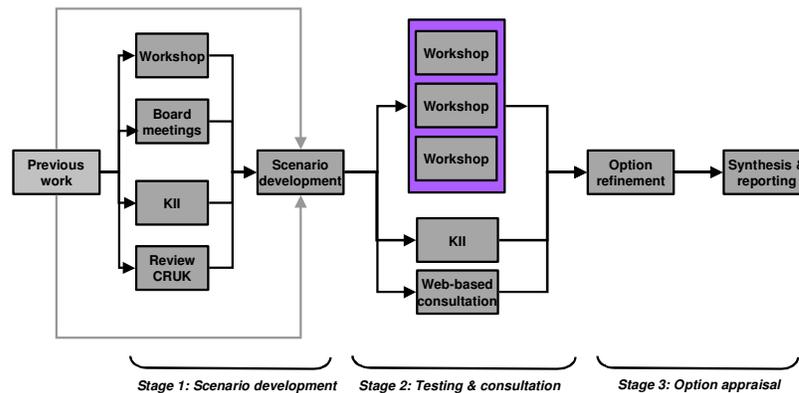
There were a number of advantages to this approach. First, it built and relied on the work undertaken in the first phase of the study. For example, in the issues analysis a number of ideas for future reviews were suggested and these were incorporated into the approaches and options. Second, it still allowed time for additional ideas to emerge. Third, it involves extensive engagement with a range of different stakeholders using a variety of appropriate methods.

Below you can examine in more detail each of the stages identified in Figure A.1.

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[18] KII = Key informant interview

Stage 1: Scenario development

The purpose of the first stage was to develop five approaches for future Unit Reviews. The methodology drew upon scenario analysis. It shares with scenario-thinking an interest in exploring what might happen in different plausible future worlds. It also shares with scenario-thinking the idea that these worlds should be based upon relatively certain trends alongside key unknowns. However, scenario-thinking typically seeks to explore different future environments to broaden strategic thinking. It is based upon understanding the consequences of strategic choices in each of these possible futures. The focus is therefore on the 'wider environment'.

In contrast, in this study we assumed that the environment of Unit Reviews is relatively fixed. Within these relative certainties we explored the consequences of pursuing different evaluation approaches in the Unit Review process. The purpose is to allow the MRC and its stakeholders in the Unit Review process to conduct a series of 'what-if' experiments designed to test the different approaches. The range of approaches selected is intended to stretch but not break the credibility of participants.

We fed into the detailed content of each approach ideas that were given to us through eighteen interviews with stakeholders in June and July 2004, and a web-based survey conducted during the same period attracting fifty responses from individual stakeholders. We also ran a workshop with fifteen members of staff from MRC Head Office on 22nd October to elicit their views on what a successful review process would involve, what the range of plausible future review processes might look like, and what the consequences of these approaches might be. The approaches were also validated through a sequence of discussions with the MRC Steering Group on Units and University Partnerships and George Sarna and Claire Newland of the MRC. We also conducted eight hour-long key informant interviews with the Chief Executive and senior MRC staff, leading University academics and Unit Directors to clarify and explore the issues raised in our approaches. These latter interviews were also used to add texture and depth to the description of the approaches.

Using this information, the project team developed five scenarios for future reviews. These are summarised in Table A.1 and published in a Working Paper[19].

Stage 2: Scenario testing and validation

To test and validate the scenarios we held three stakeholder workshops and conducted ten interviews with senior University managers. We also planned a web-based consultation, which invited participants to comment on the strengths and weaknesses of the approaches, but did not receive any valid responses[20].

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[19] RAND Europe (2004). Five approaches for Unit Reviews: A consultative document from RAND Europe on behalf of the MRC. RAND. [WR-200; available from www.randeurope.org]

[20] It is difficult to interpret why this was this case as the consultation was 'advertised' in the home page of the MRC's and RAND Europe's website for three weeks. One (charitable) explanation may be that due to the extensive consultative process we had managed to capture all those people with views to express.

Table A.1: Brief summary of five approaches

Tailor's Approach (Bespoke review to fit the science; recognising and supporting diversity in science)**.** • Use of variable review timescales to fit with the different timescales of scientific discovery. • Annual Unit self-assessment to review progress and provide basis for discussion with Board. • Biannual appraisal of Unit Directors by CEO of MRC. • Unit Directors agree targets (Science Delivery Agreements) against which they should be assessed. • All assessments include peer review of research outputs. • Unit directors have sufficient autonomy to 'follow the science'. • Under-performing Units can be closed. • Light-touch alignment to develop strategic priorities of the MRC.
Communicator's Approach (Continuity of process with enhanced communication; fairness and clarity). • Communications strategy to ensure that all participants in the review process have all the information they need to carry out their role. • MRC credit card and 'Evaluation miles' rewarding evaluators' organisations for their support. • Consistency and clarity supported by reviewing all Units in the same way. • Financial information in review consistent with MRC's financial management systems to avoid duplication of information. • Peer review by internationally acknowledged experts. • Confidentiality agreements signed by External Referees. • Use of site visits by Visiting Subcommittee of MRC Board. • Quinquennial evaluation cycle. • Greater emphasis on Value-for-Money.
Entrepreneur's Approach (Clarity of purpose and dynamic science in a business-like planning cycle; rewarding success, re-energising flagging science and managing out failure). • Annual evaluation cycle with review of progress against targets, balanced scorecards, zero-based budgeting and clear value for money criteria. • Use of quantitative metrics (targets) for Unit Review including bibliometrics. • After ten-year contract there are only two possibilities: spin-off or close. • Annual meeting between Unit Director and MRC CEO. • Extensive review (site visits, peer review, interviews, etc.) only in cases where Unit has not met annual targets. • Ten-year strategic plan allows alignment of Units with MRC strategy at outset. • Uniform review for all Units allows comparison both between Units and between Units and extramural funding.
Surveyor's Approach (Funding and evaluation to support the whole scientific field; supporting a creative scientific community). • Cycle of learning and evaluation (years 1 and 2), prioritising (years 3 and 4), reviewing (years 4 and 5) and investing (year 5). • Every year one Board conducts a performance review of all its funded activities. • Units have a clear mission to support the science in their whole field and will be rewarded for doing so. • Active involvement of MRC Board in learning/evaluation cycle. • Virtual meeting of panel of international and national experts responsible for review report. No site visits. • Internal auditors report annually on risk management to manage MRC's risk profile. • Unit Directors participate in networking events and contribute to Head Office's communications strategy. • Annual meeting between Unit Directors and MRC Board for mutual learning. • Unit director enjoys considerable autonomy with regard to finances and human resource management.
Horse Whisperer's Approach (Light-touch evaluation to support creativity and innovation; autonomy is the reward for success). • More responsibility and freedom for the Directors with freedom to allocate budget between researchers and programmes. • Unit Advisory Board, consisting mainly of academics, to advise, challenge and support Director. • Six-year Unit Review cycle in light-touch review. Detailed evaluation process only if Unit fails a six-year review and faces closure. • Heavy dependence on metric-based evaluation (no site visits, no peer review) with optional mid-term metrics-based evaluations. • Unit Review is conducted by external contractor (research evaluation organisation) working with the MRC Head Office. • Unit Directors have small editorial and administrative burden in Unit Review.

Stakeholder workshops

Three stakeholders workshops were held:

- Workshop 1 was held on 6th December 2004 from 12–3:30pm at the Novartis Foundation in London. Thirteen MRC Head Office staff attended, including Programme Managers; Board Programme Managers; Business Team; Human Resource Group; Finance; MRC Technology; and Corporate Affairs Group.

- Workshop 2 was held on 7th December 2004 from 1–4pm at the MRC Toxicology Unit, University of Leicester. Twelve Unit and Institute directors, Heads of Divisions of Institutes, Centre Directors and senior Unit administrators attended.

- Workshop 3 was held on the 14th December 2004 from 1–4pm at The Meeting House in London. Ten MRC board members attended from Infections and Immunity Board; Health Services and Public Health Research Board; Molecular and Cellular Medicine Board; Physiological Systems and Clinical Sciences Board; and Neurosciences and Mental Health Board.

Participant selection and recruitment

The MRC nominated representatives within each stakeholder group to attend the workshops. Nominated representatives were sent an e-mail from the MRC inviting them to participate. The list of attendees was sent to RAND Europe for follow-up.

Workshop process and results by Task

Prior to the workshop each participant was sent a letter outlining the purpose of the workshops and providing briefing material, so participants could familiarise themselves with the five approaches,[21] the previous analysis of the Unit Review process[22] and the MRC draft criteria for intramural support (Box 1.2).

The workshops took place in large rooms. Wherever possible we attempted to set rooms up in a cabaret style with groups of chairs clustered around tables. Each room was set up with three tables with approximately five seats around each table. Each workshop had two workshop facilitators.

Each workshop included the following components:

- Introduction
- Task 1 - What are the characteristics of a Unit Review process?
- Task 2 - How do the five approaches measure up?
- Task 3 – Building a better system.

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[21] RAND Europe (2004). Five approaches for Unit Reviews: A consultative document from RAND Europe on behalf of the MRC. RAND. [WR-200; available from www.randeurope.org]

[22] Ling et al (2004). MRC Review of the assessment and funding of Units. RAND.

Task 1 – What are the characteristics of a Unit Review process?

On arrival participants were asked to vote on characteristics of a Unit Review process. Each participant was given five dots to stick on the pre-labelled characteristics indicating what they considered to be the most important. The eleven characteristics, which were generated from a previous workshop – *Developing Approaches to the Future Evaluation of Units* held on 22nd October 2004, involving MRC staff – were: robust and repeatable; clarity of purpose at outset; capable of making tough decisions; objective – scientifically objective and evidence-based; not onerous – must not stop the business; prioritising review with respect to mission; cover *all* aspects of Unit; non-biased and independent; establish measurable milestones and deliverables for each review period; to include elements of a cost/benefit analysis; and takes into account views of stakeholders. This was a 'warm-up' exercise and took approximately fifteen minutes. After voting, participants were allowed to sit wherever they chose.

Results

The first task ranked the importance of the characteristics of the Unit Review process. The average number of votes per participant was calculated for MRC Head Office staff, Unit Directors, and Scientific Evaluators. In addition the weighted average number of votes was calculated across all three workshops. Figure A.2 shows there was consensus amongst all groups that the Unit Review process should be objective, scientific and evidence-based; non-biased and independent; and capable of making tough decisions. Unit Directors emphasised the importance of Unit Reviews covering *all* aspects of Units. MRC Head Office highlighted the importance of establishing milestones and deliverables for each review period; prioritising the review with respect to mission; and to include elements of a cost/benefit analysis. Scientific Evaluators emphasised clarity of purpose at outset, and that the Unit Review should take stakeholder views into account.

Introduction

Once everyone was seated the participants were welcomed to the workshop. The purpose of the workshop and the agenda were outlined using pre-written flip charts. A brief explanation was given on the background, the purpose of the workshop, and next steps. The overarching purpose of the workshops was to identify strengths and weaknesses of each approach, and to produce synthesised models or options incorporating their best features.

Task 2 - How do the five approaches measure up?

The next task was to identify the intrinsic/potential good and bad features about the five approaches. Each table was provided with a one-page summary of each approach. Each table identified the good or the bad points of several approaches. No table identified the good and the bad points of the same approach. Each category (e.g. Good points - Tailor approach) was written up on a flip chart and presented back to all workshop participants by the relevant group. Tables that did not consider the strengths or weaknesses of an approach commented on the other groups' findings. Each group had forty to sixty minutes to complete this task.

Figure A.2: Characteristics of a Unit Review process
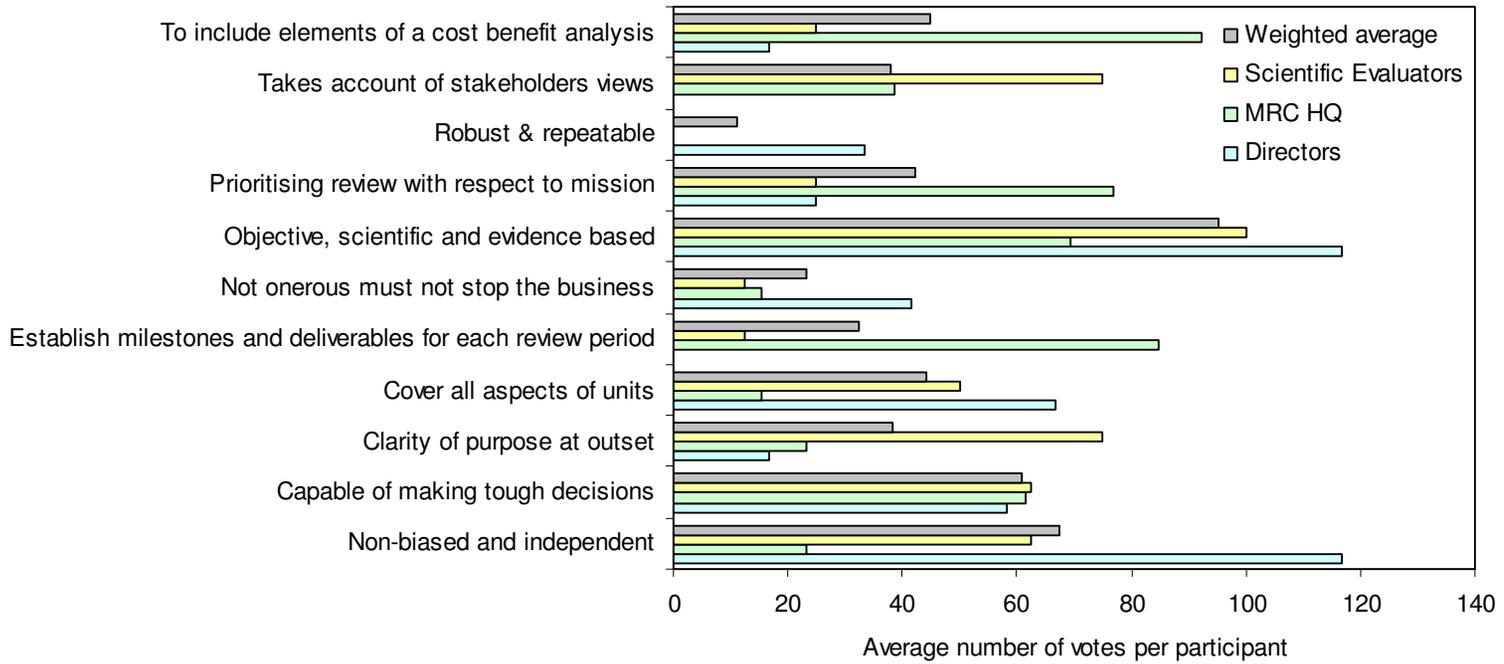
Results

The strengths and weaknesses of the five approaches are summarised in Table A.2 to Table A.6. The three stakeholder groups tended to bring up different good and bad points for each approach, however in some cases similar points were suggested between the groups.

In the Tailor approach MRC Head Office staff and Scientific Evaluators suggested autonomy as a 'good' point, and all three groups suggested variable time scales and Science Delivery Agreements as 'bad' points. Several features in the Tailor approach, such as biannual appraisals and Science and Delivery Agreements were seen in both a positive and negative light (Table A.2).

In the Communicator approach all three groups suggested site visits were 'good'. The idea of rewarding evaluators was seen as 'good' by Unit Directors and 'bad' by MRC Head Office. Scientific Evaluators suggested peer review was 'good', however this group also questioned the feasibility of international referees (Table A.3).

In the Entrepreneur approach there was consensus amongst all three groups that clarity of purpose was a 'good' point. Unit Directors and Scientific Evaluators both suggested the ten-year agenda as a weakness (Table A.4).

In the Surveyor approach the three stakeholder groups tended to come up with different 'good' and 'bad' points. The only point for which there was consensus was the broad support for science, which was suggested as a 'good' point by Unit Directors and Scientific Evaluators (Table A.5).

In the Horse Whisperer approach the dependence on metrics and external contractors were suggested as 'bad' points by Scientific Evaluators and Unit Directors. In contrast, MRC Head Office suggested external contractors as a 'good' point. There was consensus amongst Unit Directors and Scientific Evaluators that the Unit Advisory Board was a 'good' point. Scientific Evaluators and MRC Head Office both suggested the low administration burden within this approach as a strength (Table A.6).

Task 3 – Building a better system

The final task for each group was to develop their 'ideal' Unit Review system in approximately one hour. Participants were asked to spend five minutes deciding which approach their hybrid system was to be built on, which might be based on one approach or a combination of approaches. Participants were asked to identify how they would implement the system, and what elements they would add to it to make it fulfil more of the 'good points' identified in the previous session. Participants named their review system after a profession and drew a one-page diagram of their review process, outlining what changes/additions were made; and how these related to the characteristics identified at the start of the day and the draft criteria for Units developed by the MRC. Each table was given the rationale/criteria for intramural support. Each group gave a ten-minute presentation on their Unit Review system; each presentation was recorded to aid our analysis.

Table A.2: Strengths and weaknesses of the Tailor approach

	Good points	Bad points
Tailor	Diversity fit.	Targets and Science Delivery Agreements.
	Long-term vision of Unit mission.	Biannual appraisal (too frequent).
	Criteria of judgement set ahead.	Insufficient criteria.
	Light-touch.	Variable review period.
	Provided: clear guidelines to guard against favouritism; no deadlines/milestones; too frequent reviews.	Not practical.
	Flexible/creative.	Labour-intensive.
	Autonomy/clarity.	Variable time scales.
	Light-touch.	Is the SDA deliverable within MRC strategic needs?
	Variable for new or failing units.	Biannual appraisal by CEO not practical.
	Science Delivery Agreements (SDA) = vision.	Easy ride for some units/lacks rigour.
	Peer review.	Unlikely to produce evidence for closure.
	Biannual appraisal interaction.	Seen in isolation in relation to portfolio.
	Autonomy.	Lack of focus on/with MRC strategic priorities.
		Less rigour if timescales vary.
	Key:	Resources to set SDAs on Boards limited.
	☐ Unit directors ☐ MRC Head Office ☐ Scientific Evaluators	

Table A.3: Strengths and weaknesses of the Communicator approach

	Good points	Bad points
Communicator	Based on proven mechanisms.	Rewarding evaluators.
	Retain site visit and five-year cycle.	Emphasis on financial Value For Money (VFM).
	Provided: simplified rather than made more complex; formalised reward system for reviewers.	MRC credit card (poor quality reviews).
	Familiar.	Status quo (missed opportunity).
	Site visit.	Subcommittee: not level playing field; no VFM; used by Unit to self-promote.
	Peer review.	Labour-intensive.
	Communication strategy = purpose.	No strategic criteria.
	Consistency and clarity (consider area of research).	VFM - quantification (high risk science?).
	Five-year cycle (risk).	Feasibility of international referees.
	Site visits (personal touch).	Labour-intensive.
	Key:	One size fits all.
	[ ] Unit directors [ ] MRC Head Office [ ] Scientific Evaluators	

Table A.4: Strengths and weaknesses of the Entrepreneur approach

	Good points	Bad points
Entrepreneur	Clarity of purpose.	Ethos and culture different to the way science works and expectations of staff. Difficult to recruit and retain; no risk taking.
	Unit-specific evaluation.	Poorly-thought-through exit strategy.
	Clear timeline.	Ten-year horizon too short.
	Disengagement.	Too much power in CEO.
	Balanced scorecard.	May not achieve scientific consensus.
	Translation.	Disregards scientific quality.
	Light-touch.	Rigid.
	Clarity of purpose.	Rolling out/transition.
	Uniform review.	Annual review.
	Pick up problems early.	Expense of administration.
		Too prescriptive and defining targets.
		Ten-year agenda.
	Key:	Eventual cost to host institution.
	☐ Unit directors ☐ MRC Head Office ☐ Scientific Evaluators	

Table A.5: Strengths and weaknesses of the Surveyor approach

	Good points	Bad points
Surveyor	Clear mission to support scientific area and reward.	Top-down approach.
	Directors' financial and HR autonomy.	Decision-making for scientific priorities.
	Strategic overview.	Undervalues the added value of units.
	Level playing field.	Against long-term planning.
	Unit fellows.	Assumes world-class science can be 'bought' like a product.
	Broad support for science.	Dependent on Board's vision.
	Annual meeting between Unit Director and MRC Board.	Demanding on Board.
		Could be delivered in other ways.
		Expensive.
		Adds to scientific fatigue.
		No site visit.
		"Virtual" failure.
	Key:	Annual performance review of Board.
	☐ Unit directors ☐ MRC Head Office ☐ Scientific Evaluators	

Table A.6: Strengths and weaknesses of the Horse Whisperer approach

	Good points	Bad points
Horse Whisperer	Flexibility for directors (but is this novel?).	Dependence on metrics.
	Advisory board (but is this novel)?.	External contractor review.
	Six-year review cycle.	Difficult to take tough decisions to UAB.
	Reduced burden (e.g. peer review, office, scientist).	Director-centred therefore stifling (too demanding).
	Evidence-based output.	Doesn't deliver strategy or re-visit need for Unit.
	Empowers directors.	Value for Money hidden.
	Science freedom.	Not good for stakeholder Units.
	Outsourcing avoids "big brother".	No level playing.
	Engagement with stakeholders.	External contractor.
	Regular input via Unit Advisory Board.	Heavy dependence on metric-based evaluation.
	Allows novel science with low administration burden.	Unit Director autonomy.
	Light-touch evaluation.	
	Key:	

Key: ☐ Unit Directors ☐ MRC Head Office ☐ Scientific Evaluators

Results

Results of the final task suggested there was internal consensus within each stakeholder group regarding which features the 'ideal' Unit Review system should include or emphasise; however there was no clear consensus between the groups. Table A.7 to Table A.9 outline characteristics of the nine Unit Review systems from the MRC Head Office workshop, Unit Directors workshop, and the Scientific Evaluators workshop, respectively. In some cases Unit Review systems were based on a single approach, and in other cases incorporated features of several approaches.

In summary, the MRC Head Office staff gravitated towards a 'Surveyor'-type model with integrated strategic field assessments, and elements of the 'Horse Whisperer'. In addition, there was internal consensus for no site visits, and a leaning towards Science Delivery Agreements and Balanced Scorecards (Table A.7).

Unit Directors formed a strong consensus around the 'Communicator', advocating an evolved version of the current quinquennial review. There was internal consensus for evolving change; site visits; writing the Subcommittee report on the day of the site visit; and to separate the intramural and extramural budgets (Table A.8).

There was a general consensus in both these stakeholder groups towards MRC staff wanting to become moderators within the Unit Review process, and move away from an auditor and policing role.

Scientific Evaluators preferred the 'Communicator' with elements of the 'Tailor'. The elements generally favoured included peer review; clarity of purpose; quinquennial cycle; Unit Advisory Boards; cost-benefit analysis; use of some bibliometrics; site visits; and Science Delivery Agreements, for direction and not purely quantitative (Table A.9).

Table A.7: MRC Head Office Staff - Building a better Unit Review system

Presentation 1: Landscape Architect	Presentation 2	Presentation 3
• Fundamental strategic review *(Is there a need for a garden?)*: - Define what we are doing, and the need for extramural/intramural programmes. - Strategy continues to develop (corporately) and evolve over time. • Bespoke measurables, milestones and deliverables for Unit *(Type of garden).* • Allocate resources to the Units so Unit can deliver *(Planting).* • Outsource monitoring and assessment process – six-year cycle *(Garden maintenance).* • Three-year mid-term review against six-year milestones *(Flower show)*: - Light-touch. - No Subcommittee involvement. • Six-year final assessment in two parts: (1) strategic fit; and milestones and deliverables and (2) peer review of the science. *(Is this the kind of garden we want/need – shall we sell off, replant elsewhere, redesign?)*	• No site visits. • Based on Tailor approach. • Define strategy for Units (with buy-in from stakeholders and ensure this fits with MRC mission). • Unit Directors define strategic direction and what Unit will deliver in relation to the MRC mission. • Evaluation of the delivery package: - Research activities of individual projects (SDAs three- to six-year cycles). - SDAs also identify the vision and added value for each Unit. • Programme assessment: - Internal review of programmes scientifically, e.g. support, training and research activities. - These would fit into how the Director justifies to the board/stakeholders how the SDA has performed in the past and how it would perform in the future, which would be based on the assessment carried out on individual programmes. • Separating out the Science and strategy processes could aid the review process. • Light-touch assessment, e.g. no site visits or continual peer review of programmes.	• At Unit birth the first review would be undertaken after six years. • Quinquennial cycle. • Depending on the science a Unit could be passed over to another Stakeholder, e.g. after seven to fifteen years. • A balanced scorecard would be used for a light-touch review every couple of years. • The strategic framework for setting up a Unit should include a cross-council perspective (not solely Board). • Directors feed into strategy and respond. • Special arrangements for Institutes (Surveyor approach did not fit Institutes very easily). • Outsourced metrics especially for objectivity. • No site visit. • SDAs to make missions real. • Delete audit function and farming out to Company Limited Guarantee (CLGs). • Unit fellows (employed by host university). • Interim SDA stocktaking. • Web repository for metrics.

Table A.8: Unit Directors - Building a better Unit Review system

Presentation 1: Discovery and Exploration	Presentation 2: MRC Unit Review	Presentation 3
• Keep the Unit Review process simple. • Based on Communicator's approach: - Minus greater VFM (this is qualified by financial review down the track, but obviously depends on what you call VFM). - Incentives for visitors not referees. • Unit directors have autonomy to follow science. • Annual meetings between CEO and Unit directors. • Assess synergy between programmes (i.e. 2 + 2 = 6 or added value). • Subcommittee pre-meeting should be face to face (not e-mail). • Independent financial review, which should be conducted as a dialogue between Head Office and director – based on current budget. • Visiting subcommittee should write draft report on site (no delays).	• Five-year cycle (+/- six months) in discussion with Unit directors. • Unit reviewed as a whole (as opposed to focussing on programmes), which includes addressing 'added value', and defining what the Unit produces. External reviewers involved. • External reviewers and subcommittee involved in pre-meeting, followed by a site visit. Greater engagement of subcommittee throughout review, and use of incentives. Views of subcommittee members should be documented. • Overall score for Units. Individual scores of subcommittee might annotate overall score. The site visit also scores each individual programme as appropriate. • Overall score influences budget. • Using the individual programme scores, the Unit director would have the autonomy to modify the budget to decide what to do with programmes that scored less than alpha. • Budget determined by financial team, in discussion with the Unit director and Head Office, and independently of the subcommittee. • Budget ratified. Discussions regarding intramural versus extramural programmes. Identification of criteria to be assessed in next site visit (not universal across Units).	• Unit review criteria agreed at the start of review and revised for next review period. Role of Unit defined. • Ultimately the director has the final decision on how the work should be presented to the subcommittee (collaborative process with scientists). • Overall score for each Unit, which looks at how the Unit has lived up to expectations and goals, and whether the budget should go up or down or stay the same. The individual analysis should be in the form of a paragraph written by the visiting subcommittee; the purpose of this is to advise the director (and does not need a 'score'), outlining the good and bad points, so the director has adequate information to give appropriate feedback and can decide whether to modify the budget. • Strong emphasis on the mission and the strategy of the Unit and the context in which the Unit is placed. • Not light-touch, but fair and thorough, and take takes into consideration the type of research that is done in the Unit, which is different from the research that is financed through the individual programme grants awarded by the MRC.

Table A.9: Scientific Evaluators - Building a better Unit review system

Presentation 1: The sculpture (free expression with moulding)	Presentation 2	Presentation 3: The Integrator
• Peer review. • Clarity of purpose: - MRC priorities need defining. - What is the remit of the review? - What is directors' accountability? • Science Delivery Agreements (with correct vision and context). • Site visits are essential, every five years appropriate (with flexibility for new Units). • Director and Board interactions. • CEO 360º appraisal (autonomy). • Risk management.	• Quinquennial peer review. • Strong communication/dialogue between Unit directors, Board, and scientific community. • Site visits. • Accountability: cost-benefit analysis (scientist subcommittee or other expertise?). • Unit director should have some authority to deploy budget with flexibility and feedback to Board. • Quick turn around of decisions. • Acknowledgment of contribution of external reviewers. • Underperforming units closed.	• Advisory board is key to both the way the Unit is set up and run. • Provides scientific and strategic advice to Unit. • Includes one or two MRC board members, so continuous communication between Board and Unit. • Overall four to five members in total, with a five-year term for continuity. • Review science, develop science and delivery agreement with the Unit director. • Light-touch annual and more thorough quinquennial review, which is linked to MRC strategic directions. • Review period five years, possibly three years for new Unit. • Site visit (and discussions with junior staff). • Peer review with international panel of experts. • Financial assessment. • Procedures for establishment and disestablishment. Units should be converted into centres when they come to the end of their life or if Unit director retires, so there is better communication and transfer with Universities.

Interviews with senior university managers

In addition to the stakeholder workshops, the research team carried out ten hour-long single and group interviews with university Vice Chancellors and other managers across the UK. The purpose of these face-to-face interviews was to test and validate the scenarios from the viewpoint of a research sector engaged in mainly extramural MRC research. The principal messages that emerged in the course of these interviews can be summarised as follows.

Overarching thoughts on the role and review of Units

Purpose of Units

Several interviewees pointed out that the purpose of Units is to pursue research in areas not adequately covered by the universities, such as niche and mission-focused research, wider multidisciplinary work, and long-term research requiring long-term support. However, one interviewee argued that this type of research may also be carried out in MRC centres, and it was repeatedly stressed that universities offered the advantage of greater interdisciplinary research, an increasingly important aspect of competitive science. However, another interviewee highlighted that the boundaries between programme and Unit work can be blurred, and argued in favour of greater mobility between the categories, allowing, for example, for large successful programmes to be transformed into Units.

It was felt that, in deciding on the balance between intramural and extramural research, the MRC ought to set tactical priorities in keeping with a long-term vision for its research support. One interviewee suggested that investment proportions should be based on a rationale determined by the MRC in discussion with HEFCE, OST, and the NHS.

Unit-University relationships

All interviewees endorsed closer links between Units and universities, while recognising that such co-operation would be easier for some Units than for others. Two interviewees suggested that these links could be factored into the Unit Review by considering interactions between directors and Vice Chancellors, secondments, joint projects and teaching.

However, there was some disagreement regarding the feasibility of the embedding and absorption of Units within Universities. While the benefits such as an influx of high-quality scientists are recognised, there are concerns that the universities are not in a position to fund or manage substantial new additions to their research portfolios, and that it would be difficult to accommodate a Unit providing services to several universities within one host institution. Centres were mentioned as a viable solution to infrastructure issues. It was also felt that increased integration

would, at least initially, pose problems regarding governance and appraisal. One interviewee argued that if Units were embedded, they ought to contribute to their host institution's Research Assessment Exercise. A case was also made for the same evaluators reviewing Unit and University work in the same field.

Evaluators

The interviewees agreed that despite certain drawbacks, peer review by national and international scientists is an indispensable and central element of the assessment of Unit work, both in terms of scientific merit and public engagement. One interviewee highlighted the desirability of confidentiality agreements to be signed by evaluators to protect Unit work. The problem of reviewers' fatigue and need for acknowledgment of the evaluators' contribution was stressed repeatedly, although there was no consensus as to whether this acknowledgment should be of a financial nature. One interviewee suggested that a reward be given to the evaluators' own institutions. However, another informant argued that a *per diem* rate for evaluators would be preferable, as this would constitute a 'contract' with mutual obligations, such as meeting deadlines.

Site visit

There was broad support for the site visit as a valuable part of the Review process. Several interviewees pointed out the benefits of the visit to both senior and normally less visible junior Unit scientists and reviewers, and the visit's value as an opportunity to follow up peer review results. By contrast, one interviewee argued that the site visit is dispensable, on the grounds that it is costly and stressful, and that the paper-based assessment of scientific output is considered as sufficiently rigorous to be used in making funding decisions for MRC programmes.

Advisory boards

Most interviewees favoured the creation of Unit advisory boards, which should include MRC staff and external scientists. It was also pointed out that in the case of embedded Units, it would be desirable for the host university to be represented on the board to ensure the co-ordination of policies. However, one informant warned that a director-appointed board may lead to a like-minded group, and hence encourage orthodoxy in the field. Therefore, the MRC, in discussion with the director, should aim for board members adding value by contributing outside ideas.

Role of the director

It was highlighted that autonomy is a key aspect of Unit research, and that the freedom of Unit leaders is therefore worth preserving. However, several respondents recommended a shift from a director-centred to a more collegiate leadership style, and it was argued that the fate of a Unit set up for strategic reasons should not depend on the presence of one particular person. In addition, one interviewee stressed the need for regular communication between the director and the MRC's leadership and relevant board to ensure a common understanding of priorities. It was suggested that Unit directors should be appraised annually on management issues, either by the MRC's CEO or a member of the Council working in the appraised director's filed.

Time scales

Several interviewees supported the idea of variable review intervals depending on the nature and strength of individual Units, including intervals longer than five years. There was confidence that this individualised approach would be widely accepted. It was also repeatedly argued that any review cycle should be complemented by annual appraisals on all levels.

Assessment criteria

Use of metrics

The broad majority of interviewees voiced support for the appropriate use of metrics as part of the assessment of Units, while also recognising the influence of metrics on Unit behaviour. Bibliometrics featured as the most prominent measure, albeit with the strong caveat that this measure ought to be used in combination with other criteria, and not without consideration of the nature of the Unit and its research field. Other measures suggested were the amount of joint papers, grants and shared infrastructure to assess interaction with universities, the provision of training for young scientists (induction arrangements, proposal-writing), prizes won, and number of hours taught. The difficulty of measuring value for money was mentioned repeatedly, with the suggestion that this area needs to be validated through external recognition. One interviewee, by contrast, favoured a 'purist' approach of peer review of scientific publications as the mainstay of the review.

Translational research and spin-offs

The issue of translational research, and the creation of spin-off companies, was raised in two of the interviews. Here, it was suggested that targets should be used to encourage Units to take the step from research to delivery, while spin-off businesses should operate at a distance from the Units to avoid accountability problems. A further point raised concerned the setting of performance indicators in this area, which need to cover a differentiated range of activities in order to avoid distorting the behaviour of Units.

Balance of track record and proposals for future work

The majority of interviewees highlighted the need to consider both a Unit's previous successes and its vision for further research. Regarding the question of how the two aspects should be weighted, similar amounts of support were given to an equal shares solution and a 'deal-maker' role for past achievements.

Science Delivery Agreements and individualised targets

While one interviewee stressed the desirability of individualised targets responding to researchers' specific strengths and weaknesses, there was considerable concern that Science Delivery Agreements and targets could result in Units taking a conservative approach to research. Opinions on the appropriate balance of accountability to the public and freedom as the basis of a tradition of scientific achievement varied widely among the informants.

Risk

Most interviewees stressed the need to systematically encourage risk-taking and foster scientific curiosity within Units. However, opinions on the percentage of high-risk research to be undertaken by Units varied widely (from 20% to 100%), as did views on how best to foster risk-taking. While several informants suggested that provisions could be made for high-risk research days and 'blue sky' targets, another warned that even if it was, in fact, possible to a balance strong and weak areas in the Review, Units would feel under pressure to perform well across all targets.

Public engagement

There was strong endorsement of the view that Units ought to work actively to communicate their scientific endeavour to the public. However, no suggestions were made for achieving this.

Public health outcomes

There was disagreement regarding the feasibility of considering contributions to human health. While several respondents highlighted the problem of determining appropriate lead times, support for the consideration of public health outcomes contrasted with scepticism founded on the often indirect and sometimes unexpected public health effects of scientific discoveries.

Comments on individual approaches
Surveyor's approach: One interviewee suggested that to support reviews based on this field-based approach, specialists could be seconded from the universities to the MRC to ensure continuity of expertise. It was furthermore argued that for field-based assessment, scientists and policy would need to define desirable outcomes in the area.

Tailor's Approach / Entrepreneur's Approach: There was concern that even if it was, in fact, possible to balance strong and weak performance areas, Units working towards agreed targets would feel obliged to perform well across all targets. However, one interviewee commended the diagnostic test used in the Entrepreneur approach as a sophisticated way of assessing Units.

Preferred approach: One interviewee favoured a review based on the fusion of the Tailor and Communicator model; another interviewee gave endorsement to the Entrepreneur, while also approving of the element of freedom in the Horse Whisperer's approach.

Stage 3: Option appraisal

Using the outputs of Stage 2 – namely the reports of the three workshops, and the key points arising from the key informant interviews we developed the two options reported here. These options differ from the approaches as they are within the bounds of suitability, feasibility and acceptability, and are based on the evidence collected in the previous stage of the study.

To appraise the two options we had initially proposed to hold two further workshops. However, when we reached this stage of the project we sensed that there was 'engagement fatigue' in the core stakeholder group so, in consultation with the MRC, we undertook the appraisal within the RAND Europe project team. In doing so we addressed the following series of questions regarding suitability, feasibility, and acceptability.

Suitability examines how well the Options are suited for their purpose or appropriate. Questions examined included: what are the strengths and weaknesses of the Options; do the Options meet the aims of the Unit Review; do the Options fit with future external changes and trends; and how do the Options position the MRC or Units?

Feasibility is defined as the state or degree of being feasible, which examines whether the Options are practicable, possible; or easily and conveniently accomplished. Issues included: internal or external resources and competencies available to deliver the Options; legal and/or policy constraints; implications for MRC extramural funding; and timescales for delivery.

Acceptability assesses whether the Options are worthy of being accepted, or adequate, satisfactory and tolerable. This includes examining the risks and consequences for key stakeholder groups, such as the MRC Head Office staff; Unit directors; Scientific evaluators; and the wider stakeholder community.