

CHAPTER 3.0

IMPACTS OF THE SCHEME

3.0 Impacts of the Scheme

3.1

This section summarises the economic benefits of UKCMRI, both direct and indirect and quantifiable and qualitative.

3.2

This section is divided into the following subsections:

- Direct – quantifiable benefits
- Indirect – quantifiable benefits
- Qualitative benefits

3.3

Direct – quantifiable benefits: Permanent and Temporary Jobs

Permanent new jobs: between 400 and 700

UKCMRI will offer new and integrated facilities for scientists currently working at the Cancer Research UK London Research Institute (LRI) in Lincoln's Inn Fields, and from the MRC's National Institute for Medical Research (NIMR) in Mill Hill.

3.4

It is estimated that UKCMRI will employ around 1,500 people. These numbers have been arrived at through detailed planning of floorspace to include researcher workspaces, laboratories, and communal areas.

3.5

It is anticipated that, on opening, a significant proportion of the staff will transfer from existing jobs at Cancer Research and the MRC. Depending therefore upon the number who transfer from existing jobs and the pace of growth at UKCMRI, there will be between 400 and 700 new positions across a range of roles from research scientists to engineering, administrative and other support staff.

3.6

Staff will include scientists with international reputations, visiting professors and industry researchers working on secondment from elsewhere in London, the UK and abroad, as well as around 400 postdoctoral fellows in the early stages of their careers and around 250 PhD students.

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Approximately 250 jobs will comprise support staff, including administration, security and IT. These positions will require varying skills sets and will provide an opportunity for those living in Camden to be considered for employment at UKCMRI. To this end, in the lead up to the opening of the Institute, UKCMRI intends to partner with local colleges to enable residents to undertake educational courses which will better equip them for potential employment at UKCMRI.

3.8

Temporary new jobs: 600 (on average)

It is anticipated that building UKCMRI will take 48 months and require a construction workforce of around 600 staff on average, rising to over 1,000 at peak times. This has been estimated based on indicative resourcing schedules.

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UKCMRI has agreed that efforts will be made to use local contractors, sub-contractors and other businesses during the development phase and it is likely to agree a target percentage of the construction workforce who should comprise local residents.

3.10

Indirect – quantifiable benefits: Spillover increases to GDP

Spillover impacts: £16m annual increase to GDP

The scientific and technological advances and knowledge flows generated by R&D activity can have multiple beneficiaries and are not limited to any one body or, indeed, any one economic sector. R&D investment in one organisation may therefore be beneficial not only to that particular organisation ('internal spillovers') but could also 'spillover' to other organisations both within the same sector ('intra-industry spillovers') and in other sectors of the economy ('inter-sector spillovers').

3.11

Spillover benefits include:

- Impacts linked to patents such as
 - stimulating new technologies and industries
 - promoting business activities
 - facilitating technological transfer
- Improving firm productivity and growth through knowledge transfer and deep labour markets
- Increased occurrence of start-ups and spin-off companies resulting from an entrepreneurial environment
- Increased venture capital investment which typically targets young and fast-growing businesses that demonstrate the potential for high returns on investment.

3.12

Drawing on predominantly US-based research, the Health Economics Research Group, Office of Health Economics and RAND Europe (2008) examine the total social return to the UK that is generated, excluding any health gains, by public or charitable cardiovascular medical research in the UK. They conclude that every £1 of extra public or charitable research spending in the cardiovascular (or any other) therapeutic area would yield a total social rate of return of at least 20% and perhaps as much as 67%.

3.13

The more conservative of their estimation methods implies a central estimate of around 30% for the total social return on public and charitable R&D spending. These calculations show that for £1 of additional public spending on medical research, the future gain to the UK economy would be equivalent to 30p per year thereafter. However, if the resources were spent elsewhere, we can reasonably assume that these other uses would have led to some increase in GDP too. Garau and Sussex (2007) show that medical research yields more extra GDP than would be gained if the same resources were invested in their next best alternatives: that is to say that medical research yields 'economic rent'. They estimate that around one fifth of the extra GDP generated is additional, and would only be obtained if the investment is made in medical research.

3. 14

They also investigate the social return to the UK that is generated by private investment in medical research. They conclude that every £1 spent yields a social rate of return of around 50%. The range of impacts found by a variety of studies is set out in the table below. As is evident by the ranges estimated and is acknowledged in HERG's report, a great deal of caution needs to be exercised when considering these estimates.

Study	Social rate of return
Bernstein & Nadiri (1988)	10-160%
Bernstein & Nadiri (1991)	20-110%
Goto & Suzuki (1989)	80%
Griffith et al. (2004a)	40%
Griliches & Lichtenberg (1984)	41-62%
Jaffe (1986)	30%
Mansfield et al. (1977)	56%
Nadiri (1993)	Approx. 50%
PICTF (2001), Garau & Sussex (2007)	51%
Scherer (1982, 1984)	64-147%
Sveikauskas (1981)	50%

Fig 3-1. Social return to private R&D
Source: HERG et al, Medical Research: What's it worth? Table 6.3

3. 15

The investment in UKCMRI is all public or charitable. Using the conservative central estimate of 30% as their 'best estimate' of the Gross Domestic Product (GDP) impact of public and charitable investment in medical research, this suggests that for every additional £1 invested in R&D the UK's GDP will, after an initial time lag, be 30p higher every year thereafter than it would otherwise have been. Furthermore, based on Garau and Sussex' research, we can estimate that around 6p of this would be completely additional and could only be generated by investing in medical research. Appendix A contains for more detail on the quantification of spillover effects and types of spillovers relevant to medical research.

3. 16

The total capital spend on UKCMRI is £540m, of which the construction budget is £400m. On the basis of a 30% annual rate of return, this would yield an economic spinoff of £120m per annum after an initial time lag, of which one fifth, or £24m, would be completely additional. Even if we take the lowest estimate of the rate of return, at 20%, this would result in an estimate of economic spinoff of £80m, of which £16m would be completely additional.

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These estimates should be viewed with caution as there is significant uncertainty around the estimation of such impacts. However, what is clear is that spinoffs do exist and the evidence suggests that, even if they are at the lower end of the estimates, they are still of significant economic value.

3. 18

Induced consumption: £8m per annum

Any organisation that engages in commercial transactions, such as paying wages to its employees, will impact on the local economy by way of induced or consumption impacts. This is also known as the income multiplier effect. McDermott et al (1994) estimate that employees spend between 30-40% of their salaries on purchases within the local community.

3. 19

English Partnerships issued a guide⁶⁰ for how to assess 'additionality' – the additional impact of a regeneration project. This provides a range of estimates for induced consumption, or 'multiplier' effects. The table below summarises the range of multipliers that are suggested for different types of projects. For an average project, it proposes a neighbourhood multiplier of 10%, or 50% at the regional level. This is applied to the net direct jobs created by a scheme (ie after the consideration of displacement, leakage and deadweight).

Level	Description	Composite multiplier (neighbourhood level)	Composite multiplier (regional level)
Low	Limited local supply linkages and induced or income effects	1.05	1.3
Medium	Average linkages. The majority of project will be in this category	1.1	1.5
High	Strong local supply linkages and income or induced effects	1.15	1.7

Fig 3-2. Multiplier effects

Source: English Partnerships: Additionality Guide

⁶⁰ English Partnerships: Additionality Guide, September 2004

3. 20

As detailed earlier, we estimate that there will be around 400-700 new jobs created at UKCMRI, after accounting for relocations. The expected wage bill for these new employees is around £15-28m⁶¹ in today's prices. The multiplier effects would therefore be between £2m at the local level and up to £14m at the regional level, depending upon assumptions. Therefore, taking a central figure, we estimate that multiplier effects resulting from the net additional new jobs created at UKCMRI could total around £8m per annum.

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Further details can be found in Appendix D.

3. 22

Qualitative benefits: reducing the economic burden of disease; regeneration; skill development of workforce and scientific community; public outreach and support

Reducing economic burden through a healthier workforce

Chronic diseases are an economic burden. They cost money in terms of treatment but also with regard to productivity loss. Investing in life sciences can save money by developing new medical treatments which either reduces the overall cost of treatment per patient or the number of patients that need to be treated.

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Coronary heart disease is the leading cause of death in the UK. The total annual cost of coronary heart disease in the UK is estimated to be £7.06bn.

Cancer is the second largest cause of death in the UK. Cancer is estimated to have cost £18.33bn in England alone in 2008. This is expected to rise to £25bn by 2020.⁶² If survival rates for cancer in England improved to levels commensurate with the best in Europe, then it is estimated that, by 2020, 71,500 lives would have been saved and the total costs of cancer to the UK would be reduced by £10bn.

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All other things being equal the costs associated with chronic disease are set to increase because people are living longer and age is the single greatest risk factor for many life-threatening diseases.

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Murphy and Topel (1999) estimate that eliminating deaths from heart disease in the USA would generate around US\$48 trillion in economic value while a cure for cancer would be worth around US\$47 trillion. Even a 1% reduction in cancer mortality would be worth about US\$500 billion.

⁶¹ Depending upon assumptions

⁶² Featherstone and Whitham (2010), 'The Cost of Cancer' Policy Exchange: Research Paper

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The potential economic savings from medical research are clearly significant. There is also something to be said for the potential economic gains to be had by whoever it is that owns the intellectual property rights to a pharmaceutical product that successfully treats, for example, heart disease or cancer.

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Further details on this can be found in Appendix C.

3. 28

With its focus on major diseases, including cancer, heart disease, tuberculosis, influenza and malaria, UKCMRI intends to make a significant contribution towards combating chronic diseases.

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Regeneration

The area around the site suffers from high levels of deprivation, with noticeably poor scores on the health and income indicators. It also has significant levels of crime and a resulting poor perception of personal safety.

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UKCMRI aims to positively impact upon these issues. It aims to create jobs locally, both once the institute is operational and during construction. It will attempt to fill as many of these jobs with local residents as possible.

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UKCMRI will undertake crucial medical research which will help to tackle several diseases in the future. This will contribute towards improved health outcomes across the whole of the UK. UKCMRI is planning to provide a community facility which is provisionally called the 'Living Centre' and is aimed at promoting healthy living locally.

3. 32

More generally, UKCMRI will contribute towards improved safety and making the area feel more vibrant, by investment in security, and by investing significant resources into this site in need of development and activity.

3. 33

Contribution to skills development at all levels

UKCMRI is committed to providing opportunities through apprenticeships and other training and learning initiatives. It will provide construction apprenticeships, undergraduate studentships and PhD studentships, as well as contributing towards career development across the full academic spectrum.

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The Institute anticipates that construction apprenticeships will be provided on-site during the construction phase for employees resident within Camden. The details of this have yet to be agreed but it is likely to include a pledge to use reasonable endeavours to provide a certain number of weeks of paid employment to a given number of trainees or apprentices recruited from the Kings Cross Construction Skills Centre.

3. 35

To raise its profile with UK universities, UKCMRI will provide a number of undergraduate studentships. For example, UKCMRI will host a summer student programme aimed at UK students. In partnership with universities it will also seek to provide laboratory placements for longer term undergraduate project work and sandwich courses.

3. 36

UKCMRI will also offer approximately 250 four-year PhD studentships. These will enable scientists to work in a range of UKCMRI laboratories during their training, before choosing a final laboratory and supervisor for their PhD. The majority of students will be registered at UCL although some students currently working at MRC's NIMR have partnerships with other universities in London and across the UK.

3. 37

Career development of researchers at all levels, including undergraduate and PhD students, will be one of UKCMRI's priorities. The Institute's collaborative environment will encourage knowledge transfer between scientists, thereby providing informal learning opportunities for staff.

3. 38

More formal training will also be provided. This will include training in human biology and pathology for non-clinical researchers, so they can appreciate the clinical implications and applications of their research, as well as the special characteristics of experimental medicine. Particular attention will be paid to the career needs of specialist technical staff working at UKCMRI, with the provision of integrated training programmes.

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An industry 'club' will be established with pharmaceutical and biotech sectors, with the intention of increasing exposure to translation and innovation, and seminar series will be organised to which all will be encouraged to attend.

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The institute is also likely to provide postdoctoral researchers/fellows with the opportunity to establish their first independent positions. This is a valuable career stepping stone for those who have completed their PhDs and are ready to work independently but who are not yet experienced enough to set up and run their own groups.

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Finally, it should be noted that while research group leaders working at UKCMRI will be encouraged to make their reputations at the Institute, they will then be proactively helped to find a position elsewhere, especially within the UK. It is expected that many of these people will have worked at the Institute for around 12 years and will be of a sufficiently high calibre to take on leadership roles elsewhere in UK biomedical research, thereby reinforcing UKCMRI's national role in training the next generation of scientific leaders.

3.42

Public Outreach

Public outreach will complement and enhance existing outreach efforts by UKCMRI's partner organisations. The Wellcome Trust, for example, contributes £3.3m annually across the UK to engage with the general public in biomedical science. The exact details are yet to be agreed but UKCMRI intends to make a valuable contribution to the local community.

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UKCMRI's physical space will provide opportunities for workshops, conferences and other events, while outreach activities and visitor space will provide a means to engage with local communities.

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One of UKCMRI's aims is to engage with the general public, educating people about health and disease. To this end, a series of seminars and lectures will be open to the public.

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It is also hoped that local community groups will use the UKCMRI's conference and workshop facilities. The partner organisations intend to offer this free of charge and, by virtue of being at the Institute, members of the public will learn about UKCMRI and its work.

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Other outreach programmes will supplement activities already being held by partner organisations. The MRC's NIMR art programme, for example, collaborates with the Arts Council and encourages artists to engage with scientists and other staff at the Institute. Similarly, MRC's NIMR's annual University of the Third Age (U3A) educates retirees about new approaches to biomedicine.

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UKCMRI will work with local schools and community youth groups educating young people about science, health and disease. As with other outreach activities, this will build on work already being undertaken by the partner organisations such as having scientists teach part of the science curriculum at local secondary schools, speaker programmes for local schools and professional development programmes for science teachers.

3.48

Public support: comprehensive and local.

As part of its proposals, UKCMRI is exploring ways in which they can bring significant benefits to the community in the support that they can provide. This includes formalising their proposals for things such as outreach activities, use of its facilities by local community groups, local employment targets, the use of King's Cross Construction Skills Centre and provisions for a local recruitment and training.

