University of Manchester Research Strategy

This document is the first formal statement of the University's research strategy since foundation. It is intended to form a reference point and provide the basis for the actions we take to ensure that research contributes fully to the University's objectives. The strategy is not simply an account of actions to be undertaken at corporate level – it is intended to drive actions at Faculty, School and Institute level and in turn to integrate those into the University-level frame.

Many actions set out in the strategy depend upon changes in the behaviour of research groups and individuals, so wide dissemination and buy-in will be needed if the strategy is to be realised. To emphasise that it is a common property, preparation has been undertaken with the support of wide consultation.

It is also important that the research strategy is coordinated with those for the other main goals of the University, for teaching and for social responsibility. Relevant links have been pointed out in the detailed sections but the overarching driver is that a University, which is excellent in research and research impact, is far better equipped to meet and exceed the expectations of its students and wider stakeholders. Research strategy overlaps with several other dimensions including strategies for business engagement, commercialisation, internationalisation, estates, human resources and finance and will continue to require close coordination with these.

The strategy is presented under seven main headings. The three central pillars are to achieve research of the highest **quality**, to support and develop excellent **people**, and to have an **impact** beyond academia which yields economic, social and cultural benefits. Supporting these are four enabling areas of action, providing **focus** and capitalising on our critical mass and interdisciplinary capabilities, providing the right financial, physical and knowledge **resources**, meeting the highest standards of research **integrity**, and ensuring **alignment** of strategy at all levels of the University. Each section begins with the vision, indicates briefly where we are and hence a rationale for change, and presents a series of actions to be undertaken. The strategy will be implemented against a series of key indicators and targets which will be set out in an implementation plan.

Quality

Our core commitment is to perform research of the highest quality and to continue to raise the level and ambition of our activities to world-class and world leading standards of excellence. In so doing we will take active steps to ensure that the quality of our research is reflected by leading performance in any measures of quality that may be applied including international rankings and the Research Excellence Framework, and by publishing in leading outlets and attracting high levels of citations for the great majority of our outputs.

1.1 Rationale

The University achieved an excellent overall result in the 2008 Research Assessment Exercise and has been the fastest climber in the top 100 of the Shanghai Jiao Tong World University Rankings. A

great deal of research of the highest quality is produced, recognised at its peak by the recent Nobel successes. However, there is also cause for concern. Our advance in the rankings has slipped back to 44th from a peak of 40th two years ago. Other ranking tables which place more weight on citations per paper put us considerably lower. Our citation performance does not match our RAE scores and is generally behind that of our main benchmark universities. The principal weakness is a larger proportion of uncited papers - 28% of our papers are not cited at all which is considerably higher than the average for the UK's other leading universities (23%). We also need to increase the number of citations to the remaining 72% of papers. In this respect, it is important to note that papers with international partners tend to be more highly cited. Analysis shows that the papers we produce in collaboration with leading institutions around the world attract considerably more citations on average than those we produce alone (which are 1.42 times the world average), emphasising the potential of partnerships to raise quality.

1.2 Actions

1.2.1 Ambition
- The strategy hinges on raising the ambition of research - the ambition should be made explicit in individual and group research vision statements which in turn feed into School, Institute, Faculty and institutional goals. The key question to ask to identify top quality research is: How far does the research illuminate understanding beyond the researcher's immediate peer group?

1.2.2 Outputs and citations
- Schools and institutes will be encouraged to take a more proactive approach to peer review of colleagues' outputs prior to submission with a view to taking opportunities to raise quality and ambition in both the content and the choice of outlet. This should become a cultural norm. Recording and tracking the progress of submitted outputs should be a part of this process.
- Improve management information using external data and eScholar to monitor and disseminate internally our level of citation performance such that realistic localised targets can be set in these areas where citation measures are accepted practice. Other indicators such as reviews of books may also be logged where relevant.
- Advise staff on reasonable steps they might take to optimise the citation of their research outputs including one-page briefing note and more detailed advice for research managers covering strategic issues such as author affiliations, frequency of uncited papers, possibility of over-production, consequences of collaboration.
- Incorporate awareness of measures and targets for citations and other output measures in standard individual and group review processes – e.g. PDR, mentoring, RPE, etc.
- Run targeted events featuring contributions from editors of leading journals and publishers of prestigious monographs to improve knowledge of criteria and processes.
- Each member of staff to have a webpage with output from their e-Scholar entry.

1.2.3 Partnerships
- Use field specific partnerships with world-leading institutions to develop and extend our research quality, recognising that these should be based on mutual benefit.

- Target partnerships with institutions in the USA and in BRIC countries to address underutilised opportunities, ensuring coordination with wider internationalisation strategy.
- Use European partnerships more effectively to increase presence and influence in EU programmes.
- Use strategic business partnerships to drive high quality high impact research.
- Work with neighbouring research focussed institutions where regional interests or issues of proximity drive the agenda.

1.2.4 Manage lagging performance
- Identify those whose research performance is well below expectations, offer support for remedying the situation and ultimately if that does not succeed accept that they will not have a research role at Manchester.

2 People

To achieve our goals we must attract, develop and nurture the careers of excellent researchers and become the location of choice for staff at all career stages. An integrated approach will begin at postgraduate level where the Manchester Doctoral College will provide outstanding research and training. Doctoral researchers will be an integral part of our research effort and we must ensure that this first career step is properly resourced. Support for early career researchers in post-doctoral or early academic positions will include the mentoring and support needed to develop independent reputations. We will identify potential research leaders and help them to secure major awards and come to the forefront of their fields. Finally we will provide an environment that attracts and retains those at the peak of their research careers.

2.1 Rationale

Substantial advances have been made in research training and staff development – we have secured a series of prestigious doctoral training centres, implemented the eProg system, aligned our practices with the Concordat on research staff and have a promotion system which recognises excellence in all dimensions of performance. However, some major concerns remain. Doctoral completion rates fell from 65.2 in 2008 to 62.8% in 2009 – an inadequate level, particularly when their uneven distribution is considered. Doctoral numbers have increased only by 7.7% since 2004 – well below the target set. Increasingly we will have to provide funding to secure the best candidates. It is also essential that we ensure recruitment of the very best research staff and enhance their skills and expertise through continued training and support. While we have systems in place to support early career researchers, there is a discernable gap in the support we offer during the next phases of development towards research leadership.

2.2 Actions

2.2.1 Doctoral
- Develop and promote the Manchester Doctoral College in association with Faculties and Schools as a route to enhancing PGR experience
- Launch prestige university studentship scheme to highlight Manchester as an excellent place to do doctoral research and advertise this and other opportunities early to secure the best candidates.

- Launch initiative on good supervision practice including a one-page guide
- Complete roll-out and continue development of e-Prog and use it to achieve step-change in completion rate and quality in lagging areas.
- Promote high-quality publications by PhD students (facilitated by the 'alternative' thesis format used as the standard method where appropriate and renamed to reflect this).
- Implement survey of career destinations to monitor proportion of our PhDs securing positions in leading research institutions and in influential career positions and incorporate such information into our recruitment webpages.
- Develop sub-strategy for handling inter-institutional doctoral arrangements and monitor international developments (Salzburg II and joint PhDs).

2.2.2 Career support

Research staff/postdocs

- Completion of adoption of Concordat principles.
- Increase the number of fellowships we hold.
- Complete Research Staff Handbook and monitor application through e-Prog.
- Undertake a professional marketing exercise to understand factors that attract postdocs.
- Improve the rigour of recruitment processes and where appropriate adopt a search committee approach to identify the best candidates.
- Provide a clear career structure with development opportunities for postdocs.
- Develop a web presence that markets Manchester postdoc careers effectively.

Early career academics

- Use fellowships, preferably externally funded, to develop early-career academics.
- Work with senior staff mentors to develop research agenda with a high degree of ambition.

Emergent leaders
- Identify staff annually with the potential to achieve major individual investigator awards (Wellcome, ERC) and provide active support and mentoring to that cohort
- Establish a staged research leadership programme aimed at broadening skills and experience
- Develop a clearly defined 'leadership track' fully embedded in PDR and promotions processes

Established leaders
- Monitor satisfaction of established leaders and be prepared to ensure that they are properly resourced to achieve their potential and motivated to remain at the University.

2.2.3 Recruitment
- Remain alert to opportunities to recruit top-class and/or iconic researchers who complement and reinforce our identified strengths.

3 Impact

Our work must have an impact beyond academia and yield economic, social and cultural benefits whenever the opportunity arises. We will establish and maintain key relationships with external partners in business, the NHS, government and equivalent public bodies and other complementary organisations, in our city, region, and nation, in Europe and beyond with a view to shaping our research agenda. We will seek to bring to market the intellectual property arising from our work. We will ensure that individuals receive parity of esteem for translational research and knowledge transfer. Through a successful track record of impact, we will assure our sponsors and stakeholders that we merit the investment made in our research and inform our work with intellectually challenging problems of real world relevance. We will ensure that we identify and communicate widely the substantial body of our work that addresses societal challenges such as sustainability, energy, security and the ageing society. In this and other ways research will also contribute to the University's goal on social responsibility.

3.1 Rationale

The environment for impact is a good one for Manchester. We are based in an iconic city-region with which we have excellent relations. Successful collaborations have been established with major companies such as Astra Zeneca, BP, EdF, GlaxoSmithkline, IBM, National Grid, Rolls Royce, Siemens, Syngenta and Tesco. Partnerships with the NHS are critical to our activity and we are the only centre outside of the golden triangle with an Academic Health Sciences Centre. In terms of knowledge transfer, there has been a strong performance against a range of indicators. Our collaborative and contract research income has trebled since the merger but at £48.2 million in 2008/9 it was over £30M behind the two leaders. Invention disclosures have increased by 56% since the merger. The number of licences issued during 2009-10 increased to its highest level over the last 6 years, but despite this, the income associated with licences has decreased by 9% from last year. Our academics are prominent in national and international policy debates, reflected in media presence and major advisory roles. We have a similarly high profile in cultural debates.

However, even this level is far from sufficient in the current environment when the basic rationale for continued research funding rests heavily upon its ability to demonstrate impact. At the same time, research funders' agendas are increasingly defined in terms of grand challenges, not least so as to demonstrate societal relevance. Even without these external pressures the University is committed to ambitious goals of social responsibility. Our ability to project the value of what we do via the internet or by other means lags competitor institutions.

3.2 Actions

3.2.1 Key relationships

- Identify explicitly which relationships with business, the NHS, government and equivalent public bodies and other complementary organisations are to be managed in a long term strategic way with a clear (and senior) lead and ensure that these arrangements are implemented across Faculties and Schools.
- Design and implement an effective contact management system targeted on these relationships.

3.2.2 Manchester heritage

- Work with city region authorities to attract knowledge based inward investment including business and public research facilities.
- Capitalise on the image, population and cultural heritage of Manchester to give our research a distinctive identity.

3.2.3 Creating Impact

- Each member of staff and each research group to develop an impact plan, complementary with School, Faculty and UoM targets. The plan and progress to be discussed as part of the PDR.
- Promote intersectoral mobility to facilitate movement of staff between the University and business, government and community organisations.
- Gear up our business relations activity to securing international partnerships, including convening Associate Deans for Business Relations, UMIP, MSP and the City inward investment team to identify targets who may site research related establishments on or near the campus.
- Incentivise and support staff engagement with major government consultations, public debates etc.

3.2.4 Demonstrating impact

- Accelerate preparation for REF impact assessment by conducting workshops in broad academic areas, involving members of pilot panels; develop long-list of candidate case studies. Consider use of consultants to help with quantifying the commercial and other impacts of our work or involvement of science journalists and other professionals to help case studies communicate impact or to review past 20 years' of research for eligible impacts.
- Improve capture of data on the impact we have by collating data on impact collected from RPE, collecting of impact statements and reports for all grant-funded research; compiling information on commercialisation impacts (e.g. spinouts - involving UMIP), capturing information on business and other relationships where research has not been commercialised by the University but where impacts are significant (involving external and business relations, regional affairs, media relations).
- Maintain an accurate picture of postgraduate alumni and research staff destinations, especially if their careers are in areas of national strategic importance.
- Work with media relations to identify ways to project our research image nationally and internationally as part of the University's communications strategy.
- Develop an effective front webpage research presence for UoM, that highlights examples of excellent research but also conveys the "Manchester brand" including how this activity makes a societal contribution.

3.2.5 Parity of esteem

- Review promotion criteria and PDR structures to ensure that impact-generating, translation and knowledge transfer activities are properly recognised and rewarded.

3.2.6 Commercialisation

- Establish mechanism to take full advantage of opportunities for translational research and implementation activities.
- Find new ways of increasing researchers' awareness of commercialisation opportunities via UMIP.

3.2.7 Societal challenges and Social Responsibility

- Identify the ways in which our work contributes to key societal challenges and ensure that this contribution is well-publicised through web-presence that highlights examples of excellent research but also conveys the "Manchester brand" including how this activity makes a societal contribution.
- Where benefits of a coordinated approach are evident, support formation of networks in the context of these challenges. Ensure that there is an 'owner' for each challenge.
- Be prepared to respond to external grand challenge initiatives, where relevant drawing upon alliances with stakeholder groups.

4 Focus and Interdisciplinarity

The critical mass and interdisciplinary scope of the University will be used to secure a position among world leaders in targeted fields. Building upon existing successes, we will identify those themes where through key recruitments and investments we can construct a broad front of excellence. We will work in partnership with international research leaders. At the same time we will exploit our wide range of capabilities to form new and ground-breaking interdisciplinary combinations across the full range of subjects. Our institutes will play an important role in taking forward this agenda but no internal structure, process or system should be a barrier to interdisciplinary working. We will not let success in these themes distract us from the critical importance of investigator-led research and the freedom and creativity needed to achieve excellence and impact. We will nurture and support scholarship and fundamental research.

4.1 Rationale

The University recognised the importance of interdisciplinary funding at its foundation with the formation of several institutes but the trend towards interdisciplinary challenges (not least in funding initiatives) means that we need to be able to configure our capabilities in all areas of research activity. An inherent Manchester advantage is the wide range of areas in which we are engaged at a high quality level. There is also increased recognition by funding bodies of the benefits of scale and critical mass in achieving world class status. In some areas, particularly those which are equipment-intensive, there is no option but to commit substantial resources if we are to be a serious player.

4.2 Actions

4.2.1 Key themes

- Focus investment on areas where there is a match between the scale, scope and quality of our work, and high promise in the research agenda with the potential for attracting resources and achieving impact. Criteria for being a University level theme targeted for being among world leaders include combinations of the following:

- o A base of excellence with leadership from top level researchers with global reputations in their fields and a critical mass of people which puts the University's standing beyond being at risk from the departure of one or two key individuals;
  - o Engagement with social, economic or scientific challenges which require a broad-based interdisciplinary approach but where the University can establish clear areas of focus where it is recognised as setting the agenda;
  - o A position in collaborative networks which aligns us with other recognised world leaders and makes us a partner of choice;
  - o Capital intensive requirements which mean that an institutional commitment is needed to meet high threshold investments in facilities or equipment;
- Invest strategic funds in opportunities within a single discipline, or interdisciplinary activities within a Faculty, School, where the scale and rewards merit University level action.
- Conduct annual institutional foresight exercise(s) to review validity and direction of these themes integrating where relevant the results of following two actions.
- Conduct systematic dialogue with research funders, and industrial and other collaborators to identify emergent scientific themes that demand a response from us and to allow us to influence the emergence of such themes as national or EU priorities.
- Conduct systematic dialogue with stakeholders and research users to identify emerging user needs, societal demands which could have a significant research component.

4.2.2 Interdisciplinarity
- Form cross-faculty groupings around emergent research themes and in particular target cross-faculty opportunities with task forces to develop an integrated strategy.

4.2.3 Institutes
- Implement reporting and review procedures for institutes and clarify different models and modes of operation and associated governance.

5 Resources

To achieve our research ambitions we will draw upon a broad range of financial, physical and knowledge resources. While seeking to increase our share of research council and UK charitable sources, we will also diversify to achieve a substantial increase in funding from business, European and other international sources. This in turn will help us to engage our research more effectively in the agendas these funders are pursuing. We will strive to provide and make effective use of state-of-the-art facilities and equipment. Our administrative support will be integrated, using fit-for-purpose information systems, and ensuring that the needs of our researchers and sponsors are met comprehensively. Recognising that the time of researchers is a scarce and valuable resource we will seek to organise commitments to maximise quality time for research and teaching.

5.1 Rationale

We had a 7% share of research income within the Russell Group in 2008/09 at £191m, ranking 5th behind Oxford, Imperial, Cambridge and UCL (which together made up 41% of the total). However, this position in part reflects our size and per capita income puts us 7th (at 1.83) in terms of research grant and contract income per academic staff costs (excluding small specialist institutions and compared with a figure of 2.98 for Oxford). In the current funding environment with serious

constraints on UK sources of research income we face a situation where 90% of our research income in 2008/9 was from UK sources, 7% from the EU and only 2% from non-UK/EU sources. Our overseas performance lags our competitors, particularly in respect of non-EU charitable income. There are also issues around use of resources…

In light of the implementation of the Wakeham report and the expected recommendations from "Wakeham 2", we need to reduce the year-on-year indirect and estate-related (TRAC/fEC) costs of our research activity (through more efficient use of facilities, equipment and support services) and to recover a greater proportion of project-specific support costs through direct funding.

The recent Review of Research Finance and Administration found there was a pressing need to improve support for researchers by developing an integrated support service, coordinating the activities of different directorates (eg Finance and HR), and providing local one-stop-shop support.

5.2 Actions

5.2.1 Research funding

- Review and strengthen relationship management with sponsors with a clear lead for each working across Faculties and Schools.
- Establish a review of EU participation to cover both more effective administrative support and ways of increasing awareness and engagement with the processes and content of EU research, including the opportunity to influence emerging agendas;
- Complete ongoing compilation of overseas funding opportunities to be followed up by establishing a relationship manager for each major actual or potential overseas source of support.
- Deal efficiently with demand management strategies that may be imposed upon us by sponsors and take advantage of them.

5.2.2 Facilities and Equipment

- Maximise opportunities for sharing, beginning by completing inventory of current equipment. Do not authorise major future purchases without an assessment of potential collaborative use within the University and possibly with neighbouring institutions.
- Revise and implement changes to grant costings in order to make recovery of project-specific support costs standard rather than optional.
- Increase the recovery rate of true research cost from all types of funding (e.g., industrial, charities, EC, non-EC funders, etc.).
- Seek ways to maximise the contribution that the collections at the University's cultural institutions (John Rylands Library, Whitworth Art Gallery and Manchester Museum) can make to research.
- Provide world-class e-infrastructure to support research, enhancing productivity, facilitating collaboration, and enabling new research paradigms.
- Ensure that the information environment is in place to meet all research needs.

5.2.3 Administrative support

- Implement the Review of Research Finance and Administration and establish indicators which allow URG to monitor the renewed system's performance.

5.2.4 Quality time

- Review of principles behind timetabling to explore opportunities for greater blocking out to allow focus on research and teaching.

6 Integrity

The highest standards of research integrity are an essential element of quality. Building on recent progress, we will develop and implement communication and procedures to ensure that research ethics and all other dimensions of integrity are part of the values of our staff and govern our behaviour.

6.1 Rationale

Substantial progress has been made in the past year in putting in place much more effective research governance systems. Nonetheless, there are growing external pressures which require continued vigilance. A changing statutory environment (e.g., Human Tissue Act 2004, EU Clinical Trials Directive, Data Protection Act 1998, Freedom of information Act 2000) and enforcement of the law has been matched by increased expectations of funders and partners in research. From 1st of October, 2009, compliance with RCUK's Policy and Code of Conduct on the Governance of Good Research Conduct is a requirement of all grants and awards from the Research Councils in the UK. Similarly, the NIHR in the UK and NIH in the USA expect compliance with their codes of practice as a condition of funding. Following high profile cases of research misconduct or failure to follow best practice, there is decline in public faith in science and scientists which ultimately affects our ability to do research in terms of funding, people willing to participate in research or donate tissues etc for research. Within the University there s a systemic problem whereby researchers from lack of knowledge about best practices and statutory requirements fail to follow best practice. There are also more serious breaches of good practice or statutory requirements. In the last two years the number of cases referred for investigation of research misconduct has dramatically increased.

Actions

- Develop an enhanced 'Code of Good Conduct' that incorporates ethical conduct and integrity in all elements of research including funding, conduct and publications or other outputs.
- Effect a cultural change to promote research integrity and ethical conduct by incorporating awareness of research integrity in PDRs, mentoring, the promotions process and in training.
- Continue to develop structures with transparent decision making processes at University, Faculty and School level to ensure clearly defined responsibilities and lines of accountability with respect to research governance and integrity.
- Continue to develop efficient and proportionate processes to support researchers in research approval, and ethical and regulatory compliance.
- Continue to develop a proportionate, robust and transparent ethics review process that is participatory with input from staff at all levels and from all Faculties.
- Recognise contribution to Research Integrity and Governance agenda (e.g., service on University Ethics Committee) in career development and progression.

- Encourage senior staff in the University to actively participate and contribute to national/international debate and regulatory bodies to influence national/international policy in this area.
- Provide a Web page portal for all relevant docs on integrity and ethics

7 Alignment of strategy at all levels

Our research strategy will be based upon mutual commitment and alignment at institution, faculty and school levels.

7.1 Rationale

We will only able to capitalise on our strengths, including the wide scope of our capabilities both in terms of expertise and in spanning the spectrum from research to innovation, if we have joined up strategy with wide buy-in. We also need a joined up approach to implementation. This can in part be achieved by a more open approach in which up to date data on our research, its environment and its impact are made available to all staff. Increasingly external opportunities require a rapid and highly coordinated response. While not losing sight of our long term objectives, the changing environment and the opportunities research itself creates means that we need regularly to update the content of this strategy.

7.2 Actions

- Develop new dashboard of KPIs underpinned by analysis of comparative performance and make it available to all staff.
- Have periodic research strategy reports and discussion with Board of Governors, DRG and Senate.
- Use RSG for coordination between University and Faculty strategies, URG for coordination between academic and administrative dimensions of strategy.
- Engage Institutes and Business Strategy Committee in annual process for updating research strategy.
- Assign each action listed above to those responsible at each relevant level.

19.05.11