The Council for the
Mathematical Sciences

The Council for the Mathematical Sciences (CMS), comprising the Institute of Mathematics and its Applications, the London Mathematical Society, the Royal Statistical Society, the Edinburgh Mathematical Society and the Operational Research Society, is pleased to present its evidence to the Innovation, Universities, Science and Skills Select Committee Inquiry on **Implementing Skills and Training Policies.**

The CMS is an authoritative and objective body able to speak on the role of the mathematical sciences in UK higher education, research, business, industry and the public sector, and to engage with and respond to policy decisions that affect the mathematical sciences in these areas.

1. The Innovation, Universities, Science and Skills Select Committee has invited submissions of evidence on what regional structures exist for delivering the Leitch agenda on skills, and the role of the higher education sector in delivering a region-based agenda. This submission concentrates on structures for mathematical sciences skills at level 4.

<u>The importance of mathematical sciences courses and departments to the Leitch agenda</u>

2. The Leitch report recommended a commitment to increasing the proportion of adults trained to level 4[1], and called for a focus on economically valuable skills[2]. The report argued that economically valuable skills can be identified where employers are prepared to pay higher wages to those with particular qualifications[3].

3. Maths skills at all levels are a crucial element of a well-trained and flexible workforce. It is important that all those who undertake HE courses have a proper understanding of the mathematics underlying their subjects, be they other STEM subjects, economics, business or marketing courses. Mathematics graduates are highly sought-after and are well-placed in tables of comparative earnings[4] – that is, mathematics skills at level 4 are economically valuable. The implementation of the Leitch agenda should therefore encompass availability of mathematics courses and departments, both to provide training in the mathematical sciences and to underpin training in other subjects.

4. This requires that all HEIs recognise the role that mathematics plays in providing local, regional and national skills for mathematicians for industry, mathematics teachers, engineers and technicians, or graduates in commercial subjects. The loss of mathematics departments, courses and educators from a university will have wide-ranging effects across all these areas.

<u>The importance of *regional provision* of HE courses to widening participation and the impact of departmental closures</u>

5. There is evidence to suggest that regions benefit by graduates remaining there after qualification; conversely, a poor geographical distribution of courses can therefore be

[1] *Prosperity for all in the global economy – world class skills:* Paragraph 3.59
[2] Ibid. Paragraph 3.68
[3] Ibid. Paragraph 4.32
[4] See, for instance,
NC O'Leary and PJ Sloane: "The Return to a University Education in Great Britain" *National Institute Economic Review.*2005; 193: 75-89,
Universities UK: *Research Report: The economic benefits of a degree* (February 2007),
and others.

expected to lead to a shortage of specialist mathematics teachers in an area and hinder the regional delivery of the Leitch agenda with respect to improving the teaching of numerical skills teaching in schools and colleges.

6. Lord Leitch's report concluded that 'it is critical that access to university is dramatically improved so that young people from all backgrounds have a fair chance of attending'[5]. The existence of high-quality honours degree courses in mathematics distributed throughout the UK is vital to widening participation to students who, for a variety of reasons, need or wish to live at home whilst studying. In particular, the existence of 'local' courses with more moderate entry requirements (termed 'broader entry' courses below) is essential.

Current regional structures for delivery of mathematics skills in HE

7. Our analysis of course provision (based on A-level achievement) shows significant sub-regions of the UK where there is no 'broader entry' course provision. We refer the Committee to our recent report *Keeping HE Maths Where it Counts*[6], which examined the drivers and implications of the decline in provision of 'broader entry' mathematical sciences courses, noting the effects of RAE funding decisions on the sustainability of departments and therefore courses. Termination of recruitment to courses at Bangor and Hull in recent years has had a noticeable effect on the provision of broader entry courses in North Wales and East Yorkshire, and provision is sparse in the whole of Eastern England, Wales and in the central and western parts of southern England.

Council for the Mathematical Sciences
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[5] *Prosperity for all in the global economy – world class skills* : Paragraph 3.63
[6] Available from www.cms.ac.uk/reports/2007/steele_report.pdf, and attached to this submission for the Committee's reference