



**Higher Education White Paper: students at the heart of the system
BIS Consultation**

Submission from the Royal Academy of Engineering
20th September 2011

Founded in 1976, the Royal Academy of Engineering promotes the engineering and technological welfare of the country. Our fellowship - comprising the UK's most eminent engineers - provides the leadership and expertise for our activities, which focus on the relationships between engineering, technology, and the quality of life. As a national academy, we provide independent and impartial advice to government; work to secure the next generation of engineers; and provide a voice for the UK's engineering community.

This is the third submission made by the Royal Academy of Engineering to consultations arising from the Browne Review of Higher Education Funding and Student Finance. The first, made to HEFCE as part of evidence gathering on strategically important and vulnerable subjects (SIVS), provided detailed evidence on the risks to public interest if insufficient engineering graduates with appropriate expertise are formed. The second, a detailed response to the HEFCE consultation on HE funding and student number controls, identified a number of unintended consequences arising from the HEFCE proposals. A summary of the key concerns set out in those responses is provided in Annex A.

We wish for detail to be taken into consideration but will not discuss it further here, preferring instead to emphasise two main points:

1. **The modern, experience-led engineering higher education required by industry to drive economic growth is currently underfunded** despite the additional support received through the HEFCE higher-cost provision and SIVS mechanisms (*Engineering Graduates for Industry*, the Royal Academy of Engineering, 2010). **The proposals made in the HE White Paper fail to address this point** with Annex A showing that continued funding input from HEFCE is required to avoid the current underfunding becoming worse and identifying the need for cross-subsidy from earnings made from lower cost courses to cover losses sustained through the provision of engineering. **The proposals in the HE White Paper do not offer a stable and sustainable future for engineering courses with attendant risk to economic growth.**
2. There is a high risk that **the proposals in the HE White Paper will fail to deliver the engineering and scientific skills necessary if the ambitions of the Government Growth Review are to be realised.** This seems to be a worrying disconnect in public policy. Some universities will be disincentivised from providing high cost courses, introducing the real possibility of reducing student numbers in strategically important subjects such as engineering.

As it has already done with apprenticeships and University Technical Colleges, government should **invest in increased support for engineering** and the productive industries. The additional investment required is small compared with that made under apprenticeships and much better targeted to

the support of STEM disciplines: the Academy's FE STEM Data Project shows that despite growth in apprenticeships as a whole, STEM apprenticeships remain a small proportion (*FE STEM Data Project – July 2011 Report*, the Royal Academy of Engineering, 2011).

We have identified a number of immediate actions required to rectify this situation:

- Given the uncertainties introduced by HE reforms, government should commission a review of the key risks in the HE White Paper proposals. The National Academies should lead on this for the SIVS.
- Informed by the analysis of risks, government should reconnect the HE White Paper to the Growth Review by assuring ongoing funding support for the SIVS. Annex A and our detailed submissions to HEFCE make it clear that sustaining higher cost STEM SIVS will require cross-subsidy from the funding derived from other subjects. This intervention in the market is necessary to redress the inherent imbalance.

Annex A

Key concerns for STEM arising from the HE White Paper

- **The modern, experience-led engineering higher education required by industry to drive economic growth is currently under-funded despite the additional support received through the HEFCE higher-cost provision and SIVS mechanisms (*Engineering Graduates for Industry*, the Royal Academy of Engineering, 2010). The proposals made in the HE White Paper fail to address this point.**
- A £9,000 fee (without fee waivers) means a Standard Resource for each engineering undergraduate student of **£8,100** assuming £900 goes to funding access arrangements. The current funding for engineering undergraduates is made up of £3,951 Standard Resource from HEFCE *plus* £2,765 Price Group B uplift from HEFCE *plus* £1,980 balance of tuition fee *minus* access funding (assume £350) = **£8,346** (£9,346 for the highest cost courses such as chemical engineering and materials science or engineering). Hence there will be a deficit in funding for Price Group B subjects (engineering and other laboratory based subjects) unless Price Group B and SIVS funding is continued. By comparison, the new funding regime provides an uplift of £2500 for Price Group D subjects (humanities etc.). Any future deficit in the funding to Price Group B subjects compounds the underfunding of engineering noted above.
- Universities already face pressure on capital funding (72% cuts in HEFCE teaching capital funding, 58% cuts in HEFCE research capital funding, 58% cuts in Research Council capital funding and ongoing pressure on estates funding) and some are threatened financially by the ongoing concentration of research funding. Because of this and the underfunding of engineering courses, universities will need to generate greater annual surpluses to cross-subsidise capital projects, the enhancement of the student experience and the up-to-date laboratory equipment required for high quality Price Group B teaching. Annual surpluses from Price Group D provision will only be possible at universities able to command and maintain the highest fees. Elsewhere we expect intense competition for Price Group D students to develop between universities and this is likely to drive fees down, thereby reducing surpluses and the potential for cross-subsidy.

The limited scope for cross-subsidy means that any future reduction in Price Group B funding for strategically important and vulnerable subjects must be recovered through additional SIVS supplements – the two mechanisms must be seen as inextricably linked for strategically important subjects such as engineering. An evaluation of the HEFCE SIVS programme¹ confirms it has provided value for money and made a positive contribution to the sustainability of these disciplines.

¹ Strategically Important and Vulnerable Subjects: the HEFCE Advisory Groups 2010-11 report, HEFCE, September 2011

- The Key Information Set could be a helpful step but still lacks the detail required to make a fully informed choice. Courses lacking value for money can be identified through KIS data on contact hours and modes of study. However, the true value of higher education comes from the longer term returns to the individual. The KIS needs more detailed information on full life career outcomes to allow prospective students to assess the value of studying strategically important subjects and to allow discrimination between a merely adequate and an exceptional student learning experience.
- Allowing new providers to compete for the contestable student numbers will not alleviate the pressure noted for strategically important STEM subjects. The FE STEM Data Project² has identified the paucity of Level 4+ STEM provision in the FE & Skills sector. Therefore the FE & Skills sector does not have the capacity or resources to compete for STEM students in significant numbers. In addition, new for-profit providers will have little or no financial incentive to compete for Price Group B students such as those in STEM.
- There are concerns for provision of engineering courses at universities that will have their allocation of student numbers reduced to make room in the system for the core / margin proposals but are less well placed to compete for AAB+ students than the most attractive institutions and are unable to provide an average fee level of £7,500. Such provision is being described by commentators in the media as being in ***the squeezed middle*** and represents a significant proportion of the completions in strategically important subjects each year.
- Accredited Bachelors courses in all branches of engineering including computer science, the integrated engineering Masters degree (MEng) and specialist technical MSc courses offered in UK universities set global standards for quality and provide employers with the *professional* skills needed for innovative growth in a global economy. They are strategically important to the UK economy. However, the extended length of the four-year MEng makes it less attractive to students concerned about debt. Fee waivers and other financial inducements will be particularly attractive to students considering longer courses but universities in circumstances of the squeezed middle can ill afford financial inducements for higher cost courses without significant cross-subsidy from Price Group C and D courses.
- The loss of squeezed middle provision in strategically important subjects is a concern for reasons beyond straightforward loss of capacity: students in certain locations may be denied access to local or regional provision; research informed teaching of a next generation of specialists may be lost in key sub-disciplines; under-representation will deepen with attendant risk to social mobility if professionally-accredited engineering provision becomes less accessible to less economically advantaged applicants.
- The AAB+ proposals do nothing to encourage universities at which competition for admission is most intense to consider the context in which candidates achieved their A Level and other qualifications. This could damage efforts on widening participation.

² FE STEM Data Project – July 2011 Report, The Royal Academy of Engineering, July 2011

- Advice from SEPNET is that 25% of entrants to arts and humanities courses gained AAB+ in 2009/10 versus just 17% in STEM subjects. There is evidence that STEM A Levels are harder³ - *“at A Level, the STEM subjects are not just more difficult on average than the non-sciences, they are without exception the hardest of all A Levels”*. Therefore removal of student number controls via the AAB+ mechanism favours arts and humanities more than STEM.
- Changes to funding arrangements for co-funded employer engagement could result in a significant reduction in the number of students benefiting from vocationally relevant Foundation Degree programmes if employers and students are not prepared to meet the full cost of provision. Co-funded numbers provide a vehicle for widening access to HE and it would therefore appear to be counter to other Government proposals in this area. The position on employer co-funding needs clarification. Can employers carry on paying the current fee levels as a contribution? Will it be easy for students to apply for a top-up fee (i.e. the difference between the employer contribution and fees)?
- Employers seem very happy with their current engagement in co-funding part-time provision but how will they react to fees that increase by perhaps a factor of 2.5? Many will be deterred from co-funding, preferring to let employees take a loan for the entire cost. The position on part-time loans needs clarification. Is the loan means tested (an issue for students paid a training wage) and will it cover a contribution to living costs (an issue for those not on a training wage)? Part-time students apply from January to September. The loans for fees for part-time students will be applied for in July to September. Can the loan system cope with this? Will there be any additional HEFCE funding for part-time STEM subjects?

³ Relative difficulty of examinations in different subjects, CEM/ SCORE, 2008