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# Future needs for capital funding in higher education

**A review of the future of SRIF and  
learning and teaching capital**

**Report to HEFCE by JM Consulting Ltd**

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## **Purpose and structure of report**

This report reviews the impact of the programmes of capital funding allocated to the higher education sector through the Science Research Investment Fund (SRIF) and the equivalent learning and teaching capital schemes over the period from 2001 to 2006.

Our studies in 2001 identified that there was then a remedial investment need of approximately £8bn across the whole UK higher education infrastructure, to address backlogs of maintenance, fitness for purpose, and legislative compliance in the buildings, plant, services and equipment needed to support teaching and research. This was approximately 30% of insured asset value, and is equivalent to £10.4bn in 2006 prices.

SRIF is a UK-wide scheme which has allocated £3bn to institutions over the period 2002/03 to 2007/08.

Learning and teaching capital schemes are different in each country of the UK, although they have a common purpose. At a UK level, they have allocated £2bn to institutions over the same period.

The report assesses how far these funds have now achieved the purpose for which they were allocated, and makes recommendations on the needs for future capital funding to achieve sustainability of the higher education infrastructure for teaching and research.

The report makes a UK-wide assessment and recommendations about requirements at a UK level (which is effectively the same for England which accounts for over 80% of UK higher education activity). Three associated reports look at differences in Scotland, Wales and Northern Ireland and comment on any different implications for future policy and funding in these countries.

The summary report (chapter 1) includes all our main findings and recommendations.

# 1 SUMMARY REPORT

## Purpose of study

- 1.1 The purpose of this study was to inform policy on the Science Research Investment Fund (SRIF), and learning and teaching capital (LTC) by:
  - a. assessing institutions' progress towards a sustainable physical infrastructure for teaching and research;
  - b. identifying how much remedial and recurrent investment they still need to make, how they can finance this, and therefore how much more public capital grant funding is required.
- 1.2 Further details of the terms of reference and methodology are in Appendix A. We have drawn upon detailed evidence and discussions at 24 case study institutions covering England, Scotland, Wales and Northern Ireland. We are grateful to all these institutions for their contribution to the study.
- 1.3 The findings from the study cover three inter-related areas which are relevant to future needs:
  - a. what institutions need to invest to address any remaining problems of condition or functionality of infrastructure that are adversely affecting research or student learning or the sustainability of the institution;
  - b. what level of public funding they need to enable them to finance their required annual investment programmes going forwards, and in particular to make up any "funding gap" that arises from failure to recover full economic costs (fEC) of research or teaching;
  - c. how far their academic and infrastructure strategies will deliver a sustainable future, given appropriate continuing capital grants.
- 1.4 We were asked to assess the total investment requirements at a UK level, and to show how these are split between teaching and research, and between the four countries of the UK. This leads to quite a complex and differentiated picture, and general conclusions have to be expressed with care as there will often be one country or one type of institution which looks different. This summary aims to show a balanced picture if taken as a whole, but readers should be cautious about taking single paragraphs out of context.

## Overview of findings

- 1.5 Firstly, SRIF has been very successful. It has facilitated an enormous improvement to research infrastructure at the UK level, which in 2006 is in a much better (and improving) state than in 2001. Areas of backlog remain, and will need further investment, but this might be on different terms.
- 1.6 This improvement can be evidenced in three main areas:
  - a. institutions now generally have access to enough space of broadly appropriate character (condition, fitness for purpose, and legislative

- compliance) to carry out their sustainable programmes of teaching and research;
- b. many institutions are undertaking condition surveys, producing strategic 10-year capital plans, and working towards managing their physical assets in a sustainable manner (i.e. more efficiently, with consistent investment, and generating a realistic return);
  - c. a few institutions are close to being able to finance their required future level of investment in their infrastructure (normally around 4.5% of the total asset value per annum) on a recurrent basis, and some are actually spending at or close to these required levels.
- 1.7 Secondly, there are still significant levels of remedial investment required in the infrastructure for teaching and research, but the remaining backlogs are smaller than they were in 2001. They are now of the order of £5bn across the whole sector (this can be contrasted with broadly £10bn at 2006 prices which we found in 2001)<sup>1</sup>. They affect both teaching and research, but are now more significant for teaching than for research. The improvements are illustrated in Figure 1 in Appendix B.
- 1.8 Thirdly, we have established for the first time (as this was not possible in 2001), the recurrent level of investment which institutions need to make post-2008 in order to address the remaining backlogs that are critical to their mission, and to maintain a sustainable infrastructure in future. This requires a forecast of both future needs and future funding, which of course include a number of uncertainties.
- 1.9 After allowing for what institutions can generate from their own funds, including contributions from fEC funding of research and variable student fees (not in Scotland), the sector will have an annual funding gap of approximately £650m after 2008. This is lower than the amount they are currently receiving in SRIF and LTC, and so represents a step towards sustainability. However, this improvement is fragile and is based on a set of assumptions (e.g. about employment, energy and building costs, and public funding post-2008) which may be optimistic and challenging for institutions to meet. The trajectory of funding need is complex: see Figure 2 in Appendix B. We conclude that institutions will need continuing formulaic grants post-2008, and that continued formulaic funding at the current level after 2008 would enable a sustainable position to be reached earlier.
- 1.10 Splitting these requirements between teaching and research is somewhat arbitrary since teaching and research activities are often closely inter-related and use some of the same staff and infrastructure. Even where they use dedicated infrastructure, they also depend on generic support services (libraries, IT networks, administration etc). Nevertheless, we have estimated the split. There is a certain symmetry about this in that the “backlog” needs are higher for teaching and learning (because SRIF has made a bigger impact on needs in the research infrastructure), while the “funding gap” needs are larger for research (because it will continue to be in deficit).
- 1.11 This pattern is repeated, with differences, in all four countries of the UK:

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<sup>1</sup> These are not measured on exactly the same basis as the availability of data and institutions' knowledge of their estates problems have both improved since 2001.

- a. in Scotland, the investment backlogs are significantly larger than in England, and the capital grant funding under both SRIF and the Scottish Learning and Teaching Infrastructure Fund (LTIF) has been lower in relation to the size of the asset base;
  - b. in Wales, the level of capital funding for learning and teaching has been lower than in England;
  - c. in Northern Ireland, the position and needs are similar to those in England.
- 1.12 There are also differences in needs between different types of institution.
- 1.13 Our full findings therefore show a spectrum of progress towards achievement of a sustainable physical infrastructure across the sector. Continuation and consolidation of this progress will depend on the continuing public capital funding provided to institutions after 2008, and also on how effectively institutions prioritise their spending and manage their portfolios of activity and physical assets.

## Science research infrastructure

- 1.14 SRIF is a UK-wide programme, and has allocated £2bn to institutions over the four years 2004/05 to 2007/08 (since the timeframe of our last survey). This is being delivered to institutions in a predictable and flexible manner enabling them to use it strategically and holistically, including for areas such as long-term maintenance which clearly underpin sustainability<sup>2</sup>.
- 1.15 The problems which we highlighted in our 2001 report as inhibiting appropriate UK research have been or are being addressed by those institutions that have chosen to make this a priority; they have used SRIF strategically to support their actions. This process still has some way to go, and we estimate the remaining backlogs specific to science research to be in the range £1-2bn, significantly improved since 2001.
- 1.16 Within this overall improved picture, there are some areas where the remaining need is larger than the UK average:
- a. a few research-intensive universities still have major infrastructure problems which will not be resolved by formulaic SRIF funding. Either their academic aspirations are unaffordable, or they have a historic legacy of poor estates which they have not yet managed to address. They need radical solutions (e.g. to rationalise estates and academic portfolios). Dealing separately with these outlying institutions with exceptionally high backlogs would of course reduce the average capital funding need across the whole sector;
  - b. in Scotland, the condition and fitness for purpose of the infrastructure is significantly poorer than in the rest of the UK, and the amounts of SRIF allocated have been smaller in proportion to the value of the estate. The

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<sup>2</sup> However, not all HEIs have been equally imaginative in using this flexibility, and differences between countries in the availability of funds, and in the amount of lead-time and flexibility available may have reduced some institutions' perceived ability to plan strategically and to make the best-value choices.

need for further investment in the science research infrastructure, coupled with programmes of rationalisation to improve efficiency of asset use, is therefore larger than in the rest of the UK.

- 1.17 So, the “backlog” problem is rapidly reducing to manageable levels in most institutions, but further capital funding will be needed beyond the end of the current SRIF allocations in 2007/08. This continuing SRIF funding is needed both to cover financing gaps going forwards (due to deficits on research, and in some cases unsustainable institutional portfolios), and to continue to make inroads into the remaining (reduced) backlogs of capital investment.
- 1.18 If, as we expect, the proportion of full economic costs funded across the whole of institutions’ research portfolios continues to rise, this need for continuing SRIF funds will begin to decline. However, this clearly depends on a number of factors, not just the level of funding by Research Councils, and the speed of improvement would be slowed if other factors impact negatively on institutions’ finances, or if they attempt to maintain unsustainable research portfolios. This evolution is illustrated in the trajectory graph at Figure 2 in Appendix B.
- 1.19 As the historic legacy is reduced to manageable levels<sup>3</sup>, institutions should switch their attention to a more strategic form of investment and management. This will include integrating their infrastructure and academic strategies so that the research uses the assets effectively and intensively enough to generate an adequate income to cover their full life-cycle costs. Where assets or research are “not affordable”, institutions cannot expect public funding to make up these deficits indefinitely. The funding councils and the Office of Science and Innovation (OSI) could help to reinforce the more sustainable and integrated strategic approach which is already evidenced by a minority of research institutions in our sample.

## **Infrastructure for teaching and learning**

- 1.20 LTC has been a national rather than a UK programme, and there are clear differences in the amount of funding provided across the UK.
- 1.21 Progress in respect of the infrastructure for teaching and learning is not as well advanced as that in respect of research. There are several reasons for this:
- a. the infrastructure to support teaching and learning is significantly larger than that to support research, and the backlogs of investment that existed in 2001 were larger;
  - b. the amounts of LTC so far delivered to institutions are smaller than those for research (£1.5bn at UK level over the same four-year period, 2004/05 to 2007/08) and relatively less in both Scotland and Wales;
  - c. institutions generally have access to fewer other sources of funding to support physical infrastructure for teaching<sup>4</sup>;

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<sup>3</sup> We are defining “manageable” levels of backlogs as backlogs which are not critical to institutions’ missions; are not more than 10% of asset value; and can be dealt with over time through normal regular maintenance and renewal programmes.

<sup>4</sup> Although there have been schemes for teaching infrastructure – such as funds for improving poor estates in England.

- d. a large proportion of the learning and teaching infrastructure is in the post-92 universities which, in general, inherited a lower-value asset base at incorporation, and some of which is unsuitable for modern higher education and in need of strategic investment.
- 1.22 This last point could be enlarged to note that some of the post-92 universities are pioneering developments to support mass higher education, new types of student, flexible modes of delivery, and 24/7 use of assets. Often they have had to adapt and improve poor quality inherited infrastructure which was not designed for modern higher education (former technical colleges for example). The buildings may be safe and sound, but they will not deliver a UK-standard educational experience. They cannot facilitate the new kinds of engagement with non-traditional students that are central to the government's policies; nor meet increased student expectations in the variable fee environment.
- 1.23 We estimate that the remaining backlogs in teaching and learning are in the range £2-4bn, i.e. broadly double those for research. Unlike research, teaching is not in deficit<sup>5</sup>, but the backlogs are larger, and it has not had the same level of attention to ensure its infrastructure is at national standards of functionality and fit for the demands of fee-paying students. As a minimum, formulaic LTC will need to continue at the current levels for longer than SRIF. There is also a need for some strategic investments for one-off enhancements. In both Scotland and Wales, the requirements are greater, and are discussed in the relevant country reports.

## Recommendations

- 1.24 Our findings show improvement all round as a result of SRIF and LTC, but more marked in research than teaching, and with some catching-up required in Scotland and Wales.
- 1.25 Much of the infrastructure is common to both research and teaching, and investment can be more effective and deliver better value for money if it is planned and managed holistically. If possible, it would be beneficial to combine the two formulaic capital streams and allow institutions to use them more flexibly (perhaps with a requirement that they demonstrate an appropriate balance of benefits to both teaching and research).
- 1.26 However, not all institutions in our sample are capable of managing this greater flexibility without some conditions to ensure sustainability. Some need to develop a proper capital assets strategy that (a) will address the issues that threaten their sustainability, and (b) is properly financed, not just a wish-list. Some are not spending at the required levels, and need to commit to do so as a condition of future formulaic grants.
- 1.27 In a few cases, further formulaic funding, even with improved management, will not be enough to deliver progress towards sustainability. There is a need for some strategic funds for reconfiguration and rationalisation, to encourage a few institutions with large outstanding problems to take hard decisions to achieve greater sustainability of research and teaching infrastructure. This

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<sup>5</sup> Informal TRAC evidence shows that non-publicly-funded teaching is in surplus, and although some aspects may be in deficit, this is not on the same scale as the deficits in research.

needs to be managed so that it is not perceived to be rewarding those institutions which are furthest from sustainability. The funding councils have existing schemes which they could use to do this.

1.28 In teaching and learning, there is also a need for strategic grants for enhancement of poor infrastructure for student learning, which may be “watertight and sustainable” in maintenance terms, but fails to reflect the needs of a modern world-class higher education system. Again, the funding councils could adapt existing schemes as best suits the needs in each country.

1.29 In summary, we recommend that:

- i. formulaic SRIF and LTC grants should continue for all institutions post-2007/08. These formulaic allocations have been highly cost-effective. They facilitate strategic capital planning by institutions, and lever in a matching commitment and contribution from institutions’ own resources and management;
- ii. the two streams should preferably be combined, or at least managed in a more integrated way, with the minimum of restrictions on the way the funds are invested;
- iii. if possible, the total publicly-funded resource for infrastructure should continue at current levels for a few years more. This will enable backlogs to be addressed more quickly, and a sustainable position to be reached sooner. Moreover, institutions still have fragile financial forecasts, and remaining backlogs to be addressed, and too rapid a decline in capital grants could destabilise the progress already being made;
- iv. institutions which are not yet managing their infrastructure strategically and in a sustainable manner should not expect automatic continuation of formulaic funding (as this is not the best use of public funds and can be seen as rewarding poor management). Conditions should be attached to the formulaic grants to encourage all institutions to adopt the good practice which is evident in parts of the sector. We illustrate in Appendix B some simple metrics, which the funding bodies could use to implement such an approach;
- v. a limited lifetime scheme should be introduced to support rationalisation of infrastructure in research-intensive institutions needing large one-off investments to achieve sustainability. This would be subject to a business case on the grounds of improved sustainability, and matching funds. (Such “spend to save” investment will reduce future needs for SRIF);
- vi. funding councils should provide some strategic LTC funds to support selective enhancements to the teaching and learning infrastructure, bringing it to a 21<sup>st</sup> century level of functionality for institutions which are close to managing sustainably;
- vii. the funding councils should consider how to encourage the spread of the types of good practice in sustainable management of infrastructure discussed in this report. Adopting the metrics and conditions we suggest in Appendix B would be an effective mechanism to achieve this.

## 2 THE HIGHER EDUCATION INFRASTRUCTURE AND FINANCING

### Introduction

- 2.1 In this chapter, we review the data on the higher education infrastructure and the financial performance of HEIs, both at sector level and for the case study institutions in the four countries of the UK. Its purpose is to provide a context for our findings in the subsequent chapters.
- 2.2 We refer to several standard higher education systems or sources of data or performance indicators which include:

EMS	Estates Management Statistics – we have drawn extensively on the latest (2004/05) data
Financial forecasts	Submitted by all HEIs annually to their funding council
HESA	Higher Education Statistics Agency
SMG	UK Higher Education Space Management Group
TRAC	Transparent Approach to Costing
fEC	Full economic cost of an activity (e.g. teaching or research) as derived using TRAC
CE/CP ratios	Cost of equity (CE) to the cost of production (CP): an indicator of the return on assets generated by HEIs

- 2.3 Table 1 provides an overview of the total income; number of institutions; gross internal area of (non-residential) estate; and insured asset value for those higher education institutions providing data to EMS across the UK.

**Table 1: Area and value of the non-residential higher education estate 2004/05**

	Total HEI income, £m	No. of institutions	Area (GIA), million sq m	Insured asset value, £bn
England	14,234	127	14.6	27.3
Scotland	1,859	18	2.4	4.4
Wales	845	12	1.0	1.5
N Ireland	366	2	0.4	0.7
UK	17,304	159	18.3	33.8

Source: EMS 2004/05 with data for some institutions extrapolated – further details are in Appendix B.

- 2.4 Taking the 2004/05 EMS database as representing July 2005 prices, we can deduce the total insured value for the UK sector in January 2006, some 3% higher, at £35bn for the sector.

<b>Jan 06 non-residential insured values</b>	<b>£bn</b>
England	28.0
Scotland	4.5
Wales	1.5
Northern Ireland	0.7
<b>Total</b>	<b>34.7</b>

- 2.5 Some comparative statistics across the four countries are shown in Appendix B and are discussed in the country reports. The main differences to note are:
- in Scotland there is apparently a larger, and less efficiently utilised estate than the UK average;
  - in Wales, the asset value is lower and institutions are significantly smaller.

The figures for Northern Ireland are arguably not comparable as they exclude the two university colleges which do not participate in EMS.

## **HE infrastructure (estates and equipment)**

### **Area and value of estates**

- 2.6 As shown above, in 2004/05 the HE non-residential estate comprised approximately 18.5 million square metres of buildings with an insured value of £35bn in 2006 prices.
- 2.7 As noted in our 2001 report, the HE estate comprises a wide variety of types of building with many historic or specialist buildings (laboratories, studios, theatres, galleries, farms, clinics etc), ranging from medieval to modern. A high proportion were built in the 1960s and '70s and are now near the end of their design life.
- 2.8 A large part of the HE estate was inherited from local authorities on incorporation of the former polytechnics and colleges in 1989. A part of this estate dates back to former local authority technical colleges and was not designed for higher education.
- 2.9 The estate has grown in recent years – EMS suggests by nearly 4% between 2000 and 2004. The EMS Annual Report 2004 noted that there are clear indications that institutional space is being better used. In this same period, the full-time equivalent (FTE) student population increased by 12%, and total income in real terms rose by 13%.

## Use of estate by activity

- 2.10 A high proportion of the HE estate is generic infrastructure – i.e. it supports teaching, research and other activities. Table 2 shows that nearly 40% of non-residential space is support space, another 40% is teaching space, and 20% is research space. Generic services (boilers, lifts, drains, power supplies, IT networks) underpin all of the space, yet many institutions still do not consider these to be part of the research or teaching infrastructure on which SRIF (for example) can be spent.

**Table 2: Use of the higher education estate by activity**

Estate size 2003/04 (UK)	Net internal area million sq m	Per cent
Teaching space	5.6	41
Research space	2.7	20
Support space	3.6	) 39
Other (unclassified)	1.6	)
Total non-residential	13.5	100
Residential	4.9	
Total UK space	18.4	

Source: EMS Annual Report HEFCE 2006

- 2.11 These figures are incomplete (not all institutions are included) but the underlying data show essentially an identical pattern of utilisation in England and Scotland (40% teaching space, 21 or 22% research space, 40% support space), and a small but significant difference in Wales (where the figures are 43% teaching, 14% research, 43% support). This fits with the general picture that there is a slightly stronger balance of teaching and learning activity in Wales relative to the UK. (These EMS data for Northern Ireland include only one institution and so cannot be quoted.)

## Institutional asset values

- 2.12 The area and value of estate varies widely between institutions. Across our sample of case study HEIs, the area of estate ranged from around 10,000 square metres at the smallest (specialist) institutions to nearly 400,000 square metres at the largest multi-campus universities.
- 2.13 The insured asset value is a convenient indicator of the value of institutions' estates. It is a proxy for the building-by-building reinstatement value, which is a more useful figure but burdensome to produce. It is influenced by factors outside institutions' control such as location, legacy of buildings etc, and it may vary significantly from year to year when revaluations are made. Nevertheless insured value is the best readily available measure we can use to compare the asset base between institutions. The other obvious measure, market value, is more problematic for HEIs, where there may be no viable alternative use for buildings, and valuations may be misleading or out of date.
- 2.14 The insured asset values of the non-residential estate at the case study institutions (as provided to us at January 2006) also varied widely, from below

£50m to well over £1bn. These figures are not precisely comparable (since valuations may have been made on different dates and by different methods) but they are the most comparable data we have. We have used these figures in comparing the relative scale of backlogs and forward annual investment needs at these institutions.

## **Equipment**

- 2.15 Equipment is an important part of the sector asset base, and of institutional spend, but it is much harder to quantify and to make comparisons than for estates.
- 2.16 Equipment includes research kit, and equipment which is specific to the project or programme; “well-founded laboratory” research equipment; and built-in equipment such as fume cupboards. It also includes generic equipment such as ICT infrastructure –central systems, communications, software, wireless networks, local hardware, and PCs for staff and students. Finally, it includes teaching equipment in laboratories, studios and workshops, and lecture and seminar-room equipment such as data-projectors and whiteboards.
- 2.17 In 2001, we estimated the value of equipment at approximately £8bn making up approximately 25% of total UK infrastructure (estates were then £26bn).
- 2.18 It was decided (twice) during the implementation of TRAC that it was not possible to calculate an infrastructure adjustment for equipment robustly, along the lines of the (buildings) infrastructure adjustment, which would ensure that the replacement cost of equipment was included in the FEC. The difficulties include:
  - a. the short write-off time in university accounts (usually three to five years). The useful life of equipment is often much longer than this. Some equipment (ICT) is increasingly being written off in the year of purchase, reflecting the fast pace of technological change;
  - b. incomplete inventories;
  - c. local acquisitions – a considerable amount of equipment is bought by academic departments out of their local expenditure budgets or research grants, and may be unknown to the university centrally;
  - d. the wide variety of types of equipment makes general assumptions about life-times and maintenance costs more difficult than for buildings.
- 2.19 There is rarely a strategic approach to the management and sustainability of equipment in institutions.
- 2.20 We have discussed equipment at all the institutions we visited, and we have ensured that equipment/ICT investment needs were not overlooked or neglected in our estimates of backlogs and future needs. Nevertheless, our findings in this area must be regarded as less robust than those for estates, because institutions’ knowledge of and plans for equipment are generally less well-developed. However, the relatively lower value of equipment, and the fact that research and teaching equipment needs will usually be very visible and given a high priority by academics, means that this should not significantly affect the robustness of our overall conclusions.

## The condition and fitness for purpose of the HE estate

2.21 EMS shows condition backlogs, and functional suitability of estates. Both these categorisations involve an element of interpretation which will differ between institutions. Nevertheless, these nationally-available data on estate condition are an important indicator of sustainability at a sector level.

### Condition data

2.22 EMS data show that there was a modest improvement in the condition of the HE estate between 2000/01 and 2004/05. The proportion in maintenance conditions C and D<sup>6</sup> had reduced from 36% to 34%. This nevertheless implies an increase in the cash cost of the condition backlogs due to the growth in the overall estate size and the effect of price inflation.

2.23 An analysis of the 2004/05 data on a country by country basis shows that institutions in Scotland have a significantly worse condition, on average, than those in the rest of the UK.

**Table 3: Comparison of estate condition**

	England	Scotland	Wales	Northern Ireland
No. of HEIs included	119	15	12	2
% in condition C	30%	40%	33%	31%
% in condition D	3%	4%	2%	3%
<b>Total</b>	<b>33%</b>	<b>44%</b>	<b>35%</b>	<b>34%</b>

Source: 2004/05 EMS. Average (unweighted for size of institution) of percentages given by all institutions.

2.24 The use of EMS data needs to be supported by discussions with institutions to aid interpretation. For example, an area of condition C in an administration building may be less serious to the university (in terms of sustainability) than condition C in a library – which may affect reputation and student recruitment, or condition C in a research facility which may even prevent some research from taking place.

2.25 EMS data are a couple of years old by the time they are published. It is not surprising that the estate condition had improved so little between 2000/01 and 2004/05, as the total amounts of capital allocated in time to be reflected in the 2004/05 EMS statistics were relatively small (approximately £2.6bn, less than 10% of insured value), and only partly spent on addressing backlogs.

2.26 This time-lag emphasises that estates management is a long-term issue: once backlogs have been allowed to build up, it requires many years of attention to redress the position. This is particularly the case if the institution does not

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<sup>6</sup> C – Operational, but major repair or replacement needed in the short to medium-term (generally three years) and D – Inoperable, or serious risk of major failure or break-down.

have a capital plan that takes account of backlogs, or if it is unable to create adequate cash surpluses from operating activities.

- 2.27 Nevertheless, these data indicate that the condition backlogs are beginning to decline in response to the elevated levels of investment, since the introduction of SRIF and LTC in recent years.

### **Fitness for purpose**

- 2.28 EMS also provides data on the functional suitability of the estate. This is more subjective than maintenance condition, but equally important in establishing investment needs. Some institutions have buildings which are satisfactory in maintenance terms, but are unsuited to the needs of modern higher education. Often this means that they are unattractive to staff and students, inhibiting to the most modern and flexible methods of teaching and learning, and inefficient in use.
- 2.29 In building up a picture of investment requirements, we have looked at both maintenance condition and fitness for purpose, as discussed with each of the institutions we visited.

## **Investment in the HE estate**

### **Required investment**

- 2.30 In our 2001 report, we suggested that institutions should be planning to invest of the order of 1.5% of insured asset value (IAV) annually on maintenance, and a further 4% on replacement and renewal. This leads to a combined annual investment requirement of 5.5%. In 2001, the concept of such significant levels of on-going spend was new for many institutions.
- 2.31 This was of course an indicative average figure. One might expect the required investment to be higher in high-technology areas such as biosciences or digital media, and in institutions which are competing to provide world-class research and student facilities. It might be lower for disciplines with less dependency on technology, and for institutions with a more local or regional recruitment catchment area. There could be good reasons for particular institutions to spend either more or less than this in the short-term, but overall we would be surprised if any institution could be sustainable if it consistently invested significantly less than this over a number of years.
- 2.32 Probably the most important message is that each institution needs to work out its required level of annual investment to support its mission and situation. We see this as a high-level strategic decision to be discussed and agreed by the governing body as part of the institution's financial strategy<sup>7</sup>.
- 2.33 During this study we found that a number of institutions have considered these issues more than they had in 2001, although only a few have made the

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<sup>7</sup> The HEFCE guide "Financial strategy in higher education institutions: a business approach" (HEFCE 2002/34) identifies the level of investment in physical capacity as a key principle of financial strategy.

strategic decision we describe in the previous paragraph. Some are planning to spend around or above our 2001 figure of 5.5%, but others consider this is too high for them. There has also been a recent study by the UK Higher Education Space Management Group which would indicate a slightly lower annual requirement of around 4.8%. (See Table 4.)

**Table 4: Required annual spend on infrastructure as % of insured asset value**

	%.
Good management practice spend on recurrent reactive and planned or long-term maintenance – SMG <sup>8</sup>	2.5%
Refurbishments and renewals: every building needs refurbishing every 15 years at an average of 35% of the new build cost – $1/15 \times .35 = 2.3$	2.3%
<b>Total annual requirement</b>	<b>4.8%</b>

- 2.34 As a result of this more detailed and updated evidence, we have (slightly) moderated the annual requirement we suggested in 2001, and are now using a rounded figure of 4.5% per annum as the indicative average figure. As before, this is indicative and not a norm, and each institution should consider its own needs in the light of its particular circumstances and objectives.
- 2.35 We show in Table 5 the annual investment requirements which we have agreed with the initial group of 12 UK case study institutions during the study. These vary around 4.5%, with a low of 3% and a high of 6%.

**Table 5: Annual financing requirements of UK case study HEIs**

Institution reference	Annual requirement - % of IAV	Institution reference	Annual requirement - % of IAV
a	4.5%	g	4.5%
b	4.5%	h	5.5%
c	6.0%	i	4.8%
d	3.1%	j	5.5%
e	5.5%	k	6.0%
f	4.6%	l	4.5%

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<sup>8</sup> UK Higher Education Space Management Group, "The cost of space", HEFCE 2005/26. The 2.5% on maintenance includes elements that had in our 2001 report been classified as replacement or renewal.

*One research university, with a city campus and constrained space to expand, plans to bring all its estate to Condition A, accepting that this means a higher annual investment, and more demanding income targets for its staff. It believes this is necessary to achieve its aims in terms of position in the international league tables, and has achieved a corporate acceptance in the university of a policy to invest at 6% of insured value on an annual basis.*

*A predominantly teaching institution is in a market where ability to recruit students is not an issue for it and cannot justify investing in its estate at a higher level than 3.5% of IAV.*

*An institution undergoing great changes has its main focus on new developments at present. It is willing to accept a proportion of its existing estate in a lower maintenance and fitness condition because it does not see this as critical to its mission. This institution will be investing significantly less than 4% in its existing infrastructure.*

### **Actual investment in the HE estate**

- 2.36 The actual spend on estates at UK sector level over the five-year period 2000/01 to 2004/05 is shown in Table 6, drawn from HESA data.

**Table 6: Actual spend on the UK HE estate 2000/01 to 2004/05 (£m)**

<b>UK</b>	<b>2000/01</b>	<b>2001/02</b>	<b>2002/03</b>	<b>2003/04</b>	<b>2004/05</b>	<b>Five-year total</b>
Buildings (excl residences)	917	1,097	1,502	1,499	1,670	6,685
Maintenance (inc residences)	465	502	517	564	629	2,676
<b>Total</b>	<b>1,383</b>	<b>1,599</b>	<b>2,019</b>	<b>2,062</b>	<b>2,298</b>	<b>9,362</b>

- 2.37 This gives a five-year average of £1.9bn, representing 5.9% of the UK non-residential estates insured value (£32bn in 2003/04). The data do not show what proportion of this spend was on new capacity rather than existing estate, but the total spend of 6% is consistent with an expectation that, on average, the condition of infrastructure would be expected to have improved over this period - as is shown by the EMS figures quoted above.
- 2.38 The equivalent data for each of the four countries of the UK are available from HESA. They show that the equivalent levels of investment of insured value over this five-year period were:

England	£1.6bn – 6.1% of IAV
Scotland	£186m – 4.5% of IAV
Wales	£61m – 4.3% of IAV
N Ireland	£46m – 7.8% of IAV.

## Sources of capital, and grant schemes

- 2.39 The sources of finance that institutions have used to fund these capital investments are shown in Table 7. This shows that public capital grants (“FC grants”) make up only a proportion of total financing.
- 2.40 The approximately £9bn spent over the five-year period 2000/01 to 2004/05 (shown in Table 6) can be compared with the £3.6bn which has been allocated in public capital grants over the four years 2004/05 to 2007/08 (shown in Table 8). Although the years and definitions do not match, this indicates a picture where every £1 of public capital grant is matched by equivalent contributions from other sources – chiefly what are described in HESA as institutions’ own funds (“internal”). These relativities are illustrated in Table 7.

**Table 7: Sources of capital spend by UK HEIs 2000/01 to 2004/05 (£k)**

	2000/01	2001/02	2002/03	2003/04	2004/05	Five-year average as %
FC grants	241,550	342,821	566,633	570,282	679,123	27
Sales	42,946	31,458	37,308	79,695	93,175	3
Internal	575,867	627,143	694,470	724,788	772,708	39
Loans	67,918	113,090	145,098	128,244	172,362	7
Other external	339,000	363,844	501,947	426,508	375,740	23
Total £m	1,267	1,478	1,945	1,903	2,145	100%

Source HESA. These figures are higher than those for buildings in Table 6 as they cover all capital investment including equipment and residences.

- 2.41 Equivalent tables for the four countries are available from HESA. These show that over the five-year period, averaged funding council grants make up a differing proportion of the total capital funding as follows:

England	28%
Scotland	23%
Wales	35%
N Ireland	28%

- 2.42 This might indicate that institutions in Scotland have been slightly less dependent on public capital grants (which have been lower in total), while those in Wales have been slightly more dependent than the UK average.

## Capital grant schemes

- 2.43 In our 2001 reports, we identified 30 capital grant schemes which had been available in the 15 years up to 2003/04 to support infrastructure (buildings and equipment) for teaching or research.
- 2.44 A total of approximately £4bn had been made available for capital infrastructure, from 1989 through to 2003/04, (incorporating Hunter and KDK schemes, Joint Infrastructure Fund (JIF), early SRIF, funds for poor estates and project capital, but excluding capital funded through research grants or through the funding councils' recurrent grants).
- 2.45 Table 8 shows the sums that have been made available through formulaic capital allocations at a UK level since our previous study. The table shows the four-year total allocated in each country and also expresses this as a proportion of the insured asset value of the higher education estate in that country.
- 2.46 This shows that, over the four years from 2003/04 to 2007/08, the end-date of this study, the sector will have benefited from the allocation of approximately £3.6bn in capital grants (excluding those from research councils and other sponsors). This is equivalent to approximately 10% of the insured asset value at a point halfway through these grant schemes.

**Table 8: Capital grant schemes – sums allocated to HEIs 2004/05 to 2007/08, compared to insured asset values, by country**

	England	Scotland	Wales	Northern Ireland	UK
IAV 2004/05 £bn	27.3	4.4	1.5	0.7	33.8
Capital grants £m					
2004/05	804	65	38	26	933
2005/06	821	74	38	34	965
2006/07	727	96	30	12	865
2007/08	729	126	30	12	897
Total grants £m	3,081	361	136	84	3,659
Of which:					
SRIF	1,740	201	93	51	2,086
L&T	1,339	161	43	32	1,494
% of IAV					
SRIF	6.4	4.6	6.2	7.3	6.2
L&T	4.9	3.6	2.9	4.6	4.4
Total	11.3	8.2	9.1	11.9	10.6

Notes: IAV is from Table 1 (EMS 2004/05). Grants from funding council data.

- 2.47 The table shows a significant variation in the amounts allocated as a percentage of asset value between the four countries and between teaching and research.
- 2.48 In Scotland, there has been less capital allocation overall (8.2% of asset value as compared to 11.3% in England); and, within this lower allocation, both research and teaching have been below the level in England.
- 2.49 In Wales, the allocation of SRIF has been on a par with England, but the allocation of teaching capital has been significantly lower (3% against 5% of asset value), leading to an overall lower allocation of 9% against 11% in England.
- 2.50 In Northern Ireland, SRIF allocations have been larger than in England and L&T capital broadly the same as in England.
- 2.51 Across the UK, amounts allocated under LTC have been significantly smaller than amounts allocated under SRIF.

### **Possible evolution of backlogs**

- 2.52 In principle, we can use the national data quoted above to make a first high-level estimation of the way the backlogs of capital investment would be expected to have evolved since our survey in 2001.
- 2.53 We have not attempted to do a precise calculation here as there are a number of uncertainties. These include the unknown rate at which 2001 “satisfactory” infrastructure will have been added to the backlogs needing attention since 2001, and uncertainties about the timing and purpose of institutional investments. In particular, there is an unknown balance between expansion of capacity in institutional capital projects, and strict like-for-like replacement of existing unsatisfactory infrastructure.
- 2.54 These uncertainties can only be resolved through more detailed investigation of actual cases at individual institutions, which provide the central evidence for the study as reported in chapter 4.
- 2.55 However, an initial and high-level analysis using the national data is set out in Table 9. This shows an improvement since the 2001 position, but a modest one. The remaining need as calculated here would represent 25% of 2006 insured value, compared to 31% previously. This is still a significant level of backlog, but as demonstrated later in the report, it is consistent with a significant improvement in the overall position.

**Table 9: Indicative calculation of possible sector-level backlog in 2006**

	<b>£bn</b>
2001 UK backlog for teaching and research as in JMC 2001 study and re-indexed to 2006 prices	10.4
<ul style="list-style-type: none"> <li>▪ add required renewal investment (at 4.5% pa)<sup>9</sup> (as explained earlier in this chapter)</li> </ul>	+6.3
<ul style="list-style-type: none"> <li>▪ deduct 80% of capital and maintenance spend since 2001 study (we assume this % has been addressing backlogs or on-going requirements)<sup>10</sup></li> </ul>	-8.9
<ul style="list-style-type: none"> <li>▪ add increase in borrowing<sup>11</sup></li> </ul>	0.6
To derive estimate of new backlog at 2006	8.4
(This shows that the capital investments made since 2001 could be expected to have covered all annual requirements of institutions, and also to have enabled them to make broadly a 20% reduction in the level of outstanding remedial (“backlog”) requirements.)	

## Financial position of the sector

- 2.56 The most recent financial out-turns for the HE sector are summarised in Table 10. This shows small surpluses forecast in all four countries of the UK. On a TRAC full economic cost basis (with additional costs of infrastructure and financing and development added), these small surpluses become deficits at the sector level (and for almost all HEIs), confirming that the sector is not generating enough cash to support its own needs for investment and development without continuing public grants.
- 2.57 The latest financial forecasts provided by institutions in England showed that surpluses would decline over the period to 2005/06, before recovering to a level of around 2% in 2008/09. This recovery must be partly explained by institutions’ expectations of the benefits from the progressive impact of variable student fees and funding of the full economic costs of publicly-funded research.
- 2.58 In Scotland institutions are forecasting an improvement in the operating surplus – to 3.8% by 2007/08. In Wales the surpluses are forecast to be slightly higher, at around 2.5%, in 2006/07. In Northern Ireland the surpluses range between 2.6% and 0%, with the final year showing breakeven.

<sup>9</sup> 4.5% of non-residential estate of £34bn in 2004/05, indexed to £35bn 1Q06, for four years.

<sup>10</sup> 2004/05 actual capital and maintenance spend from HESA; including buildings spend on non-residential estate only and excluding equipment. Plus spend for 2005/06 to 2007/08 based on the financial forecasts. 20% of actual spend was deducted as a best estimate of the proportion of spend in the case study HEIs on new capability, rather than addressing backlogs.

<sup>11</sup> We included non-residential borrowing in the 2001 backlog to ensure that the case study institutions were treated similarly. If institutions had not borrowed, their backlog would be higher – so we included it as part of the backlog.

- 2.59 These forecasts tend to be cautious, but these are very modest levels of surplus. The surplus, plus depreciation, less release of deferred capital grants, broadly indicates the cash available to an institution for capital spend. These levels of surplus would not, by themselves, generate enough cash to enable institutions to make the required annual investment of 4.5% of insured value, and also to make any significant impact on the remedial investment need identified in our 2001 report.

**Table 10: Financial position of institutions 2004/05**

	England	Scotland	Wales	NI	UK
No. of institutions	131	20	12	4	168
Total income (£m)	14,821	1,936	853	382	17,993
Total expenditure (£m)	14,656	1,919	834	370	17,780
Operating surplus (£m)	267	29	16	12	325
Surplus as % of income	1.8%	1.5%	1.9%	3.1%	1.8%

Source: HESA 2004/05. Operating surplus is that for the year retained within general reserves.

### Borrowing

- 2.60 At the end of July 2004, the English sector had external borrowing of £2.6bn, most of which had been incurred to support capital infrastructure investment (source: HEFCE report 2006/01, "Financial forecasts and annual monitoring statements: outcomes for 2005"). Institutions have widely differing policies on borrowing for non-residential purposes. Some have a policy of not borrowing at all, while others have borrowed significantly in order to finance past estate developments.
- 2.61 This is illustrated in Table 11, which shows the level of non-residential borrowing across the initial group of 12 UK case study institutions (including plans to 2007/08). The level of borrowing for non-residential estate varies from zero (five institutions) to over 20% of insured asset value.

**Table 11: Non-residential borrowing level at case study HEIs January 2006 as a percentage of insured asset value**

Institution reference	2006 borrowing (to end 2007/08)	Institution reference	2006 borrowing (to end 2007/08)
a	5%	g	7%
b	0%	h	0%
c	22%	i	0%
d	1%	j	9%
e	1%	k	0%
f	6%	l	0%

## Return on assets and CE/CP ratios

- 2.62 The CE/CP ratio (the cost of equity to the cost of production) is an indicator of the performance of an organisation in terms of the return (income) it generates in relation to the size of its asset base.
- 2.63 The CE/CP ratios for the initial group of 12 UK case study institutions are shown in Table 12. This is not all public information in this form, but the underlying data have been reported in EMS since 1999/2000.
- 2.64 These ratios are not precise measures – asset values can vary quite significantly for reasons which are not related to the real infrastructure needs or efficiency of the institution. Nevertheless, they do give an indication of efficiency of asset utilisation. Institutions with relatively low CE/CP ratios would be said to be generating a larger return on their assets, or to have a smaller asset base in relation to their income. They will find it easier to finance the necessary investment in their estate. Institutions with a relatively high CE/CP ratio will find this harder. Our case study investigations confirm this expectation.

**Table 12: CE/CP ratios of UK case study institutions**

Institution reference	CE/CP ratio	Institution reference	CE/CP ratio
a	2.2	g	1.9
b	2.8	h	2.0
c	1.6	i	1.4
d	3.9	j	1.5
e	3.0	k	2.0
f	1.7	l	1.3

CE 'cost of equity' is the insured value in £m of non-residential estate, 2005/06.

CP 'cost of production' is total income in £m (excluding residential and catering income) from HESA 2004/05.

- 2.65 Using the data in the 2004/05 EMS database (non-residential income and insured values), we calculated the average CE/CP ratios for three types of institution in England.

CE/CP ratio	Unweighted average
Research-intensive	2.2
Small and specialist institutions	2.6
All other	1.9
England	2.1

- 2.66 We could speculate on the reasons for these differences. Research-intensive institutions tend to have a higher value of estate compared to teaching-

intensive institutions, on average by about 15%; and of course most research is (still) loss-making. However, the ratio for research-intensive institutions varies widely by institution, from 0.5 to 3.9.

- 2.67 Discipline also has a significant impact: some research institutions which have significant non-laboratory provision show the lowest CE/CP ratios in the sector. Teaching-intensive institutions specialising in art and design, music or agriculture have amongst the highest CE/CP ratios in the sector, and are more than 35% higher, on average, than other multi-faculty teaching-intensive institutions. This might be affected by their size: they are also amongst the smallest institutions.

The average for each country is as follows (all institutions, from EMS).

<b>CE/CP ratio</b>	<b>Weighted average</b>
England	2.0
Scotland	2.5
Wales	1.8
Northern Ireland	2.1
<b>UK</b>	<b>2.1</b>

- 2.68 This shows that Scotland has the highest average CE/CP ratio – some 25% higher than in England. Wales is the lowest, at 10% less than in England. The weighted average for the UK is 2.1.
- 2.69 The weighted average for our 12 UK case studies is slightly (10%) higher, at 2.3. This reflects the higher proportion of research-intensive institutions in our case study sample.
- 2.70 It would be wrong to draw simplistic conclusions from these ratios, but we would expect institutions with high CE/CP ratios to be considering why this is the case and whether there is anything they can do (without damage to their academic mission) to reduce their CE/CP ratio. This should be a matter for discussion by the governing body, alongside the investment requirement we noted earlier.
- 2.71 Conversely institutions with very low CE/CP ratios might wish to consider whether they are investing enough in capital assets. While intensive utilisation and “sweating the assets” can be a sign of good management, there is a danger that very low-cost infrastructure can be a negative factor in terms of the quality of the student experience and the ability to deliver high quality teaching and research.
- 2.72 We hope our report will stimulate such consideration by institutions. We would expect some kind of benchmarking of this information to be a normal part of good institutional management, and to be reported to governing bodies.

## Conclusions and national differences

- 2.73 At a high level, we can conclude from this review of published data that the overall condition of the UK higher education infrastructure is improving as the elevated levels of capital grants have enabled many institutions to begin to reduce the backlogs they had in 2001.
- 2.74 However, the position may be different for the research infrastructure and for the teaching and learning infrastructure, with the former having had significantly higher levels of public grants than the latter.
- 2.75 In most respects, there is a broad equivalence of these basic statistics across the four countries of the UK. However, a few differences do stand out including the following:
- a. in Wales a relatively larger number of smaller institutions have a lower asset value. They have spent proportionately less than English institutions on their estates in the last five years, and have also been more dependent on funding council grants. These have been at the UK average for SRIF, but have been proportionately lower than those in England for LTC;
  - b. in Scotland, institutions have a higher asset base, but this is in significantly poorer condition than the UK average. Investment in estates and capital grants has both been below English levels, although institutions have contributed relatively more from other sources of finance.
- 2.76 There are wide variations between institutions in terms of their ability to generate adequate returns to service their assets (as indicated by CE/CP ratios). It is hard to see how institutions at the higher end of this range can become sustainable without strategic change to their current portfolio of activity and assets.

### **3 PROGRESS TOWARDS THE SUSTAINABLE MANAGEMENT OF INSTITUTIONAL INFRASTRUCTURE**

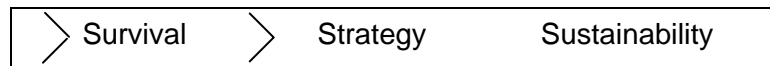
- 3.1 In this chapter we assess the progress institutions are making towards sustainable management of their infrastructure. This includes analysis of findings at our case study institutions and also some comments on conditions in the financial and management landscape within which they are operating.
- 3.2 This chapter presents the first part of our findings from the study, and sets the context within which any further rounds of SRIF and LTC will operate.
- 3.3 Our more quantitative findings on the remaining backlogs and amounts of capital grant required are in chapter 4.

#### **The concept of sustainability of infrastructure**

- 3.4 The concept of sustainability is of increasing policy interest in higher education. A simple definition might be as follows: to be sustainable, the institution needs to manage in such a way that by carrying out its operations today, it is not reducing its ability to do so tomorrow.
- 3.5 All UK HEIs have had to prepare first sustainability statements (called frameworks) for their funding councils during the lifetime of this project, and we have reviewed these as part of our work with case study institutions. We have also drawn upon the “trigger metrics” for each institution associated with this monitoring process.
- 3.6 Sustainability applies to a number of areas where the institution needs to renew and invest in its capacity to do its business. Physical infrastructure is the most obvious of these, and the easiest to measure, but failure to invest in staff, in new methods and technology, or even in relationships could also threaten the future of the institution.
- 3.7 For the purposes of this study, we are concerned with the sustainability of the physical infrastructure not as an end in itself, but as a component of institutional sustainability (or perhaps strictly the sustainability of the teaching and research at the institution).
- 3.8 We suggest that this idea of sustainability of infrastructure includes three linked concepts:
  - a. the need for **fitness for purpose** (which will include being compliant with legislative requirements and maintained in a condition appropriate to the particular academic and market positioning of the HEI);
  - b. the need for **relevance** to the strategies of the institution (this may seem obvious, but we have seen examples of infrastructure which is inappropriate or not required);

- c. the need to be **affordable, or capable of generating or sustaining an adequate income stream** to cover the costs of servicing the capital item. The funding councils' guidance is that institutions need to recover fEC across the sum of their activities, taking one year with another. This does not preclude some activities or some infrastructure from being loss-making and subsidised by other activities, but it does mean that institutions should look carefully at the business case for any new building or piece of equipment. The concept of whole life costing is relevant here.

3.9 This interpretation of sustainability is not just about survival, or even about delivery of medium-term academic strategies (such as gains in the next RAE). It is about the institution being able to continue to perform long-term at whatever level is appropriate – in some cases at the highest levels in the world. We found that some institutions' sustainability statements do not yet reflect this ambition in the levels of investment they are planning to make. They are still at the left-hand end of the following continuum:



3.10 Sustainability of infrastructure is also not about growth or expansion into new areas of activity. Some institutions we visited are planning this, and they should have a business case which indicates that the income from additional students or research (for example) will cover the cost of such expansion. But the focus of the existing SRIF and LTC grants, and of our assessment of sustainability, is based on the continuation of existing activities at current levels (which of course implies some renewal and development to remain at competitive standards).

### Challenges for institutions

- 3.11 Sustainability is not just about maintaining existing infrastructure. The existing infrastructure is a result of history, and is not necessarily what is needed to deliver the institution's current strategies. Maintaining 100% of the existing estate to Condition A is not an end in itself, and may indeed be unnecessary or even damaging to an institution's academic strategies.
- 3.12 Institutions need to take a more deliberate and strategic view of what they should be doing in this area. This should be an integral part of their academic and strategic planning, and should be discussed by their governing bodies. The key questions that institutions need to ask themselves are as follows:
  - i. What type of infrastructure do we need to deliver our mission and strategic plan?
  - ii. How much infrastructure is needed and in what condition?
  - iii. How efficiently is the current infrastructure being utilised and what return is it generating?
  - iv. Should we dispose of, replace, improve, or add to our existing infrastructure?
  - v. What is the business case for doing this?

- vi. How can we finance it?
- 3.13 We are encouraged to find that, compared to our study in 2001, many more institutions are now thinking seriously about their total infrastructure portfolio, and some have written strategies which address some or all of these questions.

## **Institutions' planning and management**

- 3.14 In order to advise on indicators of progress towards sustainable infrastructure, we have reviewed a small number of inter-related factors or key performance indicators in respect of each institution.
- 3.15 The key indicators we used are:
  - a. CE/CP ratios (assets to turnover), as already discussed;
  - b. infrastructure plans: i.e. the quality and realism of the institution's long-term strategic plan for its infrastructure;
  - c. sustainable academic strategies: i.e. the extent to which this infrastructure plan is informed and driven by sustainable academic strategies which set the requirements for infrastructure, and create the income needed to finance it;
  - d. cash-generation and investment performance: i.e. the institution's ability and willingness to generate adequate cash to deliver these plans, and its track record of investment in infrastructure;
  - e. corporate decision-making: i.e. the institution's ability to make and implement strategic decisions at a corporate level – such as (when appropriate) prioritising spend on existing infrastructure over expansion of activity, or disposing of assets or rationalising provision which cannot be sustainable on the definition above.
- 3.16 Our observation from our 24 case studies is that those institutions which are closest to achieving a sustainable position are performing well against each of these indicators, and those which are a long way from sustainability invariably perform poorly in one or more of these areas. This suggests that these indicators could usefully form part of a self-assessment exercise by institutions.
- 3.17 We suggest that the funding councils could adopt some relatively simple criteria for categorising institutions according to the sustainability of their infrastructure strategies, and we illustrate this in Appendix B. The two high-level, quantitative indicators we suggest are CE/CP ratio and actual spend on infrastructure. We have already discussed these in chapter 2.
- 3.18 We illustrate the sector's position against the other management indicators in this chapter. Cash generation is also covered in chapter 4.

### **Infrastructure plans**

- 3.19 The questions listed in paragraph 3.12 set the agenda for institutions in this area. It is a broad one, and implies that finance and estates directors will be fully engaged with the early development of academic and other plans in the

institution. This has not always been the case in the more traditional research universities.

- 3.20 We have found quite a lot of evidence that this is changing, and the introduction of SRIF and LTC have helped to strengthen this trend. There is evidence of a more general recognition that estates is a strategic function, not just about “maintaining buildings”. More institutions have a systematic understanding now than in 2001 of the condition of their estate and its impact on activity; and many are building on this to develop strategic medium-term estates plans (which are not just wish-lists).

Several, but still a minority, of our 24 case study institutions were able to show us an agreed ten-year capital development plan which listed projects required to bring the infrastructure into a satisfactory condition to support academic strategies, and showed how these could be financed (including through variable fees and increased FEC funding of research).

One (Russell Group) university has created a new post of Pro Vice-Chancellor (Estates) who champions the needs of long-term investment in the estate within the university senior management team. This has changed the nature of the debate and has provided a counter-balance to the demands (for example) that all SRIF funding should be spent on new research equipment.

- 3.21 However, these are still in the minority. Some others have still not completed condition surveys, and some have not yet been able to give priority to their estates strategy – sometimes because their problems were simply too large, or because it was not seen as a pressing issue against other priorities. However, most of these are aware of the needs and are working towards meeting them.

Another university has a devolved management style where all capital funding has been allocated to academic faculties on the basis of their recurrent income. This has meant that the estates spend has been locally driven, and, whilst spent well, has not reflected institutional priorities nor helped to address the generic infrastructure backlogs. These have not reduced since 2001. This university also has a relatively high CE/CP ratio. A new senior management team is starting to address these strategic issues.

- 3.22 One simple indicator of the extent to which institutions have taken all this on board was their response to our enquiries about their annual investment requirement. A minority could quote this to us, and show evidence that they were already spending or planning at this level; a few others were not spending at these levels but were happy to discuss the concept and agreed that “it will help us in the institution to get this understood”. A third group were effectively managing ad hoc according to what funds were available once other priorities had been dealt with.

- 3.23 We would consider a formal institutional policy on this to be an essential part of its response to the funding councils’ request for sustainability frameworks.

A large research institution accepts that it probably has too much space for efficient operation (and this is borne out by a high CE/CP ratio). It would like to rationalise some of its activities onto a new better located and better utilised site, which would improve return on assets and efficiency. However, this needs a major one-off investment which cannot be funded solely through formulaic capital grants.

- 3.24 Our conclusion is that the sector is making some good progress against this indicator, strongly facilitated by SRIF and LTC, and helped by operational tools like EMS, TRAC, and the advice from the Space Management Group. Some institutions have made strong progress and can demonstrate some very good

practice. Overall, however, the sector still has a lot to do and there is a continuing need for the funding councils to promote the importance of developing realistic capital asset strategies.

### **Sustainable academic strategies**

- 3.25 As already noted, maintaining a sustainable infrastructure is not an end in itself. Each institution needs to consider in an integrated way what infrastructure it needs to support its sustainable academic strategies, and how this can be afforded. Neither the academic objectives nor the infrastructure plans can be decided in isolation, and both may have to be moderated in the light of what the institution can finance and maintain on a sustainable basis.
- 3.26 We found that these connections are not always made as well as they should be, and there are differences between teaching and research:
- researchers are usually pretty clear about the infrastructure they need because they usually have to bid for it (and now to cost it under TRAC fEC). The issues for research infrastructure are therefore more about affordability and effective utilisation than about lack of academic rationale;
  - by contrast, we found that many teaching and learning strategies barely mention infrastructure at present, although many of our case study institutions were willing to talk about the new types of spaces and facilities that they wish to create for student learning in future.
- 3.27 However, there are strong implications for infrastructure from the needs and developments in teaching and learning. The difference is that institutions have not always articulated these as clearly as for research; there has been less specific capital funding available; and there are perhaps not such strong academic and financial pressures to improve teaching and learning infrastructure (although this is changing with international league tables and increased student fees).
- 3.28 Some of the requirements that institutions identified to us include:
- technology-enabled learning environments;
  - flexible spaces – e.g. for small group work, problem-based learning etc;
  - informal/social learning spaces for staff and students;
  - modernisation of teaching rooms and their equipment;
  - “learning hubs”;
  - specialist learning environments – laboratories, workshops, studios etc which need to be much more flexible and better utilised than they have often been in the past.
- 3.29 Most institutions are now approaching these needs in a more systematic manner (e.g. by rolling programmes of refurbishment), but there is evidence that there is still much to do in these areas compared with the relatively satisfactory position now achieved in science research.
- 3.30 Sustainability of academic strategies is also seen very differently in different types of institution. As already noted, research universities tend to have (on average) a higher asset base per pound of income generated (as shown by

CE/CP ratios). This means that they probably have larger estates and more facilities for students, but also that they are further from a position where they can afford to sustain these from their own income. The mainly teaching institutions often consider that they are disadvantaged: they have a poorer infrastructure; they have had to take harder financial decisions in order to manage their sustainability; and they have more limited access to capital grants.

- 3.31 In both teaching and research, there are areas of provision which are not financially viable on any short-term measures. These are generally more acute in research – some of our case study institutions have very large portfolios of EU and charity-funded research and are incurring multi-million pound losses as a result. In general, their attitude was that “we have to do this research”, but this translates directly into a greater need for public capital grants for infrastructure.
- 3.32 At a higher-level, in some parts of the country there are too many small institutions all struggling to maintain similar infrastructure and services. Scotland, with a population of 5m, is maintaining 20 HEIs (and 40 further education colleges), many of which need very significant infrastructure investment. While there may be good national reasons for retaining a diversity and geographic spread of institutions, this is bound to be a severe financial challenge. There are issues in Wales and Northern Ireland that are equally acute, and some of the same issues apply in England too, although the average size of institutions is greater.

### **Cash generation and investment performance**

- 3.33 The single most critical indicator of sustainable management (and one of the key findings of this study) is how far institutions are generating enough cash to maintain the infrastructure in their plan, and whether they are actually spending this at the required levels.
- 3.34 This is really a check on the realism and delivery of the financial strategy (where institutions have such an integrated financial strategy). We have had discussions with the directors of estates and finance together at nearly all our case study institutions.
- 3.35 We report on the ability to generate adequate cash in chapter 4, where we conclude that a few institutions are close to this, but it is on a relatively fragile base, with a number of significant financial risks which could knock them off course.
- 3.36 Another key factor here is that there is not a culture of making significant levels of surplus for strategic investment in higher education. There is also a justified concern in some institutions that to do so would expose them to unrest from staff, and demands for much higher spending on routine operating costs, such as pay.
- 3.37 The financial strategy should be about a wide range of mechanisms that institutions can use to improve their financial headroom. These would include:
- improving financial performance of existing activity;
  - pricing and improved cost recovery;
  - improving efficiency;

- rationalising the portfolio of teaching and research activity;
  - collaboration with other institutions and organisations;
  - fund-raising and new forms of income generation.
- 3.38 Every institution has scope to do some of these things more effectively, if there is a corporate will to create more financial headroom for investment in higher priority activities. Seeking additional public funding is also important, but is not the only avenue open to institutions. Borrowing or asset disposals may sometimes also be relevant, but they do not, in themselves, necessarily add to the total financial strength or sustainability of the institution. Many recognise that effective utilisation of existing estate (“sweating the assets”) can be as important as seeking additional public funding to enlarge it.
- 3.39 A few institutions in our sample (often the post-92 universities, but not limited to these) had adopted this sort of integrated business model of their academic and infrastructure strategies, and some had taken hard decisions such as making major asset disposals to permit restructuring and improvement of the remaining estate. Some others are still maintaining large estates which appear to be poorly adapted to their needs and poorly utilised and therefore present a considerable challenge for long-term sustainability.

A post-92 university has one of the clearest and most integrated strategies we have seen. It plans to rationalise its campus which will release space for other uses. It is thinking laterally about the university’s future portfolio which may include some completely new areas of activity which will require new infrastructure. It accepts the logic that these activities have to create an income stream which will justify the investment. It sees the whole university as a business and will consider disposing of assets if this is necessary to finance high priority new activity.

A research university involves academic staff in the early decision-making and planning about where new buildings investments will be made. Staff are effectively given the option of raising their income (e.g. contribution from research income per academic) to create an income stream to finance a new investment.

Another university accepts that addressing its backlogs, and size of estate, will mean major rationalisation that will require major capital investment. The institution has some cash, but will need to borrow or be funded for the rest. Notwithstanding this, it is not showing any significant surpluses in its financial forecasts. Even with SRIF/LTC it has only been spending at 3.2% of insured value each year; and the “best scenario” of cash available from top-up fees and full economic costing would only equate to two-thirds of the current level of SRIF/LTC funding.

## **The environment for institutional sustainability**

- 3.40 In assessing institutions’ progress towards sustainable management of infrastructure, we also need to take account of the environment in which they are operating. This can reinforce and support the progress they are making or it can make this more difficult (and less attractive to institutions). In assessing the future needs for capital grant funding we have to make some assumptions about the environment, as well as about the way institutions will behave.

## Recent history of capital funding

- 3.41 Before SRIF and LTC, HEIs relied on periodic but irregular injections of public funds to support their normal capital investment. As shown in chapter 2, they have also used their own resources to finance capital developments. There have been a large number of different public grant schemes; many of these involved some form of bidding and competition for funding, and provision of matching funds by the institution. They were normally based on funding individual projects.
- 3.42 These schemes delivered real benefits. JIF enabled many of the research universities to “do things we could never have done without these large project-specific chunks of cash”. There have also been some very good projects in the area of teaching facilities e.g. new learning resource centres, laboratory refurbishments and teaching facilities. These investments have improved the productivity and outputs of UK higher education (teaching and research) and some have also contributed to efficiency and sustainability (especially where old and inefficient infrastructure has been replaced).

### Current schemes

- 3.43 The current SRIF and LTC grant schemes are much more flexible and predictable than earlier project-based schemes. Funds are allocated formulaically, and are targeted much more specifically towards sustainability. Institutions have to make a 10% contribution and to submit a programme summary, plus project-level information.
- 3.44 It is clear from the case studies that this has been a huge improvement in terms of addressing sustainable development of infrastructure. While previous schemes ensured value for money on a project-by-project basis, they did not facilitate effective strategic spending on existing infrastructure. When institutions have used them well, SRIF and LTC have done this by permitting longer-term planning and a very flexible use of funds (including for long-term maintenance and holistically – dealing with a whole multi-use building rather than only the research facilities within it, for example). This change in the funding is beginning to change the way many institutions behave in planning and managing their infrastructure. It is important that this is reinforced in any successor schemes after 2008.
- 3.45 However, not all institutions have yet grasped this potential. Some grant has been used for expansion of capacity, and not all HEIs appear to have fully recognised or exploited the flexibility available in these schemes. This may be partly because of some national differences in respect of the degree of flexibility and the amount of accountability required (e.g. late notification of funds, or attachment of additional requirements which restrict the flexibility of institutions to invest them strategically).
- 3.46 SRIF and LTC could be made even more effective in improving sustainability, if the OSI and the four funding bodies could find ways to:
- a. give a longer (indicative) planning horizon and more year-end flexibility. HEIs are naturally cautious with public money, and two years is a short time horizon for estates projects. We have seen many examples of sub-optimal spending decisions because institutions were put in the position

- of “having to spend the grant within a short period” or of “not being confident they could afford a better, but slightly longer-term solution”;
- b. avoid attaching additional “strings” to formulaic grants (such as that so much of it must be spent on meeting the requirements of the Disability Discrimination Act);
- c. allow greater “cross-over” between teaching and research grants to refurbish multiple use buildings or generic infrastructure.

## **Policy drivers for sustainability**

- 3.47 The logic of the current policy environment is that the need for remedial public capital investment should decline over time as a result of several factors which are helping institutions to become more sustainable. The most important factors are:
- i. increasing awareness of sustainability and consequent management attention to more strategic financial management, portfolio rationalisation, and strategic management of infrastructure by institutions;
  - ii. better pricing and cost management as a result of improved cost information (and hence improved cost recovery);
  - iii. recurrent public funding for research rising closer to fEC (which it will do progressively from 2005/06 as research council grants are awarded at the new rates of 80% of fEC, but there are uncertainties about the speed and extent of compliance by other public funders of research);
  - iv. the recent increases in QR research block grant, including the increase in funding provided to recognise institutional commitment to charity-funded research;
  - v. the impact of the capital funds provided through SRIF and LTC (both directly, and in facilitating a more strategic approach to estates management by many institutions);
  - vi. raised student fees from 2006 in England, Wales and Northern Ireland and other recent improvements in funding of capital for teaching (such as Centres for Excellence in Teaching and Learning in England).
- 3.48 These developments will have variety of impacts at different speeds in different institutions, and some institutions will not benefit at all from some of them. However, at the sector level these developments can be seen as part of a broad “direction of travel” of policy for higher education towards a more marketised, competitive and professionally-managed service, where strategic financial management is an accepted requirement for all institutions.
- 3.49 This trend has been facilitated by a number of more operational changes in this period including the developments in TRAC, EMS, strategic planning, financial management, good governance, and good management practice which have been promoted by the four UK funding bodies. Most recently, the introduction of the sustainability frameworks and trigger metrics should encourage all institutions to build sustainability firmly into their strategic planning.

- 3.50 The first monitoring of institutions' sustainability frameworks and trigger metrics by their funding bodies took place early in 2006, and has been reported to the Research Base Funders' Forum. We have reviewed the sustainability plans of most of the 24 institutions we have visited. These are variable in quality, but over time we see them developing into a very important part of institutions' strategic planning, and the sustainability plan should be a key area for strategic discussion within the institution, and in its governing body.
- 3.51 It is worth noting also that the sustainability monitoring by the four funding bodies had a different focus from that of this review. There, the key issue was really "are these institutions sustainable, and is this part of the UK research base in a healthy condition". The conclusion reached was that only a very small number of institutions showed problems.
- 3.52 In our study, we have been looking in a more specific and detailed way (with the opportunity to discuss sustainability with senior management and to challenge their statements) at the sustainability of the current physical infrastructure and institutions' ability to service it long-term, if their current pattern of operations continues. This is not the same as the focus of the funding bodies' exercise, although the two are clearly related. An obvious difference is that we might find that the current balance of infrastructure and research is unsustainable because the research income generated is inadequate to service the asset base. However, this would not necessarily imply that the institution as a whole is unsustainable, merely that it may face some tough decisions (such as the need to rationalise portfolios or dispose of assets to remain sustainable).
- 3.53 We have reached a conclusion, using the metrics-based approach we illustrate in Appendix B, that broadly half of institutions can be said to be on the path to a sustainable infrastructure, and that broadly a quarter of them are clearly not sustainable as currently operating (there are uncertainties about the data for the remainder). This is a rather more challenging conclusion than that reached in the funding bodies' exercise, but for the reasons discussed above; we are not surprised at these different conclusions.

## **Inhibiting factors**

- 3.54 All institutions should benefit from the policy changes discussed above, even if some academics do not welcome the cultural changes they imply. However, the speed at which institutions will embrace a more "business-like" and sustainable style of management, and the extent to which they can take responsibility for their own operational investment needs will be influenced by a number of factors as discussed below.

### **Incentives to spend on activity rather than infrastructure**

- 3.55 As one vice-chancellor noted, the tendency to spend on activity rather than infrastructure is part of the culture of higher education, and will take some time to change. The RAE is probably one of the strongest factors (in research) making this change more difficult. However, it is part of a broader landscape in which (for quite understandable reasons) vice-chancellors and Ministers and officials all prefer to "put up a new building" rather than to invest the same

sums in “invisible infrastructure” which may be underground or not apparent to academic staff.

### **Backlogs**

- 3.56 To the extent that institutions still have a need to address backlogs in maintenance, this will inhibit or slow their achievement of sustainability. There are clear differences between countries, and between teaching and research (and therefore between types of institution) within the UK in this regard.

### **Deficits on research**

- 3.57 It will take three years (from 2005/06) for most research council grants to be funded at 80% of fEC, and some other research sponsors (charities and EU) will continue to fund well below fEC. Some of our case study institutions have a very high proportion of charity-funded research in their portfolios; others are investing heavily in “own-funded” research, including growing numbers of postgraduate research students, which normally increases deficits. These institutions will have some additional resource to invest in research infrastructure and sustainability, but they will still be showing deficits on their research overall, and this will inhibit their ability to invest.

### **Teaching cost recovery**

- 3.58 The evidence from TRAC is that teaching is much closer to break-even than research. The advent of variable student fees is focusing institutions’ minds on the quality of teaching and learning infrastructure where the investment needs have not yet been so well articulated or addressed as those for research. The increase in student fees from 2006 will help to address this, although only a small amount of this income will be available for capital spend (and in some institutions none of it). Implementation of TRAC for teaching in England is not expected to generate any net increase in funding so only affects sustainability in terms of improved information for decision-making.

### **Academic portfolios**

- 3.59 Most institutions manage a broad portfolio of activity, including some which is maintained for academic or social reasons yet is loss-making (examples include teaching of some strategic subjects, research funded by the EU and charities, and work to support local and regional communities). The logic of the sustainability agenda is that they now need to consider whether they can reduce or cover these losses without damaging valuable activity. There is limited scope for institutions to do this quickly (or at all in some cases), and an overly finance-driven approach would not be desirable since some of these activities are in the national, regional or local interest. Nevertheless, many institutions are now taking the first step to more strategic portfolio management – in that they are now aware of the relative costs and benefits of different activities in a much more systematic and robust way than they were in 2001.

### **Estates and utilisation**

- 3.60 Some institutions have inherited estates which are not efficient or well-adapted to modern sustainable teaching and research (in some cases, they were not

designed for HE in the first place). Some are maintaining facilities or incurring costs which are of benefit to the local community, but do not generate income. Some manage to utilise their estates much more productively than others. Some of this is due to institutional management, but some may be due to factors outside institutions' control. Some institutions are transforming their estates with major rationalisation exercises, taking 15 years to complete. Others have not yet started this process.

### **Cost inflation**

- 3.61 Staff costs, energy and utilities, and building costs are all likely to continue to rise faster than general inflation, and many elements of institutions' public funding will not be indexed even to the rate of general inflation (funding council block grant and student fees for example). So there will be a continuing squeeze on surpluses, which will (for most institutions) translate straight into deterioration of their capability to invest in infrastructure. Those who are most successful will seek to offset this by improved efficiency and utilisation, but this will often require capital investment.

### **Borrowing**

- 3.62 Institutions that have taken a strategic decision to borrow to finance estate development will continue to be servicing large debts, and this will also reduce cash surpluses which can be invested in infrastructure.

## **Conclusion**

- 3.63 There are now (more than in 2001), a number of strong policy and funding drivers which are encouraging and helping institutions to take greater responsibility for their own sustainability. The most important of these external factors supporting sustainable management are probably:
- TRAC/fEC development including improving funding of research;
  - the market awareness generated by variable student fees in England, Wales and Northern Ireland;
  - the impact of several years of SRIF and LTC.
- 3.64 All institutions in our sample of 24 are well aware of the significance of these developments, but the speed and extent of their response to them is varying. These variations partly depend on the individual management teams in institutions, but there is also some evidence that the challenge is greater in certain types of institution (notably the more research-intensive, those in Scotland, and certain institutions which are facing particularly significant problems).
- 3.65 There are also some internal factors inhibiting institutions from achieving a sustainable position. The most significant of these are:
- a. **high CE/CP ratios**, which are associated with high infrastructure costs and a low ability to generate cash;
  - b. **management issues**, including:
    - o unaffordable or over-ambitious strategies;

- lack of central management control over capital spend;
  - a management culture which does not yet give sustainability an equal priority to new activity;
- c. **large backlogs**, which still exist in some institutions in our sample.
- 3.66 There are also some external factors or risks inhibiting institutions from achieving a sustainable position. The most significant of these are:
- a. **perverse incentives**: the strongest of these is the perception that institutions which increase their research profile will be rewarded, whilst those which manage to achieve a sustainable position may be penalised by being considered less eligible for capital grants in future;
  - b. **various financial risks in the environment**, of which the most significant are probably the various elements of cost inflation which rise faster than public funding;
  - c. **some remaining restrictions and inflexibilities** in the way SRIF and LTC operate, which lead to sub-optimal use of the funds available in some cases.
- 3.67 Overall, therefore, a basis for sustainability is beginning to be laid, but it is still fragile, and will need further funding and nurturing before it can be considered to be secure.

## 4 THE NEED FOR FUTURE CAPITAL GRANTS

### Introduction

- 4.1 In this chapter, we present the quantitative findings of the study, drawing on the work with case study institutions. These address two core questions:
  - a. what is the level of remaining remedial investment need?
  - b. how much should institutions be investing to reach a stable and sustainable position and how much more capital grant funding will they need to achieve this?
- 4.2 Further details of the methodology we have used to derive the numerical findings in this chapter are given in Appendix A.
- 4.3 It is appropriate to look at these questions in two parts:
  - a. at a UK level with respect to the overall picture, and the needs of the research infrastructure and the future of SRIF;
  - b. on a country-by-country basis in respect of learning and teaching needs, as LTC are national not UK schemes, and the position and needs differ significantly country by country.

### The remedial investment need – UK

- 4.4 On the first core question, we have assessed the way that remedial investment needs (“backlogs”) have evolved since 2001, both at UK level, and in each of the four countries.
- 4.5 In 2001, many (but not all) institutions had an accumulated liability of seriously unfit or non-compliant infrastructure which was inhibiting their ability to do teaching and research at an appropriate level. There was an element of subjectivity in the way we established these backlogs, but there was ample evidence that institutions had serious difficulties, and this was presented in our 2001 report<sup>12</sup>.
- 4.6 We have investigated this, as we did in 2001, by reviewing the capital investment shortfall on existing infrastructure at the end of the current rounds of capital funding – now 2007/08 – for each case study institution. The core methodology for this was to build up a picture of need in the non-residential infrastructure in terms of:
  - backlog maintenance;
  - fitness for purpose;
  - any outstanding loans on existing non-residential infrastructure.

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<sup>12</sup> “Study of science research infrastructure”. Executive Summary Web reference: <http://www.dti.gov.uk/files/file14575.pdf>

## 2006 Backlogs in case study institutions

- 4.7 For the initial group of 12 UK study institutions, the backlogs we calculated in 2001 varied from around £10m at three HEIs to over £150m at four others. As a percentage of insured value, the range was from 5% to 45%, as shown in the middle column of Table 14 below. In aggregate, these 12 HEIs showed a remedial investment need of £1.0bn or 31% of the aggregated insured value of the sample. Borrowing was included in these figures.
- 4.8 The equivalent backlog figures observed in 2006 are shown in the last column of Table 14.
- 4.9 Asset values have changed differently across this group, so direct comparison is complex, but the values in 2006 vary from 5% to 39% of asset value, with an aggregate value of £1.4bn, equivalent to 24% of insured value. At first sight, this is not much of an improvement over 2001 (in fact the cash value is virtually unchanged as £1.0bn in 2001 is equivalent to £1.4bn in 2006 prices). However, the improvement is more significant than the headline figures suggest. There are three main differences since 2001.
- 4.10 Firstly, the insured value in these institutions has nearly doubled since 2001 (£3.2bn to £5.8bn) as property values have risen, and as institutions have expanded their levels of activity (notably for research with funding from JIF and early SRIF). So, the £1.4bn backlog is now a significantly smaller part of the HE infrastructure in terms of space.
- 4.11 Secondly, the nature and importance of these remedial investment needs has changed qualitatively since 2001. The most serious items have been addressed, and the remaining need is usually less critical to mission. In 2001 we found many examples of space which was inadequate or unfit for modern teaching and research and was inhibiting the level and quality of activity. The backlogs at most of these institutions now relate much more commonly to infrastructure which is near the end of its useful life or is inefficient or sub-optimal, rather than actually non-functional. This may inhibit marketing and development of the institution, but it is a lower order of problem than the ones observed in 2001.
- 4.12 Thirdly, as discussed in chapter 3, many of these institutions have made significant progress towards more strategic management of their infrastructure since 2001, and as a result they have a much clearer and more comprehensive view of their needs than they did then (several have done, or are doing, full condition surveys for example). Unfortunately, in terms of the headline numbers, this usually leads to an apparent increase in needs as previously ignored requirements are built into the plans. However, in terms of the reality of the backlogs, it means that the level we have measured in 2006 is more comprehensive and robust than that in 2001, and the improvement over this period is therefore larger than the headline numbers suggest.
- 4.13 This development of more strategic management also means that we can be more challenging about the extent of “backlogs” which need to be remedied. Most institutions can manage with a certain proportion of infrastructure in an imperfect condition<sup>13</sup>. We suggest (based on the case study institutions) that

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<sup>13</sup> Several we visited had small pockets of unused and “inoperable” space in buildings which were due for later disposal or reconfiguration. This is no threat to sustainability or efficiency and to spend money on such infrastructure would not deliver significant benefits.

this might normally be of the order of 10-15% of asset value (equivalent to one to two years of our recommended annual spend, plus debt), but this would depend on a number of factors. This would represent around £3-4bn at UK sector level.

- 4.14 A final point to make here is that there is a wide variation across this sample. Two institutions which have very large estates and relatively high CE/CP ratios together account for nearly a half of the 2006 backlog in the UK sample of HEIs, and these two have both shown relatively little improvement since 2001. The general position across the other 10 institutions shows a significantly more favourable picture, and a correspondingly larger improvement.

**Table 14: January 2006 remedial investment requirements in UK sample of institutions compared to 2001**

Institution reference	2001 Backlog as % of insured asset value	2006 Backlog as % of insured asset value
a	26%	28%
b	26%	37%
c	45%	36%
d	42%	13%
e	39%	39%
f	31%	41%
g	36%	15%
h	24%	8%
i	28%	26%
j	22%	35%
k	42%	10%
l	5%	5%
Average	31%	24%

(In each case the backlog is that at the end of the current SRIF/LTC capital streams – 03/04 for 2001, and 07/08 for 2006. Non-residential debt is also included in both, as are backlogs on equipment and ICT.)

**2006 Backlogs extrapolated to UK sector level**

- 4.15 Extrapolated to the UK sector level, this 2006 backlog is approximately £8bn (which can be contrasted with £10.4bn in 2001, both at current prices).
- 4.16 We wish to apportion this remedial investment need between teaching and research, but this is not easy for reasons which have already been discussed (notably that many of the core needs are generic, and splitting buildings between teaching and research is not straightforward). However, most institutions in our sample had made more progress in addressing research-specific needs than teaching-specific ones (as SRIF has been available for longer, and many HEIs perceive more immediate pressures on the research infrastructure).
- 4.17 In the light of these considerations, we would conclude that the £8bn of observed backlogs in 2006 could broadly be apportioned as follows:

Science research infrastructure (including some generic)	£1-2bn
Teaching and learning infrastructure (including some generic)	£2-4bn
Manageable residual level	£3-4bn

- 4.18 These findings, illustrated in Figure 1 in Appendix B, are our best view of what is clearly an imprecise set of data and extrapolations. They are consistent with the following broad policy conclusions which we believe are robust at UK sector level:
- a. great progress has been made in the science research infrastructure and the most serious needs have been addressed – or have implicitly been given lower priority by institutions. The “catch-up” investment need is therefore now significantly smaller for most institutions;
  - b. a small proportion of research universities have much larger backlog problems which will need more radical solutions (and if these could be addressed, it would reduce the overall average backlogs significantly);
  - c. much less progress has been made on the teaching and learning generic infrastructure, and here there are also significant national differences (which are discussed next in this chapter).

## **Backlogs in England, Scotland, Wales and Northern Ireland**

- 4.19 Table 15 shows the equivalent figures for the 2006 backlog derived for the 12 additional case study institutions in Scotland, Wales and Northern Ireland (there is of course no figure for 2001), and the average value of the backlog for each country including England.
- 4.20 These additional case studies were chosen with the relevant funding councils to be a sensible sample, taking account of a number of factors, but they are not necessarily representative of each country in a statistical sense. The backlog figures for the four countries shown in Table 15 should therefore be treated as indicative of national differences, but not as robust in absolute terms. In the case of Northern Ireland, while we have apparently a 100% sample, the country average may be misleading in terms of policy for SRIF and LTC as the two university colleges are not eligible for these grants. If they are excluded, the average backlog (on a sample of only two HEIs) becomes 21% - much close to the UK average.
- 4.21 There are clearly significant differences between the four countries – with the most notable being the significantly higher backlogs in Scotland.
- 4.22 The country averages and extrapolated total remedial investment required in each country are shown in Table 16. As already explained, these should be regarded as indicative rather than precise expressions of need. The extrapolated requirements in column 3 have been moderated and rounded in column 4 by subtracting the “manageable residual level” of approximately 10% of the asset value in each country.

4.23 The backlogs in Scotland, Wales and Northern Ireland are discussed in the relevant country reports.

**Table 15: 2006 remedial investment requirements in England, and at additional case study institutions in Scotland, Wales and Northern Ireland**

Institution	2006 Backlog as % of asset value
<b>England (as UK)</b>	24%
<b>Scotland</b>	
l	20
m	50
n	50
o	50
p	49
Average (six HEIs)	41%
<b>Wales</b>	
q	31
r	30
s	21
t	18
Average (five HEIs)	21%
<b>Northern Ireland</b>	
u	7
v	32
w	1
Average (four HEIs)	13%

Note. These are the figures derived for the 12 additional institutions visited in these countries (five in Scotland, four in Wales, three in Northern Ireland). The country averages also include the one institution in each country from the UK sample in Table 14 and the nine in England. These are unweighted averages.

**Table 16: Indicative, extrapolated remedial investment requirements at national level at January 2006 (from Tables 14 and 15)**

Country	Average requirement in sample HEIs as % of asset value	Extrapolated requirement at national level, £bn	Moderated "realistic" requirement, £bn
England	24	6.0	4
Scotland	41	1.7	1.0
Wales	21	0.3	0.2
Northern Ireland	13	0.1	0.1

## How much more capital grant funding is needed?

- 4.24 On the second core question, we have identified how much more capital grant funding, or other financial support post-2008, these institutions will need to enable them to reach a sustainable infrastructure position. This issue was not covered in the same way in our 2001 study: it cannot really be addressed until there is a foreseeable end to backlogs and a plan for the future. It involves assessment of the ambition and realism of institutions' plans and of their future ability to generate cash, as well as the status of their infrastructure and their specific plans for investment to improve this.
- 4.25 We have covered part of the evidence for this question in chapters 2 and 3 where we discussed CE/CP ratios and the management context in institutions.

### Financing gaps at UK case study institutions

- 4.26 Table 17 shows the figures we have derived for the financing requirements of the initial group of 12 UK case study institutions going forwards. The table shows the annual investment requirement which we believe is appropriate and which has been agreed with each institution<sup>14</sup>. It then shows the amount the institution can generate from its own funds, and hence the unfunded balance – or annual financing gap.
- 4.27 Our calculation of available cash takes into account forecast surpluses and expected changes due to (e.g.) fEC funding of research at 80%, and progressive increases in income from variable tuition fees (not in Scotland). It takes into account known commitments including the cash required to purchase equipment or ICT from central budgets (in addition to that funded by research sponsors or by academic and other departments from their recurrent budgets). It also takes into account debt servicing costs (interest and capital repayment) – which is part of the investment requirement we identified in January 2006. Loans merely defer payment for infrastructure.
- 4.28 Cash generated from their own funds does not take into account any surplus institutions may need for restructuring/growth etc. At least two universities were more interested in using their available cash for new campuses (adding to, not replacing, current estate). It also does not assume any income from disposals, fund-raising etc.
- 4.29 Table 17 shows that, across the initial group of 12 UK case study institutions, the aggregate unfunded balance of requirements going forwards is approximately £100m per year, or 1.8% of insured value in aggregate. This could be thought of as the “sustainability gap” in terms of physical infrastructure. If extrapolated to the sector, which has an insured value of £34bn (2006), this would indicate an annual shortfall of £650m. This is two-thirds of the public capital funding in 2005/06 of £967m (which was £462m for combined L&T schemes, and £499m from SRIF). This result shows a significant step towards sustainability.
- 4.30 Again, it is useful to be able to apportion this funding shortfall between teaching and research. Research is clearly less-well-funded than teaching, even with the improvements in fEC, and we would assess, based on the

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<sup>14</sup> The range of these annual investment requirements – expressed as a percentage of asset value – was shown in chapter 2 (Table 5).

experience of the case study institutions, that the major part of this shortfall is in respect of research activity rather than teaching and learning.

**Table 17: Annual financing requirements of UK case study institutions post-2008**

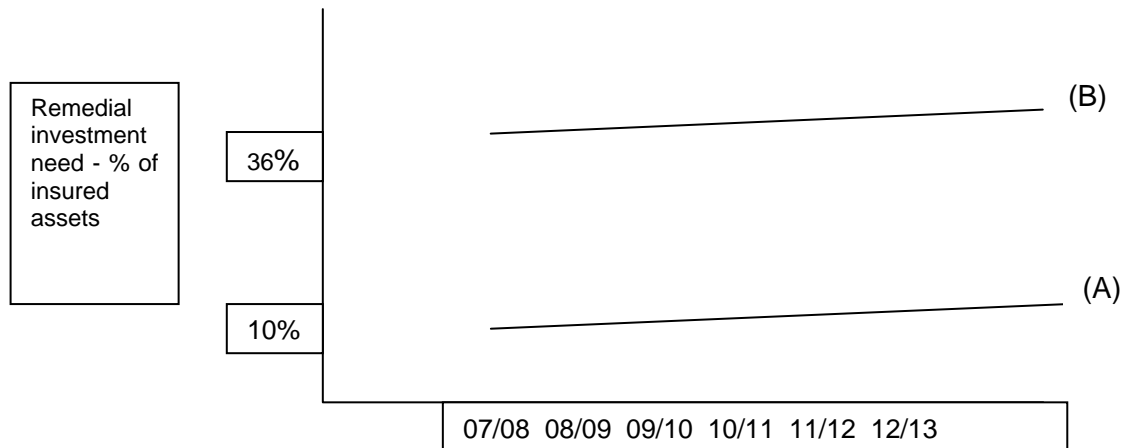
Institution reference	Annual requirement £m	Generated from own funds £m	Unfunded balance £m	Unfunded balance as a % of insured value
a	27	13	14	2.3
b	40	22	18	2.1
c	24	22	1.5	0.4
d	42	17	25	1.9
e	43	21	22	2.8
f	2.2	0.4	1.8	3.8
g	20	18	3	1.0
h	14	14	0	0.0
i	9	9	0	0.0
j	10	5	5	2.9
k	25	15	10	2.4
l	18	9	9	2.3
Average total			£106.3m	1.8%

- 4.31 As on backlogs, there is clearly a very wide variation between these institutions. Some are still very far from a sustainable position: for six institutions the unfunded balance is broadly 50% of their total annual investment requirement. Several others could be said to be close to being sustainable (the funding gap is less than 25% of their total requirement). In two institutions, there is no funding gap (within the accuracy of these necessarily imprecise forecasts).
- 4.32 We should note that most institutions stated that the "cash generated from own funds" was a "best case scenario" only. (For example, it assumes that full fEC as expected is paid by public research sponsors including government departments; that part of the increase in student fees can be reserved for infrastructure; that inflation in building costs is not excessive; that the unit of resource for teaching and students is not reduced as student fees come in.) In practice, these are probably optimistic assumptions, and there are several other significant risks that could be added to the above list – pensions for example. With operating surpluses at a very low percentage of income, there is little margin for contingency, or for above-forecast rises in costs, or for any fall in student recruitment as a consequence of variable fees.
- 4.33 However, there may be an element of conservatism in the other direction, in that we did not assume any cash inflow from non-public sponsors, fund-raising, or disposals.

### Extrapolation to UK sector level financing gap

- 4.34 The shortfall for the UK sector is likely to vary around the 1.8% average that we calculated for the 12 case studies, depending on how representative our sample is, and how optimistic or pessimistic a view is taken with the assumptions discussed in paragraph 4.32.
- 4.35 A realistic range at sector level might be 0.8% – 2.8% of insured value i.e. an annual shortfall for the sector of between £300m and £1,000m.
- 4.36 As with backlogs, there is again a very wide variation. Just two of these institutions account for nearly 50% of the total unfunded balance across the whole sample of 12.
- 4.37 It is important to note that backlogs will quickly rise again if the ongoing need is not addressed, and the sustainability position is therefore fragile, even for institutions which have a low financing gap. This is illustrated below:

#### Evolution of financing gap for a case-study institution that is well positioned (institution A) and of one which is not so well positioned (B)



Institution A has a 36% remedial investment need in 2007/08, but much of this is debt. The debt element is removed in the graph (as it is covered in the annual cash requirement, therefore might otherwise be double-counted). The graph shows that the 10% remedial backlog (that institution’s desired position) will slowly rise by ½% a year, unless additional capital funding is available.

The 2007/08 remedial need of institution B is the same as that of institution A, i.e. 37% of insured asset value, but it has no debt and so the infrastructure condition is much worse. Its desired position is around 10%. The institution does plan to address backlogs when considering capital plans. But it has a shortfall in cash available of over 2% of insured value p.a. (nearly half the desired spend). Given the scale of the backlog, it would be gradually addressed by the 2.5% that can be spent p.a.; however, backlogs in other areas would gradually appear. Overall, backlogs would gradually rise, and would become even more serious.

## Requirements in Scotland, Wales and Northern Ireland

- 4.38 The equivalent data on annual financing gaps for the additional case study institutions are shown in Table 18.

**Table 18: Annual financing requirements (funding gaps) at case study institutions in Scotland, Wales and Northern Ireland**

Institution	2006 financing gap as % of asset value
<b>England (as UK)</b>	1.8%
<b>Scotland</b>	
l	3.5
m	2.8
n	0.8
o	1.2
p	1.9
Average (six HEIs)	2.1%
<b>Wales</b>	
q	0
r	1.1
s	0.5
t	0
Average (five HEIs)	0.7%
<b>Northern Ireland</b>	
u	1.5
v	0
w	2.3
Average (four HEIs)	1.5%

Note. These are the figures derived for the 12 additional institutions visited in these countries (five in Scotland, four in Wales, three in Northern Ireland). The country averages also include the one institution in each country from the UK sample in Table 17 and the nine in England.

- 4.39 The extrapolated sector-level figures for each country are shown in Table 19. As for backlogs, these data should be taken as indicative of the broad order of funding shortfalls; they are not robust absolute numbers. Again, the reasons for this are a (probably) non-representative sample, and also forecasting these financing gaps is rather like forecasting surpluses and deficits in that the gap is a small difference between two large numbers – both of which are uncertain.
- 4.40 Table 19 shows the annual cash shortfall at national sector level required to be financed to enable institutions to finance their own forward investment for a sustainable infrastructure. The total at UK level here broadly agrees with the £650m quoted above and deduced from the UK sample of institutions. The split between teaching and research will indicate that much of the funding gap is incurred on research, where institutions are making deficits on a recurrent basis.
- 4.41 These findings are discussed in the reports on Scotland, Wales and Northern Ireland.

**Table 19: Financing gap at national level as at January 2006 (from Tables 13 and 14)**

Country	Average requirement in sample HEIs as % of asset value	Extrapolated requirement at national level, £m (rounded)
England	1.6	500
Scotland	2.1	95
Wales	0.7	10
Northern Ireland	1.5	10

## Conclusion on need for further capital grants

- 4.42 Capital grants (SRIF and LTC) are being used for two purposes: to address backlogs, and to finance continuing current investment. The balance between these two will vary from institution to institution, but the minimum level of investment for a sustainable institution must be enough to at least cover current funding gaps and to make reasonable progress in addressing any backlogs that are critical to its mission.
- 4.43 If the backlogs are ignored, we have shown that the requirement for further capital grants to finance forward investment is now lower than the levels of SRIF and LTC that institutions are receiving (except perhaps in Scotland).
- 4.44 However, reducing the levels of SRIF and LTC to this extent would simply extend the timescales over which institutions can address their backlogs, or even make this impossible. So, while this might appear reasonable in terms of current need, it would slow the sector's progress towards sustainability.
- 4.45 Other factors to be borne in mind are that:
- a. a few institutions have such major challenges that even a continuation of the current level of formulaic capital grants will not address these. We therefore believe there should also be a limited lifetime scheme to provide one-off strategic development grants to a small number of institutions which can demonstrate a good business case for this;
  - b. it would be disastrous if changes in funding gave a signal that those institutions which have managed responsibly and are close to achieving sustainability are now to be penalised relative to those which still have a large financing gap.
- 4.46 So, we conclude that formulaic SRIF and LTC need to continue in the immediate post-2008 period, but the need for them will decline as backlogs are reduced and as other sources of recurrent funding become available for both teaching and research. This is illustrated in Figure 2 in Appendix B.

# Appendix A: Study methodology

## Terms of reference

1. The remit for this study was as follows:
  - to assess how far the backlogs (of remedial investment requirements in teaching and research infrastructure) have changed since our 2001 study, as a result of the investments made since 2001;
  - to identify the factors that influence the trajectory towards sustainability of the relevant higher education infrastructure, and to provide a view of whether and how much more capital grant is required, and for how long;
  - to suggest indicators or guidelines that can be used to assess progress towards a position where the need for public capital has reached a stable and sustainable level.
2. The 2001 study was effectively a base-lining study of investment backlogs and identified a combined remedial investment requirement across the whole sector for teaching and research. The methodology to do this was primarily based on assessment of institutions' needs and plans for physical infrastructure.
3. The 2006 study had a broader remit than the 2001 study, but it included the work needed to make comparisons between the two years.

## Methodology

4. We approached this remit through a three-part methodology; these three parts all overlap to some degree.
5. Firstly, we reviewed published data on estates and financial trends at the UK level, and for each of the four countries. Here we were able to draw upon a number of sources of information, some (like HESA) published, and others (like EMS) with permission of the institutions concerned. This work is largely reported in chapter 2. It cannot answer all the study questions, but it does indicate some trends and differences, and provides a high-level context for the case studies.
6. Secondly, we did case study work at a sample of higher education institutions around the condition and status of their infrastructure; their estates strategy; future investment needs; financial forecasts, and financing plans for their infrastructure. This involved a survey of institutions and meetings with finance and estates directors and their staff at each case study institution.
7. Thirdly, we did case study work with institutions to understand what their sustainable portfolios of academic activity will look like in the medium-term; how far they have achieved a stable and sustainable management model for their infrastructure; how the institution is managed; how they will use future funding flows (e.g. from fEC and tuition fees); what kind of infrastructure they will need (and can afford); and what the implications would be of a tapering off of dedicated capital grants schemes. This built upon the findings in the

second element of work above and included a meeting with the senior management team (usually with the pro vice-chancellors or equivalent for teaching and learning, for research, and for estates and resources where appropriate). In some cases heads of institution also took part in these meetings.

8. For the initial UK study carried out between January and April 2006, we worked with a sample of 16 case study institutions, as listed below. Those indicated with asterisks did not provide full data, and were used to validate trends, rather than to contribute to the statistical calculation of backlogs and investment needs. Numerical data from this initial group of 12 HEIs are included in the report, presented in a way which avoids identification of potentially sensitive data to individual institutions.

**Initial group of UK case study institutions**

University of Birmingham University of Bristol University of Glasgow *Harper Adams University College *Imperial College, London Leeds Metropolitan University Cardiff University Kings College London	University of Newcastle upon Tyne *Nottingham Trent University Queens University Belfast *Royal College of Music Sheffield Hallam University University of Worcester University of Westminster University of York
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9. This sample was constructed to provide continuity with our 2001 study, and also to enable us to draw robust conclusions at the level of England and the UK as a whole.
10. In most cases, we visited these institutions twice to cover the second and third stages of work listed above.
11. A steering group chaired by Ian Lewis Head of Finance at HEFCE, and including representatives of DfES, OSI and the other three higher education funding bodies, assisted our work and gave guidance on the production of our report. We are grateful for their help.
12. During the period April to July 2006, we extended the range of investigations to include additional institutions in Scotland, Wales and Northern Ireland. Because of the smaller number of HEIs in these three countries, it was necessary to sample every HEI in order to obtain statistically robust conclusions on the basic numerical data and findings. However, as in England, we also visited a selection of institutions for more in-depth discussions, and these were as shown below (in each country, one institution had already been visited as part of the UK study as shown above, so the full sample of institutions visited was nine in England, six in Scotland, five in Wales, and four in Northern Ireland).
13. For this later phase of work, we refined the methodology slightly so that only one institutional visit was normally undertaken, to cover both the second and third stages of work above. This was facilitated by doing some additional preparatory work and sending a document to directors of finance to review ahead of the visit. We also collected information on those institutions not visited in these countries.

## **Additional case study institutions in Scotland, Wales and Northern Ireland**

<b>Scotland</b> University of Aberdeen University of Abertay, Dundee Glasgow School of Art University of Paisley University of Stirling
<b>Wales</b> University of Wales, Aberystwyth University of Glamorgan North East Wales Institute of HE University of Wales, Swansea
<b>Northern Ireland</b> St Mary's University College Stranmillis University College University of Ulster

## **Establishing 2006 backlogs**

14. The first part of the work with case study institutions was to establish any backlogs of capital investment required at January 2006 (in practice we extrapolated forwards to the end of 2007/08 which represented the end point of known capital grants, and of many institutions' current plans).
15. The current (2007/08) shortfall of capital investment in the estate covers three items:
  - a. backlog maintenance including legislative compliance. Some institutions have had condition surveys that provide a figure for this. Spend that is currently planned which will address any of this by the end of 2007/08 was deducted;
  - b. estate that will not be in a fit-for-purpose condition (not functionally suitable) by the end of 2007/08. Most institutions used one of three approaches to establishing this:
    - o at a high-level, considering each building on their estate and assessing how much money would be required to refurbish or replace it, that is not currently budgeted/funded;
    - o assuming that their existing capital expenditure plans will address all needs by the end of 2007/08, but identifying a shortfall in the funding of this plan after internal and known external sources of funding have been taken into account;
    - o looking at their capital and maintenance spend over the past four years and forecast for the next four years. Taking the difference between this figure, and the annual requirement multiplied by eight years, to provide an estimate of a shortfall;

- c. any loans on the non-residential estate that will be outstanding at the end of 2007/08 (this is to ensure parity between institutions).
16. The results of this work are reported in the first section of chapter 4.

### **Establishing annual shortfall after 2007/08**

17. The second part of the work was to establish what institutions needed to spend on an annual basis post-2007/08 and to identify what cash they could generate from their own resources to finance this. The approach to establish any likely annual shortfall in capital investment (maintenance and refurbishment/ replacement) was as follows.
- a. through a process of discussion with the institution we identified an agreed annual requirement for buildings spend. These are discussed in chapters 2 and 3 of the report and varied around an average annual requirement of 4.5% of insured asset value;
  - b. we also identified the level of cash generated from own funds through the following logic:
    - take forecast historic cost operating surplus after debt servicing costs (for 2008/09 i.e. *including* the net impact of variable fees and new fEC-based research income);
    - add back* depreciation;
    - deduct* release of capital funds;
    - add back* non-capitalised maintenance spend (the operating surplus is net of this figure but the required spend is in the annual requirement so it needs to be added back);
    - deduct* any capital funding for equipment or ICT that needs to be made out of these institutional surpluses.
18. Taking (a) less (b) gives the annual cash shortfall – a potential requirement for additional capital funding. However, additional capital funding is not the only method to finance this shortfall. We also asked institutions to consider the potential contribution from other non-financial measures including improved efficiency or utilisation of assets, rationalisation and collaboration.
19. In practice, some of any remaining shortfall might be made up of new loans (which however would reduce the cash generated from own funds), or from grants from non-funding council sources. Conversely, some of the cash generated from own funds might be required to fund growth or restructuring.
20. The results of this work are reported in the second section of chapter 4.

# Appendix B: Statistical data, graphs and assessment matrix

## Introduction

1. The main report contains information on the estates condition, financial position, capital grants, and investment needs in each of the four countries of the UK, as well as presenting information at a UK level.
2. In general, the England and UK positions are very similar as English higher education accounts for over 80% of the UK total. However, there are some significant differences in the three smaller countries, Scotland, Wales and Northern Ireland, and these may lead to differing conclusions about future policy and funding needs in these countries.
3. Table B1 below provides high-level comparative information, and Table B2 shows some simple ratios drawn from these data.

**Table B1**

**EMS 04/05 responding HEIS only (and extrapolated for non-respondents on specific fields)**

	England	Scotland	Wales	NI	UK
Total income incl. resid. £m	14234	1859	845	366	17304
HEIs	127	18	12	2	159
Student FTEs R&T	1225	149	81	36	1491
R income as defined EMS £m	3234	521	167	105	4026
Sqm non-resid Gross Area (m)	14.6	2.36	0.96	0.44	18.32
IAV non-residential £bn	27.25	4.39	1.46	0.73	33.83

**Table B2: Some key ratios (derived from Table B1)**

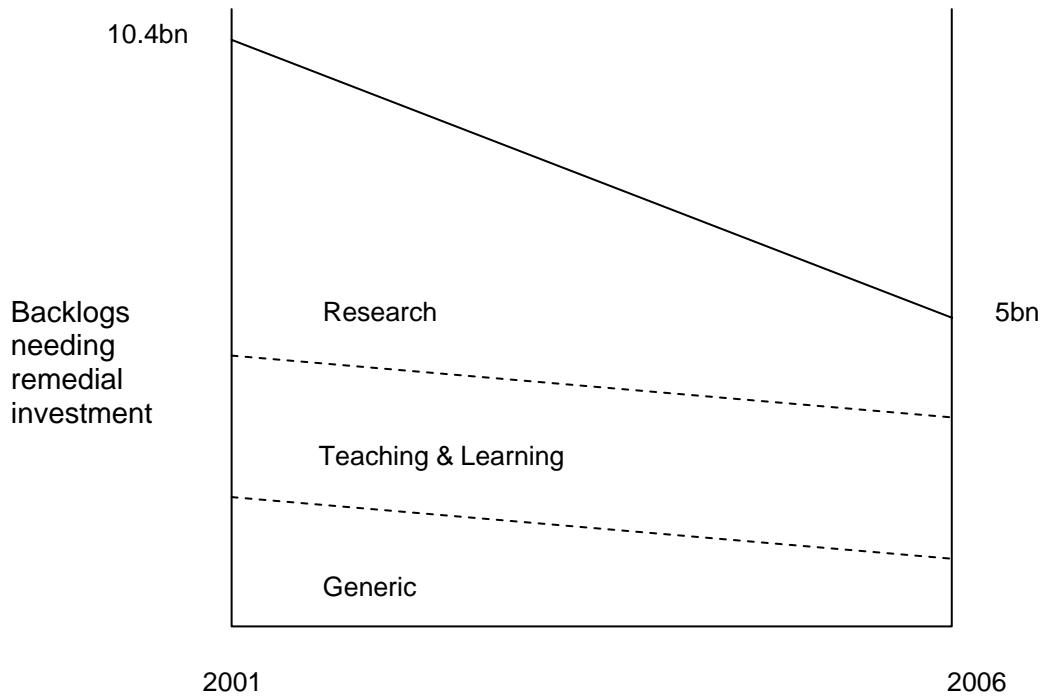
	England	Scotland	Wales	NI	UK
£ income per HEI	112	103	70	183	109
Sqm per HEI (000)	115	131	80	220	115
Insured value per HEI £m	215	244	122	365	213
Insured value per sqm £m	1.87	1.86	1.52	1.66	1.85
Sqm per student	1.19	1.58	1.19	1.22	1.23
£ income per sqm	975	788	880	832	945

## Possible diagnostic tool to categorise institutions re capital funding schemes

(The purpose of this table is to suggest readily-available metrics that could help the funding bodies to decide which institutions have the long-term capacity to service their existing infrastructure. It is not the same as what the funding bodies measure with their risk registers or sustainability metrics. Nor will it indicate cases where the existing infrastructure is unfit and needs major one-off strategic investment.)

	<b>Criterion</b>	<b>Group A. Sustainable (with some funding) if satisfy all the following criteria</b>	<b>Group B. Need explanation and strategy development, and in some cases possibly some rationalisation, if one or more of the following apply</b>
1.	<b>CE/CP ratio</b> (HESA and EMS)	Below or close to 2.0 (up to 2.5 allowable if research-intensive)	Above 2.5 (indicating possible threat, needing consideration)
2.	<b>Actual spend on infrastructure</b> Average amount spent as % of asset value over 3 years (HESA and EMS)	Close to indicative level of 4.5% (or if below have a good reason – new campus etc)	Well below 4.5% (without justification) (indicating unsustainable without some improvement)
3.	<b>Good practice</b> Evidence from estates strategy and declaration by head of institution	a. Institution has a 10-year capital plan, which is financed, and addresses all problems and backlogs that will threaten sustainability  b. As part of this, institution has agreed a required annual investment level of [X%] of asset value and this will enable it to manage infrastructure investment (with appropriate assumptions about public capital grants)	No evidence: cannot make these declarations
	<b>Outcomes</b>	<b>Formulaic capital grants with no conditions</b>	<b>Formulaic capital grants with condition to implement sustainable strategy including 3a &amp; 3b.</b>  <b>In some cases, HEI may say this is impossible and a condition may be to review options and make a business case for funding to support rationalisation.</b>

**Figure 1: Evolution of remedial investment needs**



Notes:

At 2001 we identified 10.4bn (in 2006 prices). This was probably an under estimate due to incomplete information in institutions.

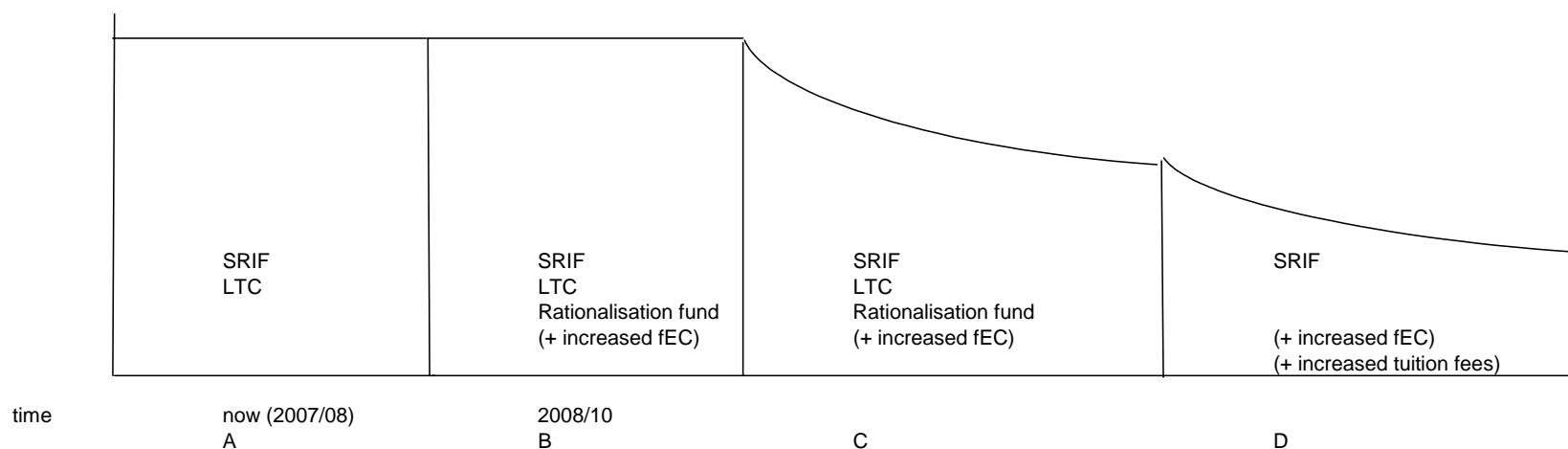
Since then, SRIF has allocated £2bn to institutions, and LTC £1.5bn.

In 2006 we identify approximately £8bn which, overall, is less critical to mission so that in the region of £3bn is a “manageable” or allowable base level. The remaining backlog is now more heavily weighted to teaching and learning.

## Figure 2: Illustration of the trajectory of investment needs and funding sources in HE

The graph shows the amount of public capital funding institutions will need to enable them to address their backlogs and to invest at 4.5% of asset value on a consistent basis to ensure sustainability of infrastructure

This is illustrative and based on a particular set of assumptions which some would regard as an "optimistic" scenario



### Phase Assumptions in each phase

- A Significant backlogs remain. Annual shortfall of approximately 1.8% of Asset Value or £600m for the sector as found by J M Consulting 2006 study (see chapter 4).
- B Increase in fEC funding of research, so Research deficits reduced. Backlogs reducing. SRIF reduced, but additional fund for rationalisation of infrastructure. LTC continues at current level so is higher share of total capital grants.
- C Impact of the rationalisation fund and improved strategic management of infrastructure leads to further reduction in backlogs. Building, utility and pay cost inflation not fully funded, but offset by improvements in funding of PGR and other Research activity. SRIF and LTC both reduced, but not ceased, while deficits continue.
- D Backlogs all reduced to manageable level. Cap off tuition fees. End of need for LTC. Residual SRIF needed to continue to address annual Research deficit on PFR.

## List of abbreviations

CE/CP ratio	Cost of equity (CE) to the cost of production (CP)
EMS	Estates Management Statistics
fEC	Full economic costs
FTE	Full-time equivalent
HESA	Higher Education Statistics Agency
IAV	Insured asset value
JIF	Joint Infrastructure Fund
LTC	Learning and teaching capital
LTIF	Learning and Teaching Infrastructure Fund (in Scotland)
OSI	Office of Science and Innovation (formerly the Office of Science and Technology)
SMG	UK Higher Education Space Management Group
SRIF	Science Research Investment Fund
TRAC	Transparent Approach to Costing