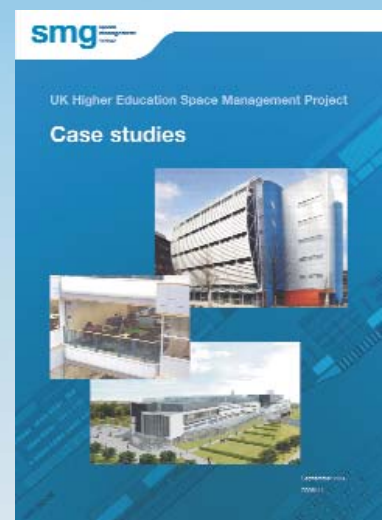
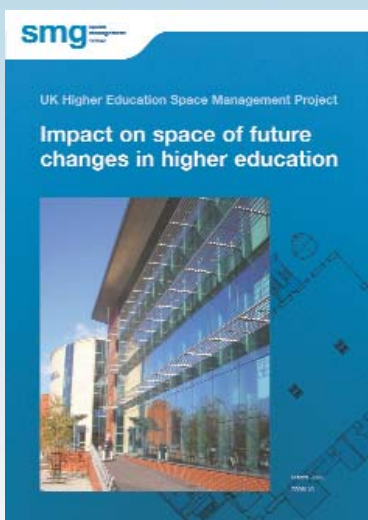
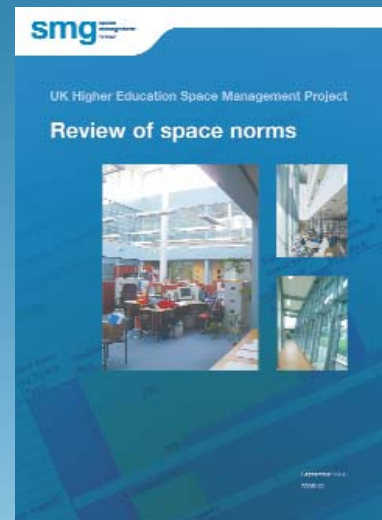
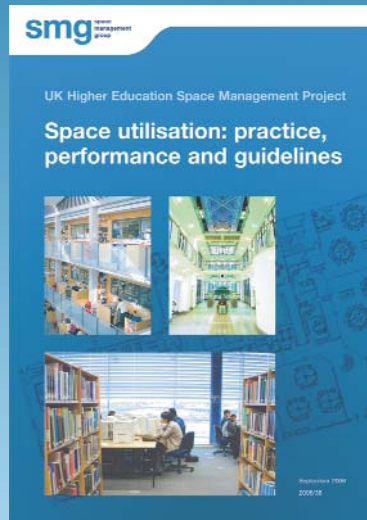
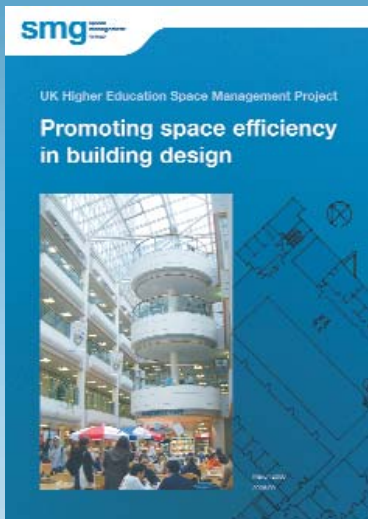


UK Higher Education Space Management Project

Space management project: summary



Space management project: summary

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Purpose and scope of this report

1. Effective space management in universities and colleges can provide measurable benefits not only to institutional finances but also to the academic experience of students and staff. This summary report, prepared by Kilner Planning, gives an overview of the work of the Space Management Project (SMP). The project was under the direction of the UK Higher Education Space Management Group (SMG), supported by the four UK funding bodies for higher education, the Higher Education Funding Council for England (HEFCE), Scottish Funding Council (SFC), Higher Education Funding Council for Wales (HEFCW) and the Department for Employment and Learning (in Northern Ireland) (DELNI).

2. The project aimed to develop additional guidelines and tools to help to deliver effective space management. It investigated many aspects of space management with research being carried out in two phases.

3. Phase One focused on three areas:

- a. What is **current space management practice** across the sector? Do good practice recommendations on space management methods help to improve space performance?
- b. What is the **financial provision** necessary for an estate to be maintained in a state that is fit for purpose and in good condition?
- c. What are **key drivers of the size of the estate**, and how can higher education institutions (HEIs) assess what size of estate is affordable?

4. The findings showed that across the sector

both full central timetabling and space charging have a statistically significant positive effect on space performance. The research also led to the development of an interactive model which enables HEIs to:

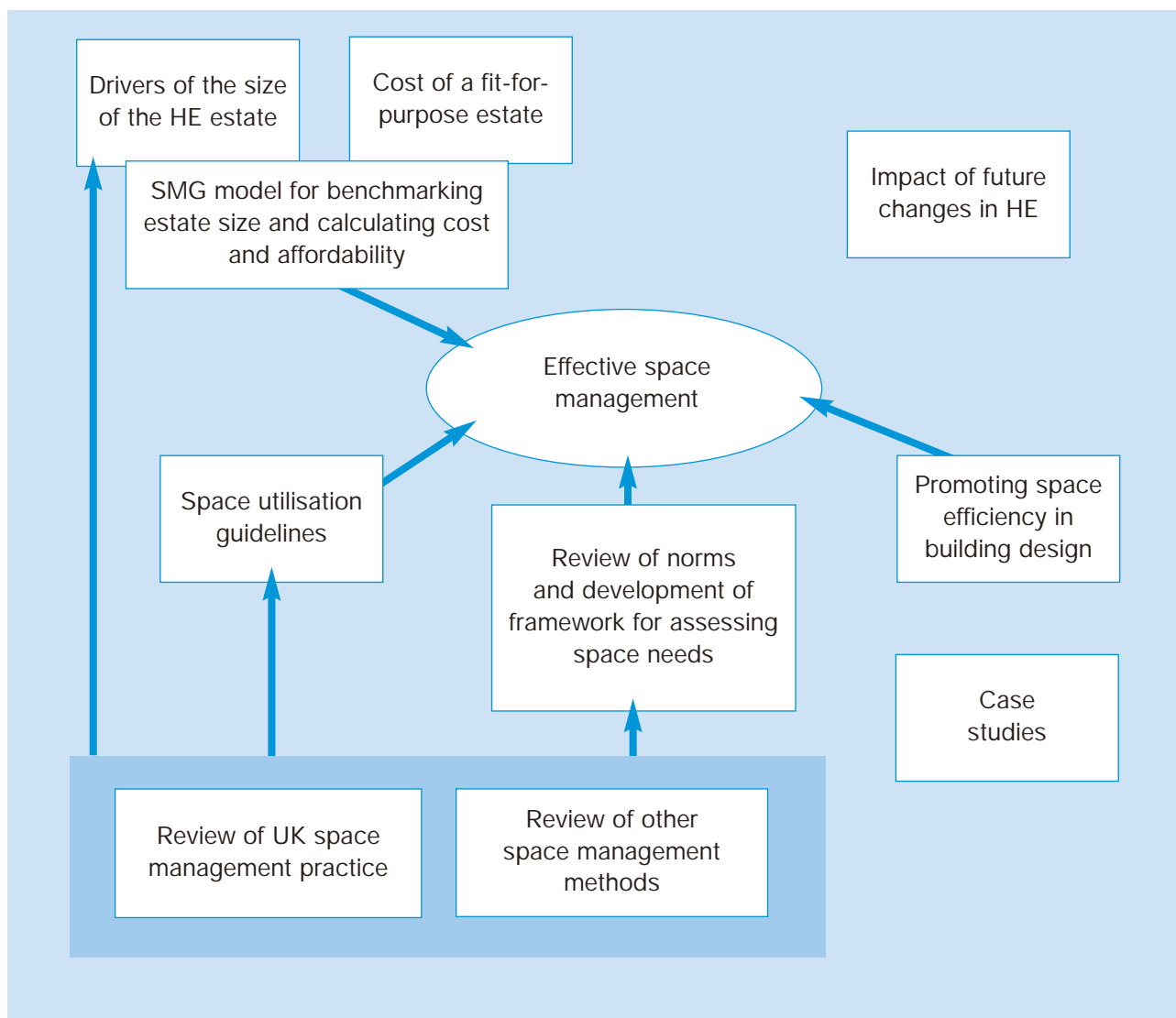
- a. Calculate the full annualised cost of their estates.
- b. Model and benchmark the size of their estates.
- c. Assess the impact of different estate cost assumptions and carry out scenario planning.

5. Phase Two of the project covered the following questions:

- a. What are the potential impacts on space of **future changes in higher education**?
- b. Could **space management methods used in other sectors** contribute to UK higher education (HE) guidance?
- c. How can **space efficiency in building design** be promoted?
- d. What are the **guidelines for a strategic approach to space utilisation** and how can this space management measure be linked to how much and what type of space is affordable?
- e. Is it feasible to provide updated **space norms** for the sector, along the lines of the former University Grants Committee (UGC) norms?
- f. What can we learn from **case studies** of individual institutions' space management practice and experience?

6. There are links between many of the research areas. These are shown in Figure 1.

Figure 1: Principal links between SMP research areas



7. This brief report summarises the project’s main findings. Full reports on the research and the SMG model are available on the Space Management Group’s website at www.smg.ac.uk.

Current space management practice

8. Eighty-four per cent of the higher education sector (140 HEIs) responded to the first sector-wide survey of space management practice in the UK. The survey set out to see how far published good practice recommendations are being followed. Sources such as the National Audit Office stress that the key factors for successful space management are: leadership, objectives, information, communication and practical tools.

9. The survey found that some core components from published good practice are in place among institutions. Among the respondents:

- a. 70 per cent of HEIs have a space management champion.
- b. Just over half of institutions (54 per cent) have space management objectives or targets, and 69 per cent use performance indicators to manage space.
- c. Over 60 per cent of institutions state that they have the space data needed for space management in terms of a computerised database on room sizes, capacities, functions, identification by user and number of teaching workplaces.

- d. Almost 80 per cent of HEI respondents collect data on space utilisation.
 - e. 29 per cent of HEIs have space charging.
 - f. 86 per cent have some computerised centralised timetabling, with 12 per cent timetabling all their teaching space.
10. However, there are also significant constraints on effective space management:
- a. Specific and measurable targets are rarely found. The link between space management and academic and financial planning is patchy and inconsistent. For space management to be effective, objectives need to be linked to overall institutional resource planning. They need to be specific and to relate not only to general-purpose teaching space but to specialist teaching space, research, office and support space.
 - b. Because the management information needed is often dispersed within HEIs, it is difficult both to get an overview and to have the necessary detail for effective space management.
 - c. There are gaps in data, particularly about room capacities, function, identification by user, workplaces and functional suitability. The lack of functional suitability data makes it hard for individual institutions and the sector as a whole to assess the impact of space management practices on the quality aspect of space use.
 - d. Data collected, from utilisation surveys for example, are not always integrated into space management policy or decisions. Utilisation surveys often concentrate on general purpose teaching space, but this makes up only 15 per cent of the total net internal non-residential area of the HE estate.
 - e. The absence of sector-wide and up-to-date space standards or norms was repeatedly highlighted as a problem by some survey respondents. Some HEIs have developed their own standards or norms, while 45 per cent of respondents continue to use norms from the now-defunct University Grants Committee and Polytechnics and Colleges

Funding Councils or space weightings, in some cases modified by the particular institution. None of these norms has been updated since 1990, and the space standards underpinning them are even older. Weightings only provide relativities in terms of space needs, and do not provide recommendations on areas required for specific activities.

- f. Communication of space management guidelines and policies is sporadic, and users are not often involved in space management policy. Also, cultural issues revolving around ownership of space, resistance to change and lack of trust remain barriers to implementing change.

11. The study also investigated the effectiveness of some existing space management tools and identified key components of good practice:

- a. Statistical analysis found that there is a clear correlation between HEIs that centrally timetable all their teaching space (both general purpose and specialist) and space performance. On average, and allowing for a range of external drivers affecting institutional size, HEIs with 100 per cent of teaching space centrally timetabled have 17 per cent less space than those which do not. The findings support the National Audit Office's recommendation that there is scope for institutions to achieve significant improvements in the efficiency of space use by increasing central control of teaching accommodation.
- b. Institutions participating in case studies during the survey highlighted key factors for a successful timetabling system that makes efficient use of space. These include:
 - top level support
 - expertise and effective resourcing of the timetabling unit
 - a clear policy for staff
 - access to core student record data
 - detailed knowledge of rooms, sizes, capacity and facilities.

- c. Statistical analysis also found a correlation between space charging and the size of the HE estate. On average, HEIs that charge for space have 12 per cent less net internal non-residential area than those that do not charge. The findings support the National Audit Office's conclusions on the role of space charging in promoting efficiency in space use.
- d. The survey found that the median flat rate space charge is £126 per m². Most respondents include operating and maintenance costs. Fewer include depreciation or the cost of capital. Respondents to the survey highlighted cost awareness as a key incentive to getting buy-in from users for space management.

The cost of space

12. The research on the cost of space focused on how to determine the annualised cost of keeping the HE non-residential estate fit for purpose and in good condition on a steady-state basis. It looked at what needs to be spent, rather than at actual expenditure incurred and shown in the accounts. This is an important distinction from the Transparent Approach to Costing (TRAC) method.

13. Two different measures of the financial provision for HEIs' non-residential estate are used in the analysis, namely the sustainable estate provision and the total estate provision for the estate.

14. The **sustainable estate provision** represents the level of expenditure per square metre required to maintain indefinitely the non-residential estate in a good and fit-for-purpose condition. It includes the following cost components:

- a. Operating costs, such as energy, water and cleaning.
- b. Maintenance costs necessary to keep buildings in good condition.
- c. Depreciation costs – including the cost of periodic refits and replacing buildings at the end of their lives.

15. The **total estate provision** for the estate comprises the sustainable estate provision plus the opportunity cost of the capital tied up in buildings and the land beneath them. As such, it recognises the opportunity costs of occupying buildings. The total estate provision measure takes account of all explicit and implicit costs of using space, and is an approximation of the rent that would be charged by a landlord. It provides useful information for determining the appropriate level of a fully cost-reflective space charge.

16. Both of these measures were evaluated for HEIs across the UK using Estate Management Statistics (EMS) data for 2002-03 as contained in the EMS 'Annual report 2004' (HEFCE 2004/45). While HEIs' operating costs were taken directly from records of their expenditure, several assumptions were necessary to generate estimates of the other costs. The SMP's 'The cost of space' report explains the basis of these assumptions.

17. The conclusions were that the average sustainable estate provision across the HE sector is £147.40 per m² of net non-residential area.

This is the total of the following components:

| | |
|--------------------|-----------------------|
| Operating cost: | £43.80/m ² |
| Maintenance cost: | £53.40/m ² |
| Depreciation cost: | £50.20/m ² |

18. The average **total estate provision** is £192.50 per m². This figure is obtained by adding an opportunity cost of capital of £45.10 per m² to the sustainable estate provision.

19. Both the sustainable estate provision and the total estate provision were found to be higher than the median reported flat rate space charges actually operated by HEIs, as reported in the space management practice survey from the 'Review of Practice' report available at www.smg.ac.uk/Phase_1_reports.html.

20. The interactive SMG model uses this approach to calculating costs. The model is updated annually following the publication of new EMS and Higher Education Statistics

Agency data. Its content and potential applications are discussed further in paragraphs 25 to 31.

21. Annex 1 clarifies the differences between the cost component of the SMG's model of the affordable estate and the TRAC methodology.

Drivers of the size of the HE estate

22. HEIs' non-residential estates range in size from 3,000 m² to over 477,000 m² (net internal area). Phase One of the Space Management Project sought to identify the key explanatory variables of the size of the HE estate. The research looked at a wide range of factors, such as teaching and research income; type of institution; numbers of staff and students; location, age and number of buildings.

23. Across the sector, income was found to be by far the most significant driver of estate size, with a strong positive correlation. Another significant driver is location, in particular whether an institution is in an urban area: institutions in urban locations typically have a smaller non-residential estate than non-urban HEIs. As we discussed in paragraph 11, space charging and the proportion of teaching space which is centrally timetabled also have negative effects on estate size.

24. The study developed a benchmarking tool which combines a range of drivers to give a predicted estate size for each HEI. The benchmarking tool is one of the main features of the SMG model which is available at http://www.smg.ac.uk/the_model.html. This allows users to make comparisons between the size of their HEI's non-residential estate and the size the benchmarking tool predicts, using different assumptions. This benchmarking tool reflects the relationship between the size of the estate and a number of drivers that prevail across the sector. The tool is based on the average relationship across the sector, and therefore does not indicate the best or most efficient use of space. The output of the benchmarking tool should be viewed as an input into a wider assessment by an institution of the

appropriate size of its estate, and not as a normative space guide: there may be very valid reasons why the estate of a particular HEI may deviate from the size that the benchmarking tool would predict.

The SMG model

25. The output from the studies into the cost of space and drivers of the size of the estate are combined into a spreadsheet model that is available for use by institutions.

26. To facilitate use of the model, EMS data and a number of other parameters are provided as default settings. Users are free to override these defaults with other data.

27. The cost part of the model allows users to calculate both the provision needed to maintain a sustainable estate, and the total provision taking into account the opportunity cost of the funds tied up in the estate.

28. The benchmarking tool within the model allows users to compare the size of their non-residential estate with the size that the benchmarking tool predicts, using different assumptions. This benchmarking tool reflects the relationship between the size of the estate and a number of drivers that prevail across the sector.

29. The output from both the cost model and benchmarking tool can be combined to help HEIs to assess what size of estate is affordable or optimal.

30. The sustainable estate provision can be used to determine the 'affordable' estate size. An HEI's sustainable estate is the amount of its existing space the HEI can afford to maintain and keep fit for purpose in the long run. The model of the sustainable estate provision, together with HEIs' information on total estate budgets, would help HEIs to determine their sustainable estates.

31. The total estate provision can be used to inform the 'optimal' estate size. The sustainable estate will not always be the optimal estate size because it does not necessarily involve any assessment of the trade-offs between spending on estate and spending on other resources. Even if

an HEI could sustain its current estate size, it might choose to release some space to spend more on other inputs, such as staff salaries. The optimal estate size is that at which an HEI would not wish to release any space (or acquire new space) in order to spend more (or less) on other inputs.

Impact on space of future changes in HE

32. Working out how much and what type of space will be needed in the future is a major challenge for HEIs. The SMP report 'Impact on space of future changes in higher education', produced by Professor Ronald Barnett and Dr Paul Temple at the Institute of Education, University of London is available at www.smg.ac.uk/resources.html. This report does not set out to predict the future size of the HE estate. Rather, it is intended to stimulate debate and to approach space use from the perspective of how academic activity might change in the medium term. It aims to be useful to academics and managers seeking a fit between changing operations in their institutions and the estates infrastructure. The main findings are based on a research method focused on interviews with academics and managers in a cross-section of English HEIs.

33. Over the past 10 years, there has been discussion about whether the traditional campus will become a minor part of an increasingly virtual estate and whether the physical location of institutions will be less relevant. The report considers that while this may happen to some degree, a remarkable feature of many institutions is their durability as a coherent organisational and physical form. Many HEIs derive strength from their highly integrated nature: from trans-disciplinary contacts, from connections between teaching and research, and between academic and social activity. A coherent physical presence allows these features to operate effectively.

34. The research highlighted the promotion of connections between HEIs and their regional business communities by a wide range of agencies. These relationships are associated with new forms of knowledge production, which have an impact on the type of space needed on campus and a blurring of the ways in which facilities are used across teaching, research and third stream activities with business and the community.

35. The report also concludes that given the academic drivers behind space demand, institutions are unlikely to experience a significant reduction in overall space needs, as reductions in one area are offset by new demands elsewhere. For example:

- a. Learning space will be one 'new' need, with more provision for student-led and blended learning environments.
- b. Distance e-learning will have a relatively limited impact on institutions' overall space needs.
- c. Research activities will require a small net increase in space, concentrated primarily in a small number of institutions.
- d. Work-based and itinerant learning will lead to some reductions.
- e. New central infrastructure and administrative functions are likely to generate pressures for more space.
- f. Space will be subject increasingly to remodelling to meet new needs or new standards and to provide for multiple uses.

36. The UK higher education system is becoming increasingly diverse, and this diversity is leading to diverging approaches in the use of space, particularly between teaching-led and research-led institutions. The report concludes that this divergence is likely to increase. However, across the sector, the quality of an institution's facilities will increasingly be seen as an important marketing asset and will accordingly attract more resources and management attention.

Space management methods in other sectors

37. The SMP also commissioned research looking at space management methods in other sectors, entitled 'Managing space: review of English further education and HE overseas'. This report is available at

www.smg.ac.uk/resources.html. The remit was to investigate the method used by the Learning and Skills Council (LSC) to assess space needs in the further education sector in England and to research examples of international HE space planning and management.

38. The assessment of the LSC approach took account of the differences in space needs between the HE and further education sectors, for example the space requirements associated with research activity in HE. The purpose of the assessment was to see if the principles behind the approach could make an effective contribution to space management in HE and, if so, whether any adaptations would be useful.

39. The LSC approach is driven by the number of guided learning hours. Guided learning hours are broadly the equivalent of teaching contact hours in HE. The LSC uses guided learning hours as the main driver because sector-wide research found that the size of colleges' estates correlated closely with the number of guided learning hours delivered. Its approach has two main components:

- a. It provides advice on how individual colleges can build up a profile of their space needs based on the number of guided learning hours, target rates of space utilisation and areas per workplace (for example in laboratories or lecture rooms). The profile will vary according to each college's teaching and learning methods and the scope of its curriculum.
- b. It publishes guidance which colleges can use to generate a predicted size for their estates. The guidance is based on the performance of the top quartile of colleges in terms of their space efficiency in delivering guided learning hours.

40. The international review focused on examples of space management guidance and methods in Australasia, North America, Hong Kong and Germany. It found that a range of methods is employed, including the publication of high level ratios of different types of space, space standards and target utilisation rates. A number of the methods had similarities with the LSC approach.

41. Many of the space management concepts and methods used by the LSC and researched in the international review are familiar to UK HEIs, although they may be expressed in different terms. However, the majority of HEIs do not routinely build up space needs profiles based on the volume of activity to be delivered for comparison with space available. The study concluded that such a method would be a useful addition to current UK HE space management guidance by providing a method for assessing the capacity of the existing estate and whether there are surpluses or shortfalls of particular types of space.

42. However, the availability of data to support such an approach is an important consideration, particularly in terms of the number of contact hours. Two case studies carried out in the research, but not named in the report, suggest that availability of sufficiently detailed information is likely to vary widely between institutions.

43. The SMG tool for benchmarking the size of HEIs' estates is based on a similar methodology to that used by the LSC to derive guidance areas. Research was undertaken during the study to test the feasibility of replicating the LSC approach more closely, but it concluded that the multi-variable SMG model is, at the present time, a more powerful explanatory tool.

44. However, the SMG decided to provide additional information for HEIs in the next update of the SMG model (September 2006) in the form of space predictions based not only on the average performance, but also on the performance of the top quartile for a given profile of strategic drivers. This gives an additional benchmark related to the performance of the most space efficient institutions in the sector.

Promoting space efficiency in building design

45. Space efficiency is often low on the agenda in building projects. The SMP research, culminating in the publication 'Promoting space efficiency in building design', available at www.smg.ac.uk/resources.html, aimed to identify which aspects of building design contribute most towards optimum space efficiency and to provide good practice guidelines for HEIs planning to undertake either new building or refurbishment and reconfiguration projects.

46. The keys to space efficiency through building design are to:

- maximise the built space on the footprint of new buildings and by modest additions and extensions in existing buildings
- match new uses to the existing built form in refurbishment projects
- provide a high ratio of usable area to gross built area
- capture balance areas for active use
- provide versatile space, furniture and fittings that can be used for different activities
- specify design features that allow different activities at different times
- optimise space standards for effective work
- create versatile office and research space, with appropriate open plan areas, supplemented by meeting and quiet spaces
- optimise furniture spaces for effective work
- provide for wireless data access to enable maximum effective use of common space.

47. The report also identified 10 good practice points for introducing and encouraging space efficiency:

- appoint a champion for space management and cost in use
- systematically collect and update space and

cost information

- agree targets and monitor their attainment
- collect standardised utilisation data, including office space utilisation
- collect and apply detailed cost information
- incorporate space efficiency concepts into the estate strategy
- incorporate requirements for space efficiency into project briefs, feasibility studies, option appraisals and design reviews
- develop and maintain a clear decision and communication structure for building projects, including user groups
- promote the benefits of versatile spaces and the right furniture
- include space efficiency in post-occupancy evaluations.

48. These principles and good practice points are expanded on in the report, which also provides 15 case studies reflecting a mix of recent projects, including refurbishment, expansion and new or replacement buildings, across a wide range of HEIs.

Space utilisation, performance and guidelines

49. Space utilisation is a strategically important space management measure. HEIs can use the SMG model to help assess what size of estate is affordable. Assessments of affordability need to be linked to the amount and type of space that is required. Utilisation studies provide information on how space is being used, and raise questions about the most effective use of resources. If space is not being used, is it needed and does it need to be funded? Could the resources consumed by under-used space be better directed elsewhere? Effective utilisation of space also creates a good match between space needs and space provision, and contributes to improving the staff and student experience. The SMP commissioned Kilner Planning to review practice and

performance in space utilisation and develop additional guidelines for taking a strategic approach to utilisation. The results are published in the report 'Space utilisation: practice, performance and guidelines' available at www.smg.ac.uk/resources.html

50. There has been relatively little change in sector-wide reported rates of utilisation in recent years. Many factors operate to depress utilisation. These include marked differences in predicted and surveyed rates of utilisation, which can lead simultaneously to strong perceptions of shortages of space while, at the same time, rooms are empty. Another factor is the nature of the estate in terms of its fitness for purpose and versatility.

51. There is also a balance between minimising the costs of space in use on the one hand, while underpinning the pedagogical and research needs of staff as well as the learning and support needs of students on the other. When decisions are made about what is the optimum balance for any individual HEI, it is advisable to be aware of the opportunity costs of low utilisation.

52. A tool called the inefficiency multiplier can be used to provide an insight into the scale of the opportunity costs. It gives an amount of space being provided at any given level of utilisation for every one square metre in use. At the EMS reported utilisation rate of 27 per cent in 2003-04, 3.7 m² was being provided for every one square metre being used. Aggressive targeting of very low levels of utilisation can have a major impact on cost. Moreover, because of the non-linear relationship between utilisation rates and space provision, where utilisation is very low, even a small increase can have a potentially significant impact on the amount of space provided, its attendant cost, and the ratio of income generation per square metre.

53. The guidelines provided in the SMP report on space utilisation are not intended to supersede existing good practice advice, but to extend it by taking a strategic approach to utilisation. The guidelines discuss ways of collecting the relevant range of data for both predicted and actual levels of utilisation; evaluating performance and the

reasons behind it; the method for calculating the inefficiency multiplier and linking it to the cost of space; reviewing targets; and developing measures to optimise utilisation.

54. They highlight the benefits of:

- extending assessments beyond teaching space to look at the use of different types of HE space
- linking utilisation to the SMG tool for benchmarking the size of estate and the model calculating what is affordable for individual HEIs
- using the inefficiency multiplier to analyse existing levels of utilisation and set targets for the level of utilisation at which HEIs wish to operate
- using the inefficiency multiplier to focus on buildings or types of space with particularly low levels of utilisation and assessing the opportunity costs
- linking targets for different types of space to optimisation of predicted uses
- building the results into the estate strategy with the aim of delivering the appropriate and affordable size of estate
- securing top level support within HEIs for optimising utilisation and for measures designed to effect institutional change.

Review of space norms

55. Space norms used to be published by the UGC and the Polytechnics and Colleges Funding Council (PCFC). They were expressed as an allowance of non-residential space per student. The allowance was made up of different types of space, such as general purpose and specialist facilities and other non-teaching space, offices for example. It varied according to academic discipline. Norms were based on observations and assumptions about how students in different disciplines were taught, such as how many hours and what type of teaching activity was needed, staff:student ratios and areas per workplace.

56. They were widely used by individual

institutions and the Funding Councils for a range of purposes, including assessments of institutions' capacity to accommodate projected numbers of students and to inform the size of new building projects, but they were never intended to be prescriptive or precise calculations of space needs. Although no new or updated space norms have been published by the UK HE Funding Councils for over 15 years, they continue to be used by many institutions, often with modifications. Feedback from the space management survey suggests that while some HEIs do not want updated space norms, others would welcome them.

57. There has been a decline in the amount of space per student across the sector since the last revision of the norms. The SMP-commissioned study, 'Review of space norms' available at www.smg.ac.uk/resources.html, estimated the updated equivalent of UGC and PCFC norms based on the size of the estate and the numbers of staff and students across different disciplines, using data from 2003-04. The study, carried out by Kilner Planning and London Economics, provides a broad brush re-estimation of UGC and PCFC norms for those HEIs which have continued to find them useful. It also assesses the scale of change which has taken place across the sector when measured in terms of performance against the norms: the research compares a reference year (1991-92) with 2003-04. The analysis found that the sector is operating at an average 80 per cent of UGC norms and just under 80 per cent of PCFC norms.

58. The study also investigated the feasibility of updating UGC and PCFC norms. It examined the way in which the norms were originally derived. Both UGC and PCFC norms were a function of series of coefficients, including:

- total hours of on-campus contact or learning hours per week per student
- breakdown of those hours into different types of activity, for instance, lecture theatre hours, seminar hours and laboratory hours
- total hours that space is available per week to be used, for instance, 40 hours

- predicted frequency and occupancy rates for space use, that is, planned utilisation
- space standards per place in teaching, learning, research and support spaces
- definition of discrete subject groups or disciplines
- staff:student ratios by discipline or subject group
- professorial:other academic staff ratios by subject group
- academic:support staff ratios by subject group.

59. Across the sector, the coefficients have changed since the norms were devised. Aside from looking at whether they could be updated, the study also explored whether there was still sufficient consistency between HEIs to enable such a sector-wide approach to be of practical benefit.

60. It concluded that while it would be technically feasible to construct new norms, the changes that have taken place in HE and the diversity across the sector render it difficult to select a range of coefficients for their calculation which would be applicable to the full range of institutions. Given this diversity, the SMG considered it inappropriate to recommend a single set of norms for use across the sector.

61. However, the study also concluded that the concepts underlying the development of norms should be retained, because the principles of basing an assessment of capacity or space needs on what activities are to be delivered and how that might be done are still relevant. Without an assessment of this type, it is difficult to know whether an HEI, or any organisation, has broadly the right amount and type of space.

62. The study developed a method to calculate indicative space needs. It shares much of the general approach which underpins UGC and PCFC norms. However, the method assists HEIs in estimating space needs based on their own particular profile of academic activity and methods of delivery. This approach is likely to be of most interest to HEIs which would like to

better understand the capacity of their estates; to start from first principles in getting an insight into what type and how much space may be needed; and to model the effect of changes in student and staff numbers.

63. The method is intended to be flexible and transparent. It takes the form of a framework which HEIs can use to generate indicative space predictions for types of space and the student full-time equivalent for all or part of an HEI, based on staff and student numbers and a series of default coefficients to assist calculations. HEIs can override the default settings where they consider that alternatives would better reflect their own circumstances and requirements. The more generously the coefficients are set, the greater the estimated indicative space calculation, and vice versa.

64. HEIs can then compare the output with existing space provision. There is also a link on the SMG website to the SMG tool for benchmarking the size of the HE estate and to the cost model for calculating the cost of having an estate kept in good condition and fit for purpose. The link enables an HEI to compare the output with the model's space predictions. For example, the estimate of teaching space derived from using the framework can be compared with the core teaching space prediction in the model.

Three case studies

65. The SMG commissioned independent research profiling three case studies to explore different aspects of space management in individual HEIs. The report 'Space management case studies' available at www.smg.ac.uk/resources.html, focuses on issues highlighted as being of particular interest to many institutions during the survey of space management practice and in feedback from SMG seminars. They are:

- Queen Margaret University College – The Relocate Project
- University of Newcastle Upon Tyne – Versatile research buildings
- Sheffield Hallam University – Promoting

effective utilisation.

66. Queen Margaret University College is building a new campus at Craighall, East Lothian to replace all its existing sites. It is the first new university campus to be built in Scotland for over 30 years.

67. The current estate is in poor condition. It is inflexible and not fit for purpose. The aim for the new campus is to have attractive, efficient and versatile space which is both environmentally and financially sustainable. This case study focuses on the decision-making leading to relocation and rationalisation. It looks at how the college decided how much space will be needed and how it is approaching the introduction of major change and new ways of working.

68. This case study is likely to be of particular interest to HEIs considering:

- rationalising all or part of their estates and replacing outdated space with new facilities
- planning future space needs and how to achieve efficiencies in space use
- ways of building versatility into space to allow for future change.

69. The case study at the University of Newcastle upon Tyne is based on the university's recent experience of planning and managing two new research buildings; the Paul O'Gorman Building and the Devonshire Building. Both buildings provide office and laboratory space.

70. The study is likely to be of interest to HEIs thinking about:

- creating more multi-disciplinary or generic research space which can be used by several different groups at the same time or by successive groups
- understanding how people working in the buildings perceive the impact of their new environment on job satisfaction and research activity
- considering how to evaluate the effect of new working environments on research output.

71. It begins with an outline of the university's estate strategy and space management policy which set the context for both buildings. It describes:

- the objectives and critical success factors for each building
- the characteristics of the spaces that people moved from
- people's perceptions of the effect of the new environments on research
- the perceptions of people working in the buildings and their views on how the new space matches or differs from their expectations.

72. The third case study at Sheffield Hallam University describes how the university adopted a strategy of rationalisation, reinvestment and renewal across the estate. It focuses on two space management methods: space charging, and how space utilisation data are collected and used to plan and manage space.

73. The case study is likely to be relevant to HEIs interested in:

- using space charging as a space management tool
- encouraging effective utilisation of teaching space
- ways of collecting utilisation data
- using utilisation data as a tool for assessing space needs.

Full published reports

74. The full reports on each of the SMP research areas and the SMG model are available on the SMG website. For ease of reference, they are listed below.

Published reports from the Space Management Project

| Phase One | | |
|--------------------------------------|--------------------------------------|--|
| Title | Authors | Available at: |
| Review of practice report | Kilner Planning and London Economics | www.smg.ac.uk/documents/reviewofpractice.pdf |
| The cost of space report | Kilner Planning and London Economics | www.smg.ac.uk/documents/costofspace.pdf |
| Drivers of the size of the HE estate | Kilner Planning and London Economics | www.smg.ac.uk/documents/drivers.pdf |

| Phase Two | | |
|---|---|--|
| Title | Authors | Available at: |
| Impact on space of future changes in higher education | Professor Ronald Barnett and Dr Paul Temple, Institute of Education, University of London | www.smg.ac.uk/documents/FutureChangesInHE.pdf |
| Promoting space efficiency in building design | AMA Alexi Marmot Associates | www.smg.ac.uk/documents/PromotingSpaceEfficiency.pdf |
| Managing space: review of English further education and HE overseas | Kilner Planning and London Economics | www.smg.ac.uk/documents/FEandoverseas.pdf |
| Space utilisation: practice, performance and guidelines | Kilner Planning | www.smg.ac.uk/documents/utilisation.pdf |
| Review of space norms | Kilner Planning and London Economics | www.smg.ac.uk/documents/spacenorms.pdf |
| Space management case studies | Kilner Planning | www.smg.ac.uk/documents/casestudies.pdf |
| Space management project: summary | Kilner Planning | www.smg.ac.uk/documents/summary.pdf |

Annex 1: TRAC and the SMG model of the affordable estate

This annex clarifies the differences between the SMG's model of the affordable estate and TRAC methodology. The two methodologies have different applications and therefore we have not attempted to combine them.

In brief, the SMG model is an estates planning and forecasting tool to support institutional strategic development. By contrast, TRAC is a retrospective device, at institutional level, to measure the full economic cost (fEC) of teaching and research. TRAC addresses all the costs of HEI activity, while the SMG model deals solely with estates costs.

The SMG model uses existing EMS and Higher Education Statistics Agency data sets. It does not cause additional burden to institutions because there is no requirement by institutions to provide a formal submission to HEFCE.

In addition:

- a. Data source – while the SMG model of the affordable estate uses EMS as the core data, TRAC takes data from the audited financial statements as its starting point. TRAC also uses insurance replacement value (IRV) as the start point to calculate the buildings infrastructure adjustment.
- b. Routine maintenance – the SMG model uses an appropriate percentage of IRV to indicate the level of expenditure which should be allowed for under good practice, rather than actual spend. TRAC uses actual expenditure.
- c. Depreciation – The SMG model uses an appropriate level of IRV as a theoretical aspect. In TRAC, depreciation is based on IRV too, but includes an infrastructure adjustment.
- d. Cost of capital element – the SMG model recognises the cost of capital as the flow of earnings an HEI forgoes by owning a building rather than selling it and investing

the proceeds elsewhere. SMG recognises it as a necessary future allowance and calculates it as an adjusted view of rateable value for non-rented property.

Consequence of differences

The SMG model uses a different terminology to TRAC to avoid confusion with the TRAC definition of fEC. The SMG model uses the terminology of 'sustainable estate provision' and 'total estate provision', thus differentiating between an actual cost (the fEC in TRAC) and the 'provision' which is calculated under the SMG model.

List of abbreviations

| | |
|--------------|--|
| EMS | Estate Management Statistics |
| fEC | Full economic costs |
| HE | Higher education |
| HEFCE | Higher Education Funding Council for England |
| HEI | Higher education institution |
| IRV | Insurance replacement value |
| LSC | Learning and Skills Council |
| PCFC | Polytechnics and Colleges Funding Council |
| SMG | Space Management Group |
| SMP | Space Management Project |
| TRAC | Transparent Approach to Costing |
| UGC | University Grants Committee |

