

IPD Occupiers
Efficiency Standards for Office Space



A report to Office of Government Commerce

November 2007



Authorship

This report has been prepared by IPD Occupiers with support from Ramidus Consulting on behalf of the Office of Government Commerce (OGC).

Contents

1	EXECUTIVE SUMMARY	1
2	WHY A STANDARD IS NEEDED	4
2.1	Introduction and Policy Background	4
2.2	Purpose of Report	4
2.3	Use of the Office Floorspace Standard	5
3	THE PROPOSED OFFICE FLOORSPACE STANDARD	8
3.1	The Office Floorspace Standard	8
3.2	Size of the prize	8
3.3	Use by departments and ALBs	9
3.4	Recommended monitoring system	9
3.5	Basic arithmetic	10
3.6	Types of property	11
3.7	Vacant space	11
3.8	Data requirements	11
4	DEFINING THE STANDARD.....	13
4.1	Introduction	13
4.2	Space per person and per workstation	13
4.3	People per workstation	14
4.4	Space Use	15
4.5	Building Characteristics	15
4.6	Environment.....	16
4.7	Conclusions	16
5	HOW TO IMPROVE OCCUPATIONAL EFFICIENCY	18
5.1	A quick start	18
5.2	Best practice beacons	19
5.3	Cultural barriers	20
5.4	Changing the “building shell”	21
5.5	Changing the building setting.....	22
5.6	The influence of building activity.....	25
5.7	Building and management strategy.....	26
5.8	Employee satisfaction	27
5.9	Taking the opportunity	27
5.10	Conclusions	28
6	APPENDIX 1: GLOSSARY	30

7	APPENDIX 2: PUBLIC POLICY BACKGROUND.....	33
8	APPENDIX 3: OCCUPANCY DENSITY PERSON REPORTS AND BIBLIOGRAPHY.....	37
9	APPENDIX 4: DETAILED ANALYSIS AND GRAPHS	39
9.1	Cellular Space	39
9.2	Influence of floorplate	40
9.3	Office property size	41
9.4	Influence of building age.....	41
9.5	Influence of office type.....	42
9.6	Meeting space.....	43
9.7	Employee satisfaction evidence	44
9.8	Environmental evidence.....	46
10	APPENDIX 5: SPACE BUDGET CALCULATIONS	48
10.1	Space requirements	48
10.2	The impact of workplace type.....	50
10.3	The impact of flexible working	52
10.4	The impact of building size.....	54
10.5	The impact of building configuration.....	55
11	APPENDIX 6: CASE STUDY DETAILS.....	56
11.1	Project case studies	56
11.2	National Audit Office Study	62

1 Executive summary

The issue

In recent years many public and private sector occupiers have focussed attention on occupational space efficiency as they have become more rigorous in their management of property costs, whilst also focussing on improving the quality of the work environment.

The purpose of this report is to recommend a floorspace efficiency standard for office accommodation, comment upon how such a standard could be introduced and suggest how departments and ALBs¹ might manage improvements in their space budgets. The arguments in the report are founded on the principle that the Government estate should be run with the minimum amount of floorspace, consistent with the business need for civil servants to operate effectively and sustainably within their buildings.

The report is intended to support the role of the OGC in setting procurement standards for central Government. The Office Floorspace Standard is part of OGC's agenda for Government Estate Transformation set out in High Performing Property², based on the achievement of appropriate and productive buildings at an acceptable price to the taxpayer.

Some buildings within the government estate are currently operating as efficiently, or in some cases more efficiently, than the private sector average, as measured by IPD's database. However, current indicators show that public sector offices have not seen the scale of floorspace efficiencies observed in the private sector. On average government offices are occupied about 25% less efficiently with a sixth of them occupied at more than 24m² per person. This position needs to change.

There are, however, a number of factors that affect the ability of an organisation to maximise its space efficiency. These include physical constraints such as building age, the size of each floor, the configuration of that space and listed building status. Operational constraints for consideration include desk sharing potential, the prevalence of "cellular space"³, the main function of the office as well as the organisation's requirements for public or meeting space or other specialist support functions.

Further constraints are cultural, where an organisation's management philosophy and willingness to embrace flexible working styles can dictate a particular form of layout. The final constraint is financial because, of course, making changes to improve efficiencies often involves expenditure.

The Standard

The research undertaken for this study (involving analysis of the IPD Database, case studies of the central Government estate and learning from other recent research of public and private sector organisations), together with the practical experience of the study team, lead to the conclusion that the OGC Standard for the use of occupied office space should be set at 12m² (of net internal area) per person. The operation of the Floorspace Standard will need to be monitored and reviewed annually.

Departments and ALBs should aim to provide a *maximum* of 12m² per person in all their buildings and across their estates. The Standard should be endorsed as one of the key drivers of performance in the central Government estate.

1 Executive agencies and non-departmental public bodies are referred to as Arms Length Bodies in this Report.

2 High Performing Property includes a Route Map which provides advice as to how to achieve an efficient and effective estate <http://www.ogc.gov.uk/documents/CP0137HighPerformanceProperty.pdf>.

3 Cellular space refers to the creation of office space within rooms for use normally for four people or fewer.

The Standard should be achievable in the majority of central Government offices but may only be an aspiration in others⁴ due to the physical, operational, cultural and financial constraints, noted above. The 12m² standard should not therefore be treated as a “best practice target”.

Conversely, where there are opportunities to occupy new or substantially-refurbished offices, departments and ALBs should consider space per person below 12m². At present many schemes with design densities of 10m²/person or less meet business need and are popular with staff. The Floorspace Standard recommendation should not be taken in any way to oppose initiatives of this kind.

This report recognises the growing importance of flexible working and the opportunities to make efficiency savings through heightened utilisation of desks rather than through lower space allocation per workstation. Thus, if either business needs or physical characteristics dictate that a building is not capable of being used at 12m²/workstation, business and property managers have the choice to focus on changing the number of persons per workstation. Even at 15m²/workstation, the Floorspace Standard can be achieved by adopting a ratio of 1.25 people per workstation.

One of the most fundamental lessons from the review of best practice experience in this area is that good quality space reduction programmes have been typically used creatively in a change management context to improve the way people work together.

One of the criticisms of a single “standard” is that it ignores specific circumstances: an alternative would be to use a range. However, the study team has concluded that the power of a single figure outweighs the disadvantages, provided that its implementation is sensitive to mitigating circumstances. Some buildings will present challenges which make achieving the Standard impossible but, nonetheless, using a Standard can help managers justify and set their current space performance in context. The framework presented in this report facilitates such an approach.

The size of the prize

This report shows that average space per person in the public sector is 25% higher than estates in the private sector. With a total annual spend on the central civil estate of at least £6 billion, savings of £1.5 billion are implied. However, some of these cost reductions may be neither possible nor desirable, while others will be expensive to attain. For this reason, the projected annual savings of applying this Standard across the central Government estate are estimated to be about £1.25 billion. It should also be borne in mind that the annual advantage to the Exchequer of lowering space per person is in the order of £400m/year.

Space efficiency is not just about lower cost and the potential savings from achieving a space Standard are both financial and environmental. Operating the Government office estate at the proposed Floorspace Standard will help to support carbon reduction since space is a key driver of overall carbon footprint.

In addition, the Floorspace Standard should not detract from the on-going emphasis on the balance between efficiency *and* effectiveness within the office building. Indeed, the real prize will be the combination of improved efficiency as well as improved workplaces to support a more productive workforce.

⁴ There are many examples of good efficiency performance in the civil estate. Speak to OGC for details.

Implementation of the Standard

Property Asset Management (PAM) Boards operating within the departments have a key role to play in the implementation of the office Floorspace Standard. PAM Boards should work with their ALBs to ensure that office space is used consistently well throughout their entire estates.

The report suggests a number of different approaches for reducing space per person in Section 5. To implement the most substantial space reduction programmes, estate managers may need to secure capital investment.

Both departments and ALBs should assess the effect of applying this Standard to their own estates and show how they will move towards and better the Standard and over what period. They should also estimate the annual savings that will be achieved. This will then be incorporated in the High Performing Property governance and monitoring process.

As part of the monitoring process, for all buildings where the office Floorspace Standard is not achieved, departments should identify the mitigating reasons, together with any explanatory comments and observations. A suggested pro forma for this feedback is included in the report. The mitigating reasons will then link in with an individual target (and date) applied to the building by the responsible department together with any explanatory text.

Finally ...

Everyone is agreed on the need to use physical assets more efficiently, an aim given added impetus by the sustainability agenda. This report seeks to help departments and their ALBs work towards greater space efficiency in a thoughtful, practical and positive way. It provides a “goal” within a framework that responds to “local” and “specific” circumstances; and it does this in the knowledge that efficiency measures need to be balanced with effectiveness measures.

2 Why a Standard is needed

2.1 Introduction and Policy Background

Property has traditionally been quite low on the agendas of both private and public sector organisations. Part of the reason for this is that property costs, such as rents and rates, have been relatively fixed, and have therefore been accepted as inevitable. Moreover, for most businesses the only options have been either to own property or to sign long, inflexible leases, committing them to rising costs through rent reviews. The result of property's low profile has meant that the true cost and impact of property on the bottom line was poorly understood.

This approach to property, which led to a creeping acceptance of waste and inefficiency, has been challenged in more recent times. In the private sector, leading economist Roger Bootle drew attention to the fact that UK business was wasting up to £18 billion a year on the inefficient use of space, with scarce financial resources tied up in costs that reduce competitiveness and profitability.⁵ Similarly in the public sector, studies have shown how efficiencies can be made. One of the earlier reports was the National Audit Office (NAO) 1999 study on the management of office space in the Ministry of Defence, which demonstrated how space could be used much more efficiently.⁶

The drive for efficiency in both the public and private sectors has been given increasing impetus by enabling technologies which have allowed the rapid spread of flexible working practices and radical, new ways of using office space.

In 2007 the OGC mandated departments to adopt the OGC's property benchmarking service.

A fuller description of the policy background is to be found in Section 7.

2.2 Purpose of Report

The purpose of this report is to recommend an Office Floorspace Standard for the use of Government offices and to comment on how such a Standard might be introduced. The arguments in the report are founded on the principle that the Government estate should be run with the minimum amount of floorspace, consistent with the business need for civil servants to operate effectively and sustainably within the buildings. This aligns with the OGC's High Performing Property Programme, the agenda for Transforming Government Procurement and other efficiency-related documents described Section 7, including those by Sir Peter Gershon and Sir Michael Lyons.

The report acknowledges that a single Standard presents a significant challenge for a number of office buildings within the estates of departments and their ALBs. This is because the efficiency with which space is used in a particular circumstance is subject to a number of often conflicting factors, some of which are listed below.

- The precise need for space will be determined by work processes
- The need for growth and spare capacity to accommodate organisational change
- The difficulties posed by building configuration and servicing
- The culture of the department and its willingness to embrace flexible working styles
- The need to plan for visitors and different patterns of use in the workplace
- Different work practices

⁵ Bootle R (2002) Property in Business: A Waste of Space? RICS, London

⁶ National Audit Office (1999) Management of Office Space The Stationery Office, London

- Provision of technology to support “smarter” working
- The impact of efficiency targets on workplace productivity and environmental sustainability
- The availability of finance for workplace improvements

The issue is therefore complex: no particular approach will be perfect. We recommend a single Office Floorspace Standard together with an acknowledgement that business needs or building characteristics may mean that there is a valid business justification for an office not being able to achieve the Standard. Mechanisms will need to be identified to ensure that departments and agencies can work towards the Standard and keep the OGC informed as to the reasons why the overall Standard cannot be attained, if that is the case.

Following a consultation process and subsequent publication, the operation of the Office Floorspace Standard will need to be monitored and reviewed annually.

This report begins by setting out the proposed Office Floorspace Standard and the rationale behind it, before going on to provide detailed supporting evidence and justification. The main sections are outlined below.

- Recommending the Office Floorspace Standard (Section 2).
- Analysing the current use of space in the public and private sectors (Sections 3 and 9)
- Setting out the need for different types of space from first principles (Section 10).
- Identifying ways in which space efficiencies can be introduced (Section 5)
- Looking for evidence of the effect of space per person on workplace productivity and environmental sustainability (Section 4.6 and Section 5.8)
- Identifying case studies from the private and public sectors to show that good buildings can be operated at the proposed Office Floorspace Standard (throughout Sections 5 and 11).

The focus in this report is on good practice for offices. We consider briefly in Section 3.6 how space standards for types of building with office components should be dealt with as a matter of principle.

2.3 Use of the Office Floorspace Standard

This report recommends a specific Floorspace Standard of 12m² per person across the central Government office estate. The Standard, when applied, will secure significant efficiency savings in the estate under the OGC’s High Performing Property initiative. Implementing the Standard will require departments to review both their current and future known space requirements as well as understand the capabilities of their office premises to meet the recommended Standard. Some buildings will present challenges which make achieving the Standard difficult or even impossible but, nonetheless, using a Standard can help managers justify and set their current space performance in context. As noted elsewhere in this report, the implementation of the Standard implies greater space efficiency through less space per person. But what does less space per person actually mean in the context of the workplace?

There has been much interest and research in recent years in occupational space efficiency as public and private sector occupiers have become more rigorous in their management of property costs. The key lesson is that occupational efficiency can be improved significantly, while at the same time, ensuring the quality of the work environment.

There is a fundamental change taking place to the way in which office space is used and managed, a change driven by technology-enabled organisational transformations. Collaborative working and a wider palette of work settings are just two of the symptoms. More and more occupiers are introducing flexible working styles to improve efficiency and effectiveness, allowing

staff to become highly mobile and to make work-life choices. For many, the idea of sitting at the same desk each day, all day, undertaking routine tasks has become outdated. Instead, the modern workplace is a more fluid, more responsive environment.

These trends provide opportunities to introduce more efficient workplace standards, without compromising individuals' comfort and productivity. Crucially, while space at the workstation might reduce, or become shared with others, opportunities to use other work settings increases. This greater flexibility needs to be combined with better space management and facilities support to improve the work experience.

At the same time it must be recognised that the concept of an average occupancy density needs to be treated with some caution. In any particular situation, the achievable space per person will vary as the result of a number of factors, including: configuration and specification of building; age and condition of building; time in occupation, the nature of the work being undertaken by the occupier, the chosen layout and the agenda of the occupiers' management team.

For many years, the concept of space per person was similar to space per workstation but our traditional understanding of occupation is changing. This was correct when everyone "owned" a desk, but the key difference today is that not only are workstations space-planned more intensively, but they are also *utilised* more intensively. More people share desks, and so greater numbers of people are supported by a given building, at a given time. Very often this greater floorspace efficiency has paid for a much better working environment.

There are two principal ways of achieving more efficient occupation. First, space allocations per workstation are reduced. For employees in open plan, there is simply less space around their workstations; while for others there is less enclosed space and more open plan, allowing higher densities; and support space is generally planned with greater efficiency. Increased efficiency, through higher densities, can have an immediate impact, and is a simple measure with which to communicate more prudent use of resources to the Finance Director. It does, however, have limitations due to building regulations relating to fire escapes, WC provision, and so on. There is also a legal minimum of 11m³ (cubic metres) for each worker.

The second step is to manage the work environment more dynamically. It is well known that traditional office layouts are, typically, half empty for most of the time due to people being out of the office, and many organisations have introduced hot desking, desk sharing and alternative work styles to improve utilisation. Such initiatives allow a building to support more people in the same amount of space. Their impact on overall densities can be dramatic, often reducing an organisation's appetite for space by around 20%-30%. This phenomenon is now widely referred to as "spaceless growth".

It is clear that growing numbers of organisations are dramatically changing the way in which they occupy their office buildings. Part of the drive is economic as organisations respond to cost pressure. But part of the drive is organisational as they transform their work processes to respond to new operational pressures. Static production line-style offices are giving way to more dynamic work environments in which team work, collaboration and meeting space occupy far greater proportions of space. The changes present new opportunities to use office space in a more efficient and sustainable manner.

The trend is for lower allocations of floorspace per person resulting from tighter space planning bringing the occupied space per workstation down at the same rate. However, best practice might indicate the space per person can improve substantially mainly as a result of much better

workstation utilisation, whilst workstation densities stay at approximately the same level, once the obvious space inefficiencies have been identified and dealt with.

There have been a number of reports and studies in recent years either using benchmarks or seeking to establish them. These studies are summarised in Section 8. Perhaps the most important of these is that produced by the British Council for Offices, whose standard is the one to which the design and investment community work, and is based on a notion of best practice, but also informed by Building Regulations related to fire escapes, lifts, stairs and so on.

The Floorspace Standard of 12m²/person recommended in this report falls at the lowest end of the ranges identified in these studies. This difference reflects recent success in managing space much more efficiently, much improved technology, the application of new ways of working and a number of other factors. The private sector comparisons come from the largest validated database of office property in the UK.

3 The proposed Office Floorspace Standard

3.1 The Office Floorspace Standard

The Office Floorspace Standard for the use of occupied office space should be set at 12m² per person, measured on the net internal area.

Buildings that are currently operating at less space per person should continue to do so. Provided that an office can be made to be truly effective in terms of creating a satisfactory workplace environment, building managers should always consider lower allocations of space per person, especially through advanced forms of desk sharing.

In recommending this Office Floorspace Standard, IPD is aware that it will be inappropriate in a number of different circumstances and that many offices are currently occupied less intensively than this. However, the number is proposed as a target on the basis that a raft of best practice case study work demonstrates that it is an achievable overall office accommodation space standard both for the whole estate and for individual buildings. The reasons that such a standard is not being achieved will form the focus of discussions between departments and the OGC.

There are arguments for different floorspace standards for different types of office, different locations and for different building characteristics. However, the power of a single figure more than outweighs the disadvantages. The bulk of this report demonstrates the complexity of the subject and identifies an action plan approach that departments, ALBs and the OGC can use to improve the efficient use of space without compromising on the effectiveness or productivity of people.

The advantage of space per person as the basis for the Office Floorspace Standard is that it gives business and property managers the choice between manipulating either:

1. Space per workstation; or
2. People per workstation

When monitoring people per workstation, it should be borne in mind that when everyone in an office has their own desk, it will be extremely difficult to achieve a person per workstation ratio of 1.0. In practice, desks will always be waiting for a new employee or the latest office move. In such circumstances, a ratio of 0.97 would be commendable.

3.2 Size of the prize

This report shows that average space per person in the public sector is some 25% higher than reasonably well managed estates in the private sector. With a total annual spend on the central civil estate of at least £6 billion, savings of £1.5 billion are implied.

However, some of these cost reductions may be neither possible nor desirable, while others will be expensive to attain. For this reason, the projected annual savings of applying this Standard across the central Government estate are estimated to be £1.25 billion.

A bigger prize even than the cost and space savings is that a focus on both efficiency and effectiveness under the High Performing Property initiative should also yield an improved working environment for the workforce. (Indeed, in securing space efficiencies, it is important that the effect on sustainability, productivity and other aspects of effectiveness is not compromised.)

Reducing space per person may be contingent upon capital investment to enable the physical change and the change programmes to bring about workplace transformation and cultural changes. This point is hugely important and will be the key enabler of efficiency savings in large parts of the government estate.

3.3 Use by departments and ALBs

The primary users of the Standard will be the estate teams of the main departments of state. They will wish to collect information together for their own and for their ALBs' estates to establish the space performance of each building. From the analysis, they will be able to establish the following, for example:

- The extent to which each building exceeds the Standard and the cumulative excess for the department as a whole and for each property centre.
- Whether buildings could be consolidated in a geographic location, such as a conurbation, providing shared office space for the departmental family.
- Which buildings could become the best practice beacons within the department to encourage less efficient property centres to improve their performance.

This analysis together with the departments' business requirements, will need to be linked into other data held by the department to create a property strategy.

Property Asset Management (PAM) Boards operating within the departments have a key role to play in the implementation of the Office Floorspace Standard. PAM Boards should work with their ALBs to ensure that office space is used consistently well throughout their entire estates.

PAM Boards should show how and over what period they will move towards the Standard. This will then be incorporated in the High Performing Property governance and monitoring process.

The report suggests a number of different approaches that departments and ALBs could adopt to reduce space per person. The solutions covered include examples such as

- the need to reach a consensus on space management with key business stakeholders to promote greater efficiency
- the need for the estate strategy to anticipate changes in future headcount projections
- the amount of enclosed workspace should be justified
- the introduction of flexible workspace solutions with a considered approach to desk sharing, furniture and technology.

Large scale change or investment opportunities arising in connection with any significant property event including a refurbishment, lease renewal or acquisition should provide a platform for departments and their ALBs to achieve a space per person ratio perhaps as low as 10 m²/person.

3.4 Recommended monitoring system

The proposed Office Floorspace Standard will be applied to all office accommodation in the central Government estate but will be the subject of negotiation between the departmental head of estates and the OGC as the champion of efficiency and effectiveness. The negotiation will be co-ordinated by OGC and will be likely to take the form of supportive – but directed – discussions to improve space per person in the Government's civil estate sharply over the next ten years, where reasonable.

Through benchmarking and e-PIMS, OGC will identify all office buildings over 500 m², where space per person is over 12m². In line with the principles being introduced by High Performing

Property, departments should identify the reasons why those office buildings in their own department and ALBs which operate over the Standard do so.

For all buildings where the Office Floorspace Standard is not achieved, departments should identify all the reasons that apply together with any appropriate comments, based on the table below. These reasons will link in with an individual target (and date) put on the building by the responsible department together with any explanatory text. (Please note that some of these reasons, primary circulation for example, are fixed factors outside the control of the building manager.)

Reasons for underperformance

Temporary while building is being vacated

Temporary while the workforce is being built up

Temporary owing to department reorganisation

Configuration constraints

Depth

Planning grid

Primary circulation

Enclosed offices

Furniture

Meeting space requirements

Local support space requirements

Central support space requirements

Meeting space requirements

Organisation culture

Workstyle

Other – to specify

The space efficiency performance of all office accommodation should be reviewed bi-annually and every opportunity should be taken to work towards and better the Office Floorspace Standard.

3.5 Basic arithmetic

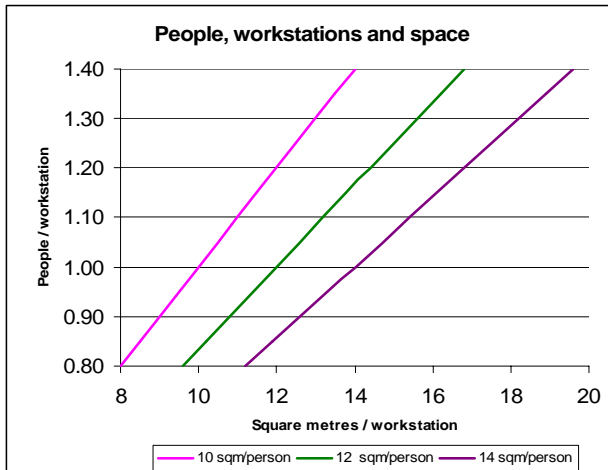
The graph below shows the relationships between people, workstations and space and specifically how 10, 12 and 14 m² per person can be derived from any given ratio of people/workstation and m² per workstation⁷. It is immediately clear that 12m² /person can be obtained with, for example:

- 15m²/workstation and 1.25 people/workstation
- 12m²/workstation and 1.00 people/workstation
- 10m²/workstation and 0.83 people/workstation

In other words, if either business needs or physical characteristics dictate that the building is not capable of being used at 12m²/workstation but at 15 m², the Office Floorspace Standard can be attained with a ratio of people per workstation of 1.25. It is this people per workstation ratio that

⁷ Despite this report's focus on space per person, it must be acknowledged that measuring people is harder than measuring workstations. Departments and ALBs will need to consider carefully how to reliably measure both these denominators.

will be the source of most efficiency improvements in the future once the most efficient space per workstation, consistent with business need, has been determined.



In practice, estates managers will need to focus on all three key ratios (m^2/person , $\text{m}^2/\text{workstation}$ and people per workstation) in managing their space budget.

3.6 Types of property

The Office Floorspace Standard is for office buildings, especially those over 500m^2 in size. It should also be applied to buildings where there is an office element, again especially where this element is over 500m^2 in size. The Office Floorspace Standard applies to the office elements, for example, of public access offices, such as those of the Department for Work and Pensions.

3.7 Vacant space

The Office Floorspace Standard applies to occupied floorspace. Building managers may often have a choice to spread out workstations where the building population is low relative to capacity. This is not good practice.

Building managers should always identify any surplus space as such and record details on e-PIMS. This will enable other departments and their ALBs to use the space, if they have a need to do so, and will provide valuable information both to the departmental estates strategy function and to the OGC.

3.8 Data requirements

Over a period of time to be determined, all departments and ALBs should identify the following space related data for all of their office accommodation. For definitions see Section 6.

1. Core data
 - a. People headcount
 - b. Workstations
 - c. Space (net internal area)
2. Breakdown of space
 - a. Enclosed workspace
 - b. Open plan workspace
 - c. Total workspace

- d. Local support space
- e. Central support space
- f. Primary circulation space
- g. Occupied net internal area
- h. Surplus space
- i. Total net internal area

The collection of this data will enable departments and their ALBs to monitor the way in which buildings are being used over time as well as helping them to identify ways in which space occupancy can be made more efficient.

4 Defining the Standard

4.1 Introduction

This section summarises some of the space data available to IPD Occupiers through its database and benchmarking activities in the UK. The IPD database comprises properties that are part of portfolios that have informed estates teams and strategies in the private sector. In addition, IPD has data from the OGC's Property Benchmarking Service that comprises departments, agencies and NDPBs. The analysis provides a top level comparison of public and private sector performance.

The section is supported by further graphs to be found in Section 9. In this section, we focus on space per person, space per workstation and people per workstation.

4.2 Space per person and per workstation

- In the data available to IPD, the public sector typically⁸ operates at around 15m²/person⁹, with the private sector at around 12m²/person. The data for the public sector is based upon departments, and ALBs who have voluntarily provided properties for benchmarking. It may be the case that IPD have only had the opportunity to benchmark the better performing buildings in the public sector and the average occupancy rate may be higher than 15m²/person.
- Over half of all private sector properties are currently occupied at less than 12m²/person, with 10-12m²/person the most commonly occurring.
- In the public sector the most common space per person range, by number of buildings, is more than 24m² /person, largely due to the high number of smaller, less densely occupied buildings
- Differences between Figures 2 and 4 primarily indicate differences in people per workstation.
- There is a greater variety in results in the public sector, which reflects that:
 - Office Floorspace standards are not being implemented to the same extent as in the private sector
 - There is a large potential for greater space efficiency in the public sector
 - There may be many constraints to efficient occupation depending on business need and building configuration.

⁸ This is the median figure.

⁹ All references to space per person are to full time equivalent (FTE) people, taking into account the proportion of time the typical part-time staff and contract workers use the office.

Figure 1

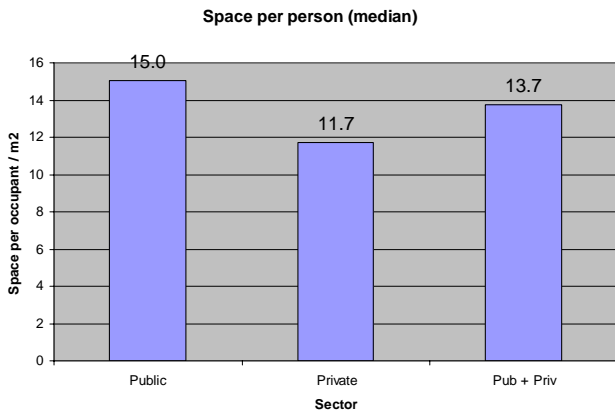


Figure 2

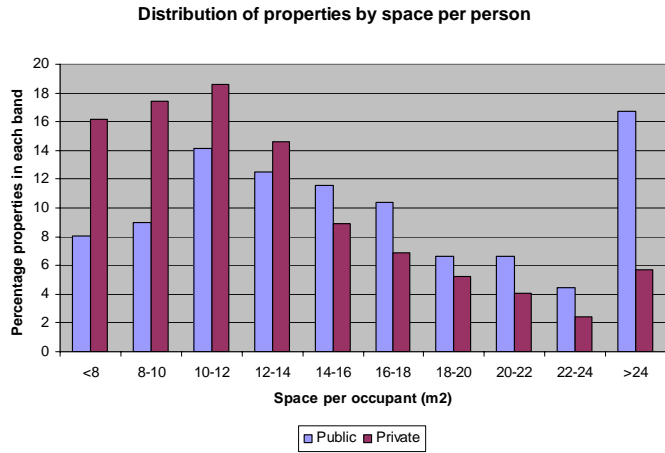


Figure 3

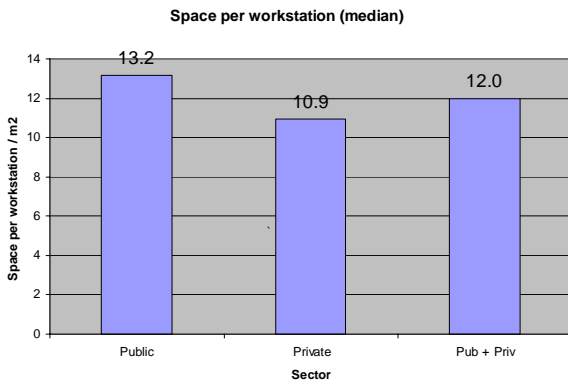
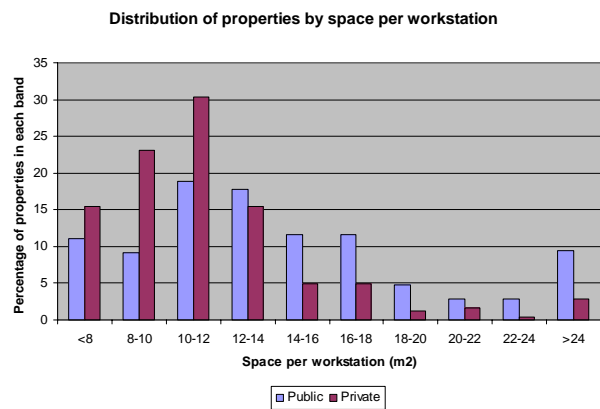


Figure 4



4.3 People per workstation

- The majority of businesses still generally allocate a workstation to each employee. This would result in a nominal ratio of 1:1. However, in reality 1:1 is rarely achieved. For the purposes of this report, where data returns specify 1:1 we have assumed they are nominal as opposed to accurate figures and as such have not incorporated them in the analysis.
- Based upon validated data from the IPD Dataset comprising private sector companies and data from the OGC Property Benchmarking Project (public sector buildings), the public sector buildings predominantly operate at low people per workstation ratios.

Figure 5

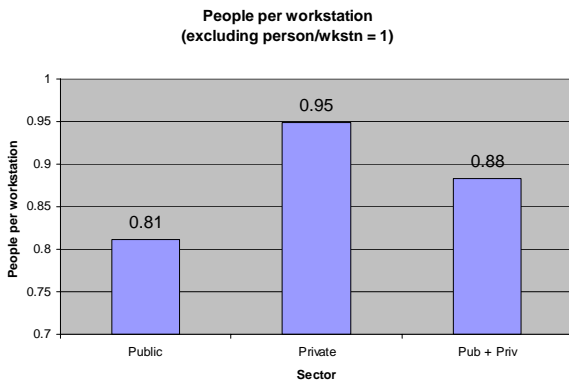


Figure 6



The Charts presented in Section 9 provide further analysis of the use of space from IPD’s private sector database and the OGC Property Benchmarking public sector data:

4.4 Space Use

- Impact of office type
 - Space per person varies considerably within overall office types with call centres averaging around 7.5m² per person and client-facing offices around 15.5m².
 - Space per workstation is highest for HQs and standard offices at around 14.5 m². Call centres average 7.8 m².
- Provision of meeting space
 - The private sector provides about 15% more meeting space per person than the public sector, despite operating at lower space budgets per person.
 - Based on satisfaction data, meeting room provision should be in the order of:
 - Call centres probably need about 0.3m²/person
 - Back offices need around 0.7m²/person
 - HQ’s typically have around 1.2m²/person

4.5 Building Characteristics

- Cellular space
 - There is a higher incidence of cellular space in the public sector. The private sector has moved predominantly to less than 10% cellular space.
 - Offices with low levels of cellular space are more likely to be occupied more efficiently.
 - There is typically much more cellular space in older properties (25% vs 13% in post-1980 stock).
- Floorplate size
 - Typically properties with an average floorplate size of more than 1,200m² have an 11% efficiency advantage (in terms of space per workstation) over buildings whose average floorplate is less than 400m² (based on mean figures)
- Influence of building age
 - Occupancy efficiencies are poorer in buildings built between 1940 and 1980 and best for buildings built since 1980.

4.6 Environment

The Government has objectives announced in June 2006 to reduce both the total amount of carbon generated through its office estate by 30% as well as reducing the carbon generated on a per square metre basis by the same amount. There are also objectives for reducing water consumption and waste recycling.

The question then arises as to what effect reducing space per person will have on energy and water consumption and waste generation. The evidence from Section 9.8 is as follows.

- There is a weak positive correlation between the energy consumption per m² and space per person (i.e. as space per person increases, energy consumption per m² also increases). This is counter-intuitive and suggests that higher space per person properties are actually being managed less diligently, or are intrinsically less energy efficient.
- There is a similar picture for space per person against water consumption per m².
- At present, therefore, there appear to be other factors having a more significant impact on environmental metrics than how intensively the space is being used, which may be because of:
 - Management practices
 - The nature and efficiency of building stock
 - The nature of activities taking place

Despite this evidence, it is clear that the total energy usage consumed is intrinsically tied up with the total amount of amount of space in the government office estate. Although higher densities are likely to generate more carbon per m² than would otherwise be the case, there is no doubt that reducing the total office stock by a substantial amount will make a substantial contribution to the Government's carbon reduction objectives

4.7 Conclusions

- On average, floorspace use in the public sector is worse than in the private sector with space per person about 25% higher.
- A sixth of public sector offices are occupied at more than 24m² per person.
- The spread of results in the public sector indicates a *prima facie* scope for reducing space allocation per person.
- The private sector has focussed space per person in the 8m² to 12m² bands.
- The following factors are shown to have an impact on space per workstation:
 - Cellular space increases space per workstation substantially.
 - Floorplate of less than 400 m² are difficult to manage for space efficiency.
 - Modern buildings built since 1980 have the best space efficiency
 - Different office functions required different amounts of space.
 - The private sector provides 15% more meeting space per person than the public sector.
- Typically, there are more workstations than people in most offices in both the public and private sectors. The average number of people per workstation in the public sector is 0.81 compared with 0.95 in private sector offices.

- The carbon reduction targets of the Government will be strongly supported by the reductions in space per person as less floorspace has to be supported.
- Altogether, space reductions of the order of at least 20% ought to be obtainable by applying the Floorspace Standard to the Civil Estate. This should be worth at least £1.25 billion/year in efficiency savings.

5 How to improve occupational efficiency

For those buildings managers whose accommodation operates above the Office Floorspace Standard of 12m² per person, the question is: “how do I reduce the space allocation in my building?”. This section identifies the issues and challenges in achieving the Standard, although the text is explicitly not intended to be a comprehensive guide to the subject.

The analysis is based on the overall experience of the project team and published case study material report in case studies. In addition, six case study visits to central government offices were conducted during the course of preparing this report to test the application of the Floorspace Standard.

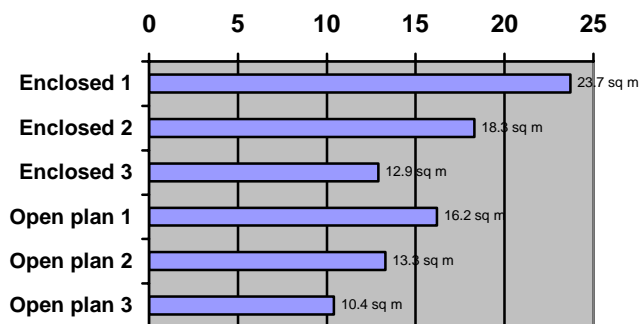
5.1 A quick start

General space layout calculations show that:

- Space per person budgets can be influenced through the adjustment of either space per workstation or people per workstation.
- Space per workstation can be adjusted radically by adjusting the generosity of space allocation within both enclosed and open-plan space.
- Reducing the amount of enclosed space is very significant in reducing the total space requirement of the building. About half the net internal area needs to be allocated to workspace area itself (the area required for desking and associated “secondary” circulation).
- Desk sharing allows for the average number of people per workstation to increase. However, extra support space needs to be allocated when desk sharing since the number of building users will go up.

Section 10 explores from first principles some of the issues involved using six different hypothetical layouts of an office, three enclosed and three open-plan layout styles. The space per workstation varies from 10.4m² to 16.2m² for the open plan and from 12.9m² to 23.7 m² for the enclosed designs. The extra space taken up by enclosed office types clearly carries a significant cost overhead.

Space per workstation by office layout style



5.2 Best practice beacons

In 2006 the National Audit Office published a report aimed at demonstrating to Government departments the potential to make better use of their office space.¹⁰ The cornerstone of the study was a series of fifteen case studies demonstrating best practice. The case studies ranged across the public and private sectors, and across large and small organisations. Best practice examples cited in that report illustrated 13.4m² per workstation and 10.4m² per person.

The case studies had all recently undergone change management programmes where real estate was used as a catalyst for organisational change as well as to effect space efficiency savings. There were a number of themes which emerged from the case studies, and the most successful projects contained a combination of the following features.

- Clearly stated business drivers, giving them authority, momentum, clarity, and focus.
- A coherent, explicit change management approach, led from the top.
- Integrated property, human resources, and technology solutions.
- Best practice workplace techniques and support, including breakout spaces, web-enabled space booking methods, concierge support, state of the art security techniques, and excellent facilities management service provision.
- Mobile staff received excellent support, ranging from technology and communication solutions, to courier collections and off-site 24/7 administrative support.
- Office services were provided to a good Standard, often through outsourced arrangements with appropriate service level agreements. As a result the staff (regarded now as customers) receive excellent support.
- Several, but not all, chose evolution and continuous change over revolution. This suited better those businesses with budget constraints, or those that overtly preferred an exploratory rather than a “big bang” approach.

The case studies demonstrated two generic routes to space efficiency savings.

- Some organisations used best practice space management techniques simply to save space – by 37 per cent across the relevant case studies. For example, Ernst & Young, a management consultancy, doubled its London occupancy levels by breaking the “me and my desk” culture, and by providing staff with enabling technology and flexible human resource practices.
- Others chose to retain the same estate, and create more capacity within it – by 67 per cent across the relevant case studies, thus avoiding new costs. For example, Norfolk County Council introduced innovative layouts and hot-desk arrangements to increase capacity and reduce their headcount costs.

Learning from this experience, it is clear that Government departments can both release surplus space and reduce maintenance costs, thereby reducing their total occupancy costs; and introduce the concept of “spaceless” growth, whereby flexible working solutions are adopted to enable growth and flexibility without the traditional resort to extra space.

One of the most fundamental lessons from all of the case studies is that newly-agreed standards, or guidelines, for space efficiency have not simply been used to squeeze space, but

¹⁰ National Audit Office (2006) Getting the Best from Public Sector Office Accommodation NAO, London

they have been used far more creatively in a change management context to change the way people work. Consequently lower space allocations per person are achieved by introducing flexibility in people's working patterns and by providing a much more diverse range of work environments. The traditional choice of working at a desk or in a meeting room have been supplemented with more collaborative, social and informal spaces, allowing the space to suit the work, as well as taking away much of the fear associated with losing personal space.

In some parts of the Government estate significant progress has already been made towards smarter occupancy. For example, the evidence presented in *Working without Walls*¹¹ demonstrates that open plan environments are more common than they were, as enclosed offices have decreased in number, densities have risen and shared meeting and project areas have increased. Such trends reflect the more fluid context in which most departments now work, and the growing need to accommodate projects and short-term requirements rather than the traditionally more stable process-led style of work.

5.3 Cultural barriers

The overwhelming themes to emerge from the six case study visits was the importance of cultural barriers and an understanding of the influence of business functions associated with the property in achieving improvements in occupancy efficiency. While physical constraints in the buildings can impose some inefficiencies (eg through poorly configured space), and while budgetary constraints can impose others (eg through the lack of financial resource to make changes), the cultural issues and perceived necessity to occupy space in a particular manner as determined by business needs predominate. The ability of senior individuals and functional areas within buildings to set their own rules and to countermand those set down by building managers is a major cause of inertia.

"Change" is a fact of life for most building managers and many buildings have been reconfigured internally in recent times. Departmental restructuring, combined with frequent "new policy initiatives", and demand from short-term project teams, mean that the managers are under regular pressure to reconfigure their space. This fact reinforces the importance of having flexible furniture and layouts, together with mainly open plan space, to enable people to move without expensive furniture moves and dismantling of internal partitions.

The nature of work undertaken in the buildings varies quite significantly and as a consequence impacts heavily on the manner in which the space is used. While there is an element of "Standard administrative work" in some of the space, it is also clear that many people are working in quite specific ways. Different types of workstyle have different space implications: in some of the case studies the building visited is one of a number occupied by the department and associated non-departmental public bodies (NDPBs) and executive agencies. In these cases, daily headcounts in the buildings can change quite significantly and unpredictably, as visitors attend some quite large meetings.

In much of the space visited in the case studies, it was clear that *deep cultural behaviours frustrate more efficient use of space.* Several building managers indicated that they were not averse to open plan working environments but could not implement them on the grounds that the business functions would not accept them. Part of the emphasis in driving greater space efficiencies has therefore to come through education to illustrate how open plan environments can be used to meet these perceived 'exceptional' workplace styles.

11 Allen T, Bell A, Graham R, Hardy B & Swaffer F (2004) Working Without Walls OGC/DEGW, London

The most pervasive issue is that senior individuals or particular teams/functions are allowed to override the recommendations of the building manager. Two generic examples illustrate the point:

- Some individuals (senior staff as well as Ministers) demand very large offices and associated functions (eg dedicated meeting rooms) on the grounds of seniority or “need”. Seniority often goes unquestioned, while building managers lack the authority to question “need”. (Such lack of leadership is in contrast to best practice case studies in both the public and private sectors).
- Certain departments or functions “manage” their space differently to the remainder of the building. This normally means a less well managed environment, and therefore less efficient use of space.

In addition, the case studies identified certain traits, possibly unique to Government, when trying to drive through space efficiencies. One department identified a need to be located close to other departments because that is where the heart of the ‘industry’ is. In these instances location is paramount with the nature of the available space and its potential for space efficiency not as important as the physical location itself.

A second factor influencing space efficiency between similarly functioning agencies within a department is the importance placed on being seen to be independent. In effect the creation of Chinese Walls has to be established to maintain transparency and avoid the impression of undue influence which will influence how departments can plan for space allocation and in some instances limit their options. Such behaviours can have a dramatic effect on the overall measured efficiency of a building.

5.4 Changing the “building shell”

The basic physical parameters of a building shell will set the rules for its occupation by describing how efficiently the building can be planned. The configuration, depth, planning grid and circulation routes together describe shape and contiguity, and they determine zoning and layout patterns. The building shell can normally only be changed with a very major refurbishment.

The historic character of the buildings can create major inefficiencies where the primary circulation routes, for example, are often wide, thereby significantly affecting the amount of net usable space available. In older buildings, there can be a good deal of structural division of the space. As a result some rooms are not needed, although in some cases they have been efficiently used as team or project rooms.

Configuration describes the geometry of a typical floor within a building. Thus, a square or oblong plan, with a single central core will be inherently more efficient than a plan form that is highly irregular (driven by plot shape), with distributed service cores.

Most modern, frame construction buildings have larger more regular floorplates than older buildings, particularly those with load-bearing walls. Such floorplates will drive higher floorplate efficiencies (the ration of net to gross internal area), where 80-85% is regarded as desirable. Where the efficiency falls much below these levels, the floor plan is likely to have more irregularities which, in turn, will impede space per person reductions.

Configuration will also be affected by the number and distribution of structural columns. These have a tendency to disrupt space planning and reduce maximum achievable densities.

Configuration of space is an important consideration when selecting a new building, and comparing one with another. Once in occupation it becomes a fix on space planning options.

Depth is the measurement across a floor, either window-to-window, or window-to-core/atrium. Shallow (less than 14m), medium (15-18m) and deep (more than 18m) buildings (combined with configuration) generate different space planning solutions.

Depth, combined with primary circulation, will determine how many zones the floor will be planned in. An atrium effectively changes a deep floor plan into a number of shallower areas, each with their own zones.

Choosing the right depth is a compromise. On the one hand, greater depth will reduce the level of individual control over the environment, reduce the level of natural light, and reduce the potential for sub-division into cellular offices. On the other hand, greater depth allows for the planning of large teams and is good for visual communications.

The planning grid describes the internal dimensions for structure, finishes and services. These relate to, for example, structural columns and window mullion spacing. The planning grid will drive the ease with which internal rooms and their partitions are introduced. Thus a 1.5m planning grid, the most common, allows highly efficient and flexible partitioning (based on 3m, 4.5m and 6m wide rooms).

The planning grid should be synchronised with windows to maximise flexibility. When selecting new space, the need for internal rooms should be assessed against the grid and the planning of power and environmental systems distribution.

Primary circulation routes, broadly, link the main safety exits from a building; secondary circulation refers to other circulation routes radiating desks. Both will be influenced by depth and configuration.

In an efficient building, primary circulation might be anywhere between 10% and 15% of net internal area, but this can rise significantly in older, more irregularly shaped buildings. Poorly planned primary circulation can therefore have a profound impact on overall densities, as indirect and overly wide routes will reduce the space available for people and desks.

Environmental systems (plant, air handling, heating, water and waste) within buildings determine their carbon footprint as well as their use potential. Put simply, systems will determine how many people can occupy a building; but they will also influence layouts (for example, by dictating partitioning possibilities). The “fit” between environmental systems and layout requirements should be evaluated to understand their impact on layouts and densities.

5.5 Changing the building setting

The fit out of a building takes the office from “developer’s finish” (with suspended ceilings raised floors and carpets), to a fully functioning work environment. It includes furniture, mechanical and electrical services, partitions, equipment rooms, and support facilities such as dining and vending. The design of the fit out will have a major impact on the overall space budget and therefore on the space per person achievable in a building.

5.5.1 Work area

One of the greatest drivers of workstation densities is the presence or otherwise of cellular offices. As established in Section 4, densely partitioned space tends to be less efficient by introducing more secondary circulation than is necessary and by increasing individual allowances on space. Cellular offices are normally justified on the grounds of either hierarchy or confidentiality – reasons that are underpinned by organisational culture.

Enclosed offices are often provided in a variety of sizes, which further reduces flexibility. If cellular offices are used, the number of different sized offices should be minimised to maximise “interchangeability”. Growing numbers of organisations have dispensed with cellular offices altogether, preferring instead a more egalitarian layout, with greater choice over work settings.

Care needs to be taken when planning high space per person open plan space over environmental factors such as air quality, acoustics and support services. Space standards in open plan should be appropriate to the nature of the work being undertaken. In deciding the appropriate footprint, account should be taken of the desk size, the chair, local circulation and any immediate needs for filing, storage or equipment. However, these elements can themselves be selected to reduce space per workstation.

The number of different space standards in open plan environments should be minimised to increase planning flexibility. In open plan and flexible working (shared desking) offices, it is important to provide a broad range of work settings. In well-planned offices, this additional need will be compensated for through higher people per workstation ratios.

Furniture systems are far more sophisticated today than in the past. They can be bespoke to fit closely with work processes and layout requirements. They can also be designed around flexible working and shared desking by providing, for example, drop-in facilities.

The style, age and functionality of furniture can have a major influence on densities. For example, many of the desks that are so prevalent in offices today have been driven by the need to accommodate a bulky, computer screen. Flat screen technology can allow far more efficient, rectangular desks planned in a bench style arrangement.

Flat screens are just one example of how technology can help support reduced space per workstation and also the people per workstation ratio. The introduction of thin client technology, for example, can be a key enabler of workplace mobility. The essence of thin client technology is that space-efficient screens are fed from centralised servers, while users carry smart cards, providing them access to their files from any workstation in the building. In another example secure networks were in place to allow working from home and secure access to servers externally but the workplace culture and technological limits (speed) needs to develop for this to be successfully embraced.

In general, desk sharing is not prevalent within the Government estate. High numbers of people per workstation requires an investment in technology, such as VOIP¹², to support desk and file sharing. In one case study, we found that despite the use of mobile file cabinets to enable mobility, many people in practice use the same desk each day, and there was plentiful evidence of desk ownership and semi-permanent occupation. In this case, the concept of higher space densities is being impeded by the lack of management support.

12 Voice Over Internet Protocol

5.5.2 Local support space

Local support space is the support space provided for the individual or local team. Thus personal and departmental filing/storage; print/copy facilities, local vending, break out areas, and so on are all included. Unless closely managed, local support space tends to grow, as people hoard and acquire additional storage, for example, rather than dispose of redundant paperwork. Local support should take up no more than 5% of a typical space budget¹³. However, in flexible working environments, particular attention needs to be paid to providing appropriate local support for itinerant workers.

Case studies of companies who have planned for maximum efficiency show how radical approaches to local support can have a dramatic effect on the overall space budget, releasing space for desks - and increased densities. Such approaches include, for example, setting a maximum allowance of one linear metre of filing per person; sharing printers at up to 1:25; enforcing a strict archiving regime, and centralising office supplies.

Management of local support space appears to vary widely across the Government office portfolio. Desks and their immediate surroundings can be cluttered with both personal and work effects, while there is often no policy to control the amount of filing and storage per person. In cases where policies exist, they are sometimes not tightly enforced. Office clutter, local storage and personalised space all contribute to space inefficiency. Dealing with the cultural issues mentioned above is at the heart of potential further improvements in space efficiency.

Meeting rooms and break-out and vending areas, as important components of the local support space budget, must be managed carefully to ensure appropriate provision. In the case studies, combined break out and vending areas have been introduced and are reported to be popular. Meeting rooms, because of the partitioning involved tend to be fixed and take up space in prime office areas.

There was little evidence during the case study visits that increased meeting and break out space had been rigorously planned and balanced: most allocations appear to be "responsive" in nature. There also appears to be little connection between the incidence of large cellular offices with meeting space, sometimes for up to twelve people, and the number and distribution of meeting rooms.

Provision of local filing and storage in most cases is only loosely controlled. Best practice is normally regarded as one linear metre per person but provision seems to be higher in many Government offices. In many buildings, storage on the office floor is high with the inevitable spread of untidiness and, ultimately, inefficient use of space.

The introduction of shared network printers is an important component of shared desking. Confidentiality issues are addressed using security systems at the printer. Where multi function devices have been introduced, further efficiencies have been achieved. There can be no clear rule for allocating printers.

5.5.3 Central Support Space

Central support space is that which is shared by the whole organisation. Central support space includes meeting and conference rooms, dining and vending areas, health and welfare, storage, reprographics, reception, and so on. Central support functions have typically taken 20-25% of a space budget, and are therefore very significant in the overall calculation of space requirement.

¹³ Related through to net internal area

Central support needs to be planned carefully, based on an assessment of need. For example, both the number and sizing of meeting rooms should reflect actual – and not stated – demand.

Central support space is often poorly managed because “everyone’s resource” is “nobody’s responsibility”. Unless carefully managed, it can reduce effective densities dramatically. Central support plays a critical role in flexible working offices, where mobile staff are dependent upon shared services. Many organisations now provide dedicated areas for mobile workers.

Approaches to the management of central meeting rooms ranges from, more or less, provision on demand, to centrally managed facilities. It also appears that the provision of meeting rooms has generally evolved over time rather than been planned according to need. In some cases, while not measured precisely, central support space appears generous.

During the case study visits made¹⁴, occupancy rates of meeting rooms (and break out spaces) were remarkably low. Various reasons were provided (Parliament rising, holidays, time of the day, etc) along with assurances that they were normally very well used. It is best practice to use centrally managed booking system to permit all building users (including any from other departments in multi-tenanted buildings to book any meeting room. The number of “no shows” needs to be carefully managed.

Central filing and storage is often a major space issue. In some of the case studies, central filing has been reduced very significantly, and continues to be reduced further, but remains a major user of space. One of the constraints is the need for ad hoc, immediate access to, for example, case files. Technical document archiving solutions may be able to support a reduction of this type of space.

Some Government buildings visited act as HQs for wider departmental families. To this extent they act as focal points for activities such as training and conferencing, and so provision of such space is “over-provided” when compared to local building demand. This demand needs to be taken into account carefully in estimating total space need but always the provision should be centrally planned and the frequency and occupancy rates of such space should be carefully monitored.

5.6 The influence of building activity

The way in which organisations occupy space is driven largely by the activities which they undertake within the space, the economic pressures they face and their organisational culture. Thus a head office function is likely to have a different use profile to an administrative back office; while a high margin, customer-facing business is likely to occupy space differently to a process-based environment such as a call centre. Different activity profiles will drive different space per person profiles.

In judging whether an existing space per person is appropriate to the organisation, it is important to assess the function of a building, and whether this is causing the space per person to rise or fall. Where a portfolio of buildings is concerned an activity profile overlain on space per person data will helpfully show reasons for variations.

Many offices provide accommodation for a range of different functions, and so there will often be variation in activities within different parts of the same building. For example, a finance or accounting area will typically have a higher space per person than a sales and marketing

¹⁴ Admittedly in July

function. The need for local variation in densities within a single building is important to recognise and understand.

Most organisations can be described by their “cultural identity”. Generically, terms such as “creative”, “entrepreneurial”, “command-and-control”, “knowledge based”, and so on are all commonly used. This cultural identity will express itself in the layout of space, and can influence densities. One of the most common issues is how the level of hierarchy influences space standards and cellular office allocation. It is important to quantify the impact of culture. For example, if senior staff ask for cellular offices, a financial calculation will express the opportunity cost for the business and an informed decision can be taken.

Meeting rooms, meeting areas, break out space, collaborative areas, etc are increasingly important in modern offices, where much work is dependent upon sharing knowledge. Such spaces are a fundamental part of the activity profile of a building. Meeting space is a key driver of space budgets and, particularly with flexible working, meeting areas can be used to reduce space per person by providing alternative work environments that are highly utilised.

Growing numbers of organisations are introducing flexible working patterns, in which individuals exercise greater choice over where and when they work. This introduces the possibility of radical changes to space occupancy. The twin benefits of flexible working are to:

1. Maximise the efficiency with which desks are planned
2. Increase their people per workstation by introducing desk sharing.

Such initiatives allow a building to support more people in the same amount of space and their impact on overall densities can be dramatic, often reducing an organisation’s appetite for space by 30% or more.

Some flexible working organisations have introduced 100% desk sharing; others have settled on a ratio of eight desks per ten people, focused on “team zones” or “villages”. The precise mix will depend on the needs of the specific organisation. The critical lesson from best practice is that flexible working environments require integrated change management programmes (involving Property, HR and IT) to achieve the right behavioural change as well as the correct mix and style of support services.

5.7 Building and management strategy

Much recent change appears to have been reactive, but the net result has been increased efficiency in most cases. In a number of the case studies, there is no overall “occupancy strategy” for the building. Working often to very short time horizons this is not unsurprising. However, the presence of such a strategy would set down space standards, workplace protocols (for example, behaviour), and office procedures (for example, meeting room booking, etc). They are now common in the corporate sector, and very good reasons have to be provided for “breaking the rules”.

The absence of a building strategy has allowed quite diverse space management solutions to evolve, introducing inefficiencies such as over-provision of support facilities. Many of the physical changes that were described by the building managers had been instigated by demands from user groups for specific purposes rather than as part of an overall strategy. If estate teams could be engaged earlier within any planning process those who better understand and appreciate the space demands on a property may well be able to provide significant input to more practical and realistic space planning requirements before the plans are too far down the line to affect any change.

From the case studies, some of the building management team were struggling to exert their authority over the use of the space. Examples included:

- The inability to enforce a clear desk policy in a shared desking pilot, which was encouraging people to use desks on a semi-permanent basis.
- Ministers and senior staff can negate the potential to increase space use efficiency and consequently building management becomes – culturally as well as technically – a reactive process rather than one that leads.
- Difficulties attached to educating people on the more efficient use of space.

Many Government buildings have Government “sub-tenants” on Memorandum of Terms of Occupation (MOTO) arrangements. They have been able to reduce their own occupied space through increased densities, and to release surplus space to other users.

5.8 Employee satisfaction

One possibility when lowering the space per person is the suspicion that this could either cause unwelcome side effects on workplace productivity. IPD has collected evidence for several hundred buildings where a score has been produced for employee satisfaction using a proprietary product, called Workplace Productivity Appraisal (WPA)¹⁵, which assesses the building user’s satisfaction with facilities provided, the working environment, the functional suitability of space and a disruption score called “downtime”. This WPA score has been linked to the floorspace per person and per workstation.

This evidence suggests that space per person does not affect employee satisfaction within the office. It does appear that there are many other factors at play that are more important than space per person in determining the attitude of the building user to the office. This is not to say that one can force space per person ever higher but perhaps it gives some confidence that less generous floorspace allocations within the current range can be perfectly acceptable.

Such a conclusion is confirmed by two powerful lessons of the NAO and project case studies:

- There are many examples of buildings with poor working environments and large space allocations
- Many public and private sector organisations operate excellent buildings at high people densities

In cases where poor densities are accompanied by poor quality space, it should be relatively easy to pay for much better quality of space through reductions in space per person. As the case studies show, these can be successful for the business and extremely popular with staff.

5.9 Taking the opportunity

The main factors affecting space per person, as set out in this section of the report, can be seen in the table below. Rating each factor in terms of the ease and cost of change (the fewer the dots, the easier it is to change the space planning element involved.) :

A key point of this table is to demonstrate that it is considerably easier to change densities when major or minor works are in progress.

¹⁵ The Workplace Productivity Appraisal is a web-based survey tool designed to measure employee satisfaction. It is run by IPD in the public and private sectors.

Level	Space planning element	Ease and cost of change		
		When selecting new space	During internal re-organisation	During business-as-usual
Shell	Configuration	**	****	*****
	Depth	**	****	*****
	Planning grid	**	***	****
	Primary circulation	**	****	*****
Setting	Cellular offices	*	**	***
	Open plan	*	**	***
	Furniture	**	****	*****
	Local support	*	*	*
	Central support	**	***	***
Activity	Organisational function	**	***	*****
	Local work functions	*	**	****
	Organisational culture	***	****	*****
	Shared space	**	**	****
	Workstyles	***	****	*****

* = good opportunity ***** = very difficult or impossible

5.10 Conclusions

The report indicates a number of different ways for departments to reduce space per person. These include:

- **Reach consensus.** The cultural barrier is perhaps the most important factor impeding reductions in space per person. It will require leadership from the top and Property Asset Management Champions in particular will be required to ensure real progress in this area. Other initiatives, such as property building strategies, training & education, will be needed.
- **Think space per person.** Great care is required when undertaking major refurbishments or selecting new offices to ensure that the shell of the building supports efficient space operation.
- **Create flexibility.** Reducing the proportion of enclosed workplaces and ensuring that the number of different workplace settings is minimised to promote interchangeability and flexibility within the workplace. Flexible working can both enable and is required to support high workstation utilisation and desk sharing.
- **Furniture and technology.** New layouts can bring about improvements in workstation densities of 30% with the support of new furniture and technology. People per workstation can similarly be increased from the current average of 0.8 to 1.25 through the right layout, furniture and technology.
- **Get the data.** Collecting the core data for offices of space, people and workstations is essential for proper space management. The breakdown of space suggested in the report will help building managers to manage space efficiency in all parts of an office.

- **Anticipate demand.** Headcount projections should be sought from business leaders to project future need, who should also be consulted about the type of space required.
- **Tight management.** Both local and support space, especially meeting room space and filing, needs to be carefully managed and planned. At present a great deal of the provision seems to be reactive and loosely managed.
- **Get the budget.** Capital investment is needed to effect the most substantial space reduction programmes.

6 Appendix 1: Glossary

Term	Definition
Arms length bodies	Agencies, non-ministerial departments and non-departmental public bodies are referred to as Arms Length Bodies or ALBs in this Report. For further explanation see http://documents.treasury.gov.uk/mpm/mpm_annex7.2.pdf .
Departments	Central government organisations with responsibility for specific areas of policy; usually headed by a minister. Responsibility for delivery is often devolved to a department's sponsored Executive Agencies and non-departmental public bodies who work independently of ministers to whom they are nevertheless accountable.
Building configuration	Building configuration describes the geometry of a typical floor plan within a building. See section 5.4.
Building shell	The exterior walls of a building, including the roof, the walls, cladding and façade. In this report, building shell includes discussion of configuration, depth, planning grid and circulation routes. See Section 5.4.
Cellular space	Cellular space refers to partitioned rooms, normally for 1-2 people, but up to a small group of, say, five.
Central Government	That part of government principally involved in implementing government policy and advising ministers. It works alongside but is distinct from the wider public sector including local authorities and the devolved administrations.
Civil estate	The workspace, offices and other property that is owned, leased, or occupied by central government departments and their arms length bodies. It does not include the NHS Estate, the Prisons Estate, the Foreign Office Overseas Estate, the DEFRA Rural Estate, public corporations or the Defence Estate.
Cost efficiency	Cost efficiency for offices is defined as costs per m ² . In the OGC Property Benchmarking Service these costs comprise rents, rates and building operating costs.
Depth	The measurement across a floor, either window to window or window to core/atrium. Depth is classified as shallow (< 14m), medium (15-18m) and deep (> 18m).
Downtime	The proportion of the working week, spent in the office, which is lost to the organisation / business because of interference from prohibiting factors, such as noise or distance from the printer.
Effectiveness	The effectiveness of an office is a general concept reflecting the output from an office. The OGC Property Benchmarking Service measures office effectiveness by comparing workplace productivity, environmental sustainability and condition, compliance & flexibility for each and every building. In conjunction with the efficiency data, this gives a balanced approach to performance measurement to support value for money comparisons.
Efficiency	The efficiency of an office is defined by the OGC Property Benchmarking Service as the cost per person of running that office. Cost per person is derived from cost efficiency (cost per m ²) and space efficiency (m ² per person). In conjunction with the effectiveness data, this gives a balanced approach to performance measurement to support value for money comparisons.
Energy consumption	A measure of a building's energy consumption based on the annual kWh energy (electricity, gas and oil). The rating of energy consumption is often expressed as kWh/m ² .
Flexible working	Flexible working – otherwise known as alternative working styles, new ways of working, non-territorial working, and a host of other names – refers to those situations where at least some workers in a business yield ownership of a fixed desk, in favour of a more mobile workstyle, using different work settings in and out of their base office.

Term	Definition
Floorspace	Floorspace is a reference to the net internal area within office premises unless specifically categorised otherwise. Net internal area is the area upon which the rental payment is calculated. In the UK, it may also be defined as the net useable area plus primary circulation (qv).
Functional suitability	A score derived from people's satisfaction rating with the workplace for the performance of generic activity types, examples of which are team working and the ability to meet deadlines. Functional suitability measures the capability of the office space to support its existing function. Suitability of space is graded from "excellent" where there are no negative impacts upon functions taking place in the office to "poor" where the operational problems associated with such space are major, and are constraining current functions in the space. The following factors can be considered in assessment – environment, layout, location, flexibility, servicing and user perception.
NDPB	A Non-departmental public body (NDPB) is a national or regional public body, working independently of ministers to whom they are nevertheless accountable. Collectively referred to in this report as an Arms Length Body.
Office	A building whose primary function is to provide accommodation for predominantly desk based working. This report and the standards referred specifically exclude data centres, laboratories and other buildings with bespoke functions – but do refer to those parts of these buildings used as an office.
People/persons	Typical numbers of permanently-employed, temporary staff and contract staff counted in terms of full-time equivalents, calculated as follows: <ul style="list-style-type: none"> • Staff employed on a regular basis: more than 30 hours per week = 1.00 • Staff employed on a regular basis: 20-30 hours per week = 0.75 • Staff employed on a regular basis: 15-20 hours per week = 0.50 • Staff employed on a regular basis: less than 5 hours per week = 0.25 To qualify as a member of staff working in the premises, staff must use the premises as their main base and also expect to work at the premises for at least some part of a typical working week.
Structural/ planning grid	The internal dimensions for structure, finishes and services. The planning grid is a sub-set of the structural grid. Thus a 9m structural grid will normally drive a 3m planning grid which, in turn, will normally drive the sizing of cellular offices.
Primary circulation	Areas which link together the main safety exits from and within a building. Significantly, primary circulation is the minimum statutory requirement to comply with fire safety regulations, rather than the more generously designed layouts that are common in many modern offices.
Projected annual savings	The annual cost savings theoretically achievable through space efficiency improvements achieved through either reductions to space per desk or through more intense use of workstations provided. Costs savings are calculated on the basis of rent, rates and building operating costs.
Secondary circulation	Secondary circulation refers to other circulation routes around desks. It specifically excludes any primary circulation (qv).
Space efficiency	Space efficiency for offices is defined as m ² per person, which can then be broken down into m ² per workstation and people per workstation. The manipulation of the two ratios (m ² per workstation and people per workstation) allows departments and ALBs to secure the right level of utilisation to meet business needs, whilst reflecting building characteristics.

Term	Definition
Support space	<p>Space required to support the main office function within the building. Support space is split between local and central support areas.</p> <ul style="list-style-type: none"> • Local support space comprises functions such as filing, vending, breakout space, photocopy, small meeting rooms, meeting tables, etc, that are allocated to and used by local teams and departments. • Central support space refers to those centrally managed functions that are shared by the whole organisation. Typically such space includes conference and meeting room suites, restaurants and cafeterias, storage, mailrooms and reprographics. <ul style="list-style-type: none"> • Meeting space – conference rooms, auditoriums, meeting rooms, project and team rooms, seminar and training rooms/areas • Catering – restaurants and cafeterias • Social – breakout rooms and areas, health & sport and welfare facilities • Technical – IT and communications rooms, switchboard, laboratory, test and other technical support space • Resource – storage, including equipment, filing, archive, libraries and vaults. mailrooms, reprographics, print rooms, reception areas (including conference reception)
Surplus space	<p>The principal focus of surplus space is space declared surplus to requirements, which is no longer occupied by the department or ALB. Only occupied space is included within the Floorspace Standard.</p>
Water consumption	<p>The annual volume of water consumed within a property. To reflect performance, water consumption is by divided the number of people recorded at the space.</p>
Workstation	<p>A desk together with associated seating, filing and ICT connectivity that is available for either permanent or temporary use by full-time, temporary or contract staff. A workstation should be compliant with various Health & Safety regulations, and should be of a size and configuration appropriate to the task(s) of its occupant(s).</p>

7 Appendix 2: Public policy background

Property has traditionally been quite low on the agendas of both private and public sector organisations. Part of the reason for this is that property costs, such as rents and rates, have been relatively fixed, and have therefore been accepted as inevitable. Moreover, for most businesses the only options have been to either own property or to sign long, inflexible leases, committing them to rising costs through rent reviews. The result of property's low profile meant that the true cost and impact of property on the bottom line went was poorly understood.

This approach to property, which led to a creeping acceptance of waste and inefficiency, has been challenged in more recent times. In the private sector, leading economist Roger Bootle drew attention to the fact that UK business was wasting up to £18 billion a year on the inefficient use of space, with scarce financial resources tied up in costs that reduce competitiveness and profitability.¹⁶ Similarly in the public sector, studies have shown how efficiencies can be made. One of the earlier reports was the NAO's study on the management of office space in the Ministry of Defence, which demonstrated how space could be used much more efficiently.¹⁷

The drive for efficiency in both the public and private sectors has been given increasing impetus by enabling technologies which have allowed the rapid spread of flexible working practices, and radically new ways of using office space.

Since 2003, many initiatives support the more efficient use of space and are directly relevant to this Report:

- Sir Michael Lyons recommended the large-scale relocation of civil servant posts from their high cost property in London to more cost effective property in the regions
- The Gershon Report (2003) identifying the potential for efficiencies to release resources to frontline priorities, confirmed by the 2004 Budget
- Subsequently, the Lyons Report on the Better Management of Public Sector Assets required a clear strategic asset management focus was required to bring about efficiencies in the Government's large estate
- In 2006, the OGC introduced the High Performing Property: Routemap to Asset Management Excellence, based on four principles of excellent asset management.
 - founded on skills, capability and professionalism;
 - supported by benchmarking, standards, tools and guidance;
 - matched by review, performance measurement, challenge and audit, and
 - overarched by strong, high level leadership and property asset management, integrated fully with strategic resource and business delivery.
- The NAO issued a report on Getting the Best from Public Sector Office Accommodation 2006, which used case studies to demonstrate the beneficial effects of best practice asset management. The report suggested potential savings in the Government estate of £1.5 - £2.0 billion per annum.
- In January 2007, the Transforming Government Procurement report outlined a range of central Government procurement reforms included new powers for the OGC to set standards across central Government as well as to promote estate transformation.

In 2003 the Government announced a cross-cutting review of the public sector aimed at identifying the potential for efficiencies in spending, to release resources to frontline priorities.

¹⁶ Bootle R (2002) Property in Business: A Waste of Space? RICS, London

¹⁷ National Audit Office (1999) Management of Office Space The Stationery Office, London

The Government accepted the main recommendations of Sir Peter Gershon's report¹⁸, and the 2004 Spending Review set out agreed efficiency targets for each department.

The Budget of 2004 followed up the Gershon report by announcing the Government's ambition to cut administration costs in real terms and achieve efficiency gains, across the public sector, of 2.5% per year over the period of the 2004 Spending Review. This was expected to deliver efficiencies of £20 billion a year by 2007-08, for redeployment to front-line public services.

The Gershon report was reinforced later in 2004 by one from Sir Michael Lyons¹⁹, who argued for better management of public sector assets. In submitting his report to the Chancellor of the Exchequer, Sir Michael set down a number of challenges to the Government.

- Generate efficiencies from assets that can be recycled into improving delivery.
- Develop asset management strategies that are driven by business plans.
- Make departments responsible for assets in the control of their agencies and bodies.
- Ensure that managerial responsibilities for asset management are clear.
- Develop a clear focus on the scope for reducing office space requirements.
- Make strategic asset management an integral part of resource management and business planning, underpinning future investment decisions.

The implications for property were clear: a clear strategic asset management focus was required to bring about efficiencies in the Government's large estate.

Sir Michael's call for improved efficiency in asset management had been trailed with a report recommending the large-scale relocation of civil servants from their high cost property in London to more cost effective property in the regions. The Lyons Review²⁰ recommended the relocation of 20,000 posts, a number that was confirmed in the 2004 Spending Review.

According to the OGC web site, "The Chancellor announced in his pre-Budget Report on 6th December 2006, that as at 30th September 2006, 10,574 posts have been successfully relocated". Going forward, 3,600 posts will be relocated in 2007/08; 1,300 in 2008/09 and 3,655 in 2009/10. This year will see major moves by Defence Logistics Organisation (580); department of Health (180) and Immigration and Nationality department (200).

At the OGC's February 2007 Relocation Conference, the department's Relocation Programme Manager gave a further update. Delivered relocation posts, he stated, were projected to reach 12,200 by the end of March 2007. The overall target of 20,000 is expected to be exceeded by the time the programme is complete. The Programme manager also reported that the programme had thus far resulted in the surrendering of around two million square feet of office space.

As the efficiency agenda gathered pace, those charged with its execution began to shape the practical implementation; the issues of asset management came into much sharper focus with the publication by the university of Leeds. In its introduction to High Performing Property: Routemap to Asset Management Excellence²¹, the OGC refers to the total central Government asset base of around £220 billion, and the need for it to evolve to reflect the efficiency and value

18 Gershon, Sir Peter (2004) Releasing Resources to the Front Line: Independent Review of Public Sector Efficiency HMSO, London

19 Lyons, Sir Michael (2004) Towards Better Management of Public Sector Assets HMSO, London

20 Lyons, Sir Michael (2004) Well Placed to Deliver? Shaping the Pattern of Government Service HMSO, London

21 OGC (2006) High Performing Property: Routemap to Asset Management Excellence OGC, London

agendas and to reflect the rising public expectation in terms of public services. The report set out an agenda for change.

The strategic target is to dispose of between £6bn and £7bn of surplus assets in central Government and to achieve annual efficiency savings of between £1 billion and £1.5 billion by 2012-2013 from an estate that costs £6 billion a year to run. Clearly this implies a strategic approach to the management of the estate, and the report identifies a number of opportunities within such an approach:

- selling surplus assets to free resources for new investment;
- transferring ownership of assets to the private sector where this secures better value for money, or by placing risk where it can be better managed;
- Identifying and capitalizing hidden assets, and
- Increasing value for money from retained assets and property.

High Performing Property challenges Government – centrally, through the departments and through the arms length bodies – to deliver a “a step change in performance”. The report defines central Government’s “high level framework and direction to achieve excellence in property asset management”. It highlights those strategic actions needed, together with milestones. The guidance is based on four underlying principles of excellent asset management:

- founded on skills, capability and professionalism;
- supported by benchmarking, standards, tools and guidance;
- matched by review, performance measurement, challenge and audit, and
- overarched by strong, high level leadership and property asset management, integrated fully with strategic resource and business delivery.

It promotes an approach where Government organisations embrace a number of basic principles.

- A clear and comprehensive approach to the integration of property asset management in strategic business delivery and resource management.
- Clearly defined and delivered asset management responsibilities, matched by skilled and capable staff and Board level representation, where appropriate.
- Use of performance measurement and management tools to deliver continuous improvement in the management and delivery of property assets.
- Maximised use and operation of an organisation’s estate, including early identification and disposal of surplus accommodation, optimum use of buildings and workspace through the adoption of effective workspace strategies, and optimum delivery against the Government’s sustainability targets.

The High Performing Property initiative takes place within a wider procurement agenda, being spearheaded by the OGC. In January 2007, Financial Secretary to the Treasury, John Healey MP, announced the publication of the Transforming Government Procurement report.²² The report outlined a range of public procurement reforms aimed at encouraging improvements to the delivery of public services. The reforms gave the OGC new powers, “tasking it with delivering the transformation of Government procurement and with driving up standards and procurement capability across central Government”. Subsequently, the OGC has issued the first in a series of letters to Permanent Secretaries and Chief Executives, setting out new standards and requirements that central Government departments and agencies will be expected to meet. The first letter called on departments to adopt the OGC's property benchmarking service “in order to improve the quality of performance information on their property holdings”.

22 HM Treasury (2007) Transforming Government Procurement HMSO, London

The drive for efficiency and effectiveness is now informed by empirical evidence that did not exist until very recently. For example, the OGC's property benchmarking service referred to in the previous paragraph is undertaken by benchmarking organisation, IPD. Its 2006 report²³, refers to a database now comprising 375 buildings, from 31 departments, housing 95,000 staff. The report suggests that "potential cost savings of 25% should be possible from a variety of both cost saving and space efficiency measures", suggesting an annual cost saving of at least £1.5bn.

Alongside the various initiatives to improve efficiency and effectiveness within asset management, there is also the increasing attention being given to the Government's property estate by the National Audit Office. In 2006, the office issued a report, Getting the Best from Public Sector Office Accommodation, which used case studies to demonstrate the beneficial effects of best practice asset management, suggested potential savings in the Government estate of £1.5 - £2.0 billion per annum.²⁴ At the time of publication of this report, the NAO was working on further analysis of the efficiency of government estate.

In January 2007, the NAO issued a further report outlining "indicator sets" for measuring value for money performance of five core functions: finance, human resources, information and communication technology, estates management and procurement. The indicators are designed to help managers monitor and improve value for money performance in the five areas to secure efficiency improvements and release resources for front-line services. Use of the indicator sets is voluntary, "with individual organisations deciding whether or not they would add value to their own performance management systems, benchmarking activities and improvement plans".

23 IPD (2007) OGC Property Benchmarking Report IPD, London

24 NAO (2006) Getting the Best from Public Sector Office Accommodation NAO, London

8 Appendix 3: Occupancy Density Person Reports and Bibliography

A fundamental element of the asset management agenda is to use workspace more efficiently, and central to this objective is the issue of occupancy densities. Using space more intensively has become a pervasive trend among both private and public sector organisations, with the goal of minimising the amount of space for which rent, rates and other property costs are paid. The question, of course, is: what represents a “good” or “bad” occupancy space per person?

There have been a number of reports and studies in recent years either using benchmarks or seeking to establish them. These studies are summarised in the table overleaf. All of them report benchmarks or averages over 12m² per person.

One of the first impressions to emerge from the table is that the data are not very consistent, ranging between around 12 sq m and 20 sq m (net lettable) per person. The BCO, TOCS and GLA benchmarks are all “adopted” standards for recommended best practice, whereas the other figures all result from empirical surveys seeking to establish the current situation.

Recommended best practice The BCO Standard is the one to which the design and investment community work, and is based on a notion of best practice, but also informed by Building Regulations related to fire escapes, lifts, stairs and so on. TOCS and GLA are based on knowledge of best practice, and the latter is used as a ratio with employment forecasts to project future demand for office space in London.

Empirical survey results Of the others, the two Roger Tym studies and the Gerald Eve study were all based on extensive surveys, and cluster around 16 sq m – 18 sq m. The AEP study was analysed in gross square feet, and a deduction of c20% is required to normalise the figures, to approximately 13 sq m – 16 sq m. The DTZ survey comprised the South East, excluding London, which probably explains the relatively high figure. The first IPD figure of 14.8 sq m relates to a pilot survey of Government buildings conducted in 2004, while the later figure of 14.5 sq m is taken from a larger sample in 2006.

Variance in the data is partly explained by sampling methods but, based on a knowledge of the various studies and their sampling, the later Roger Tym survey and the Gerald Eve study, at around 16 sq m, appear to be most representative of the current situation, at a macro level. It should be noted, however, that the large sample size used in the Gerald Eve study encompassed a wide range of office types and that the findings are biased by lower densities achieved at smaller, less efficient offices. It is implicit that each of the studies in the table assumes one desk per person.

The 2007 IPD report suggests that the Government estate has poorer space efficiency than the private sector. This is summarised in Section 4.

In addition, office occupancy standards of various types have been created in the past. An example of this is the Ministry of Defence’s Standard for offices which can be found at:

<http://www.defence-estates.mod.uk/publications/jsp/index.php>

Key Occupancy Space per Person Benchmarking Reports

Source	Space per person benchmark	Comments	Publication date
Roger Tym & Partners²⁵	17.9 sq m	Based on study of the South East	1997
Gerald Eve²⁶	16.3 sq m (Range: 10.6 sq m to 19.7 sq m)	National survey, cross-sector, with large sample	2001
Arup Economics & Planning²⁷	City, 20 sq m Business parks, 16 sq m General offices, 19 sq m	Arup presented their figures in gross rather than net lettable	2001
TOCS²⁸	14 sq m	Up to 12.5 sq m in the IT sector	2003
DTZ²⁹	20 sq m	Study of the SE, excluding London	2004
BCO³⁰	14 sq m (Range: 12 sq m to 17 sq m)	National guidance based on understanding of best practice	2005
IPD³¹	14.8 sq m	0.3m sq m, 130 building sample of the Government estate	2005
Roger Tym & Partners, et al³²	16.2 sq m (Range: 14.4 sq m to 20.6 sq m)	London study, large sample	2006
Greater London Authority³³	16.3 sq m	Rising to 13.9 sq m in forecasts of future standards.	2007
IPD³⁴	14.5 sq m	Based on a sample of 375 offices, 95,000 people and 1.4m sq m	2006

25 Roger Tym & Partners (1997) The Use of Business Space: Employment Densities and Working Practices in South East England Serplan, London

26 Gerald Eve (2001) Overcrowded, Underutilised or Just Right? Gerald Eve, London

27 Arup Economics and Planning (2001) Employment Densities: A Full Guide AEP, London

28 Actium Consult & CASS Business School (2003) Total Office Cost Survey Actium, London

29 DTZ (2004) Use of Business Space and Changing Working Practices in the South East SEERA, London

30 BCO (2005) BCO Guide 2005: Best Practice in the Specification for Offices BCO, London

31 IPD Occupiers (2005) Property Benchmarking Project OGC/51 Final Report for Pilot Phase IPD, London

32 Roger Tym & Partners, Ramidus Consulting & King Sturge (2006) The Use of Business Space in London RTP, London

33 Harris R, Chippendale D, Cundell I & Jones S (2007) London Office Policy Review 2007 Greater London Authority, London

34 IPD (2007) OGC Property Benchmarking 2006 Report IPD, London

9 Appendix 4: Detailed Analysis and Graphs

9.1 Cellular Space

Figure 6

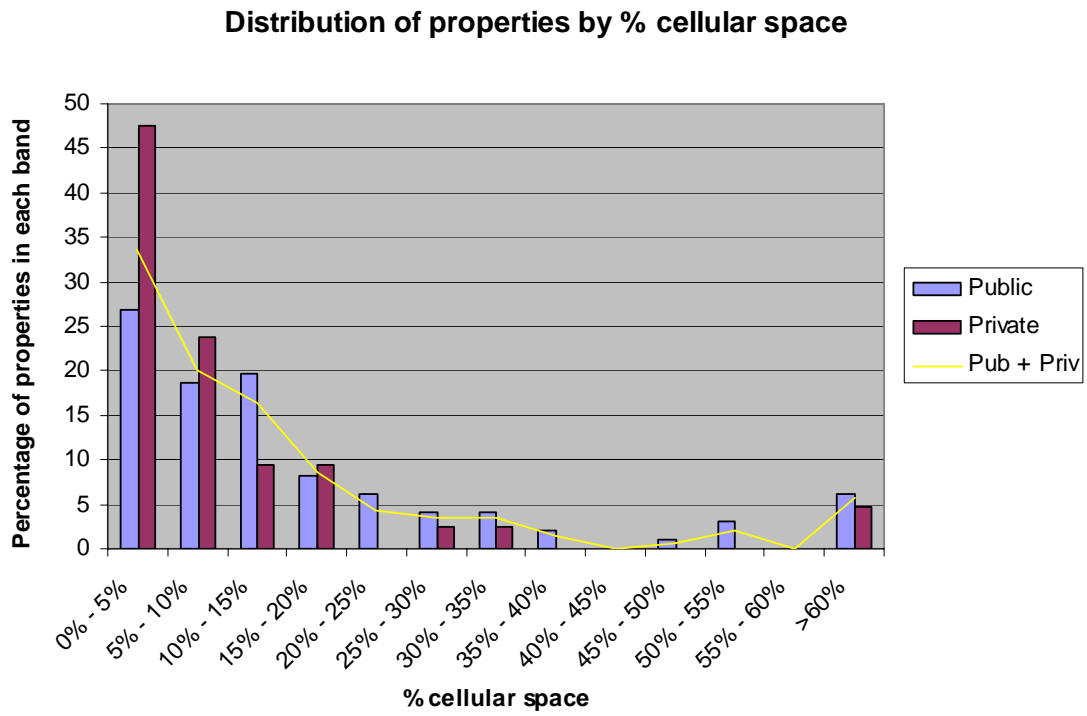


Figure 7

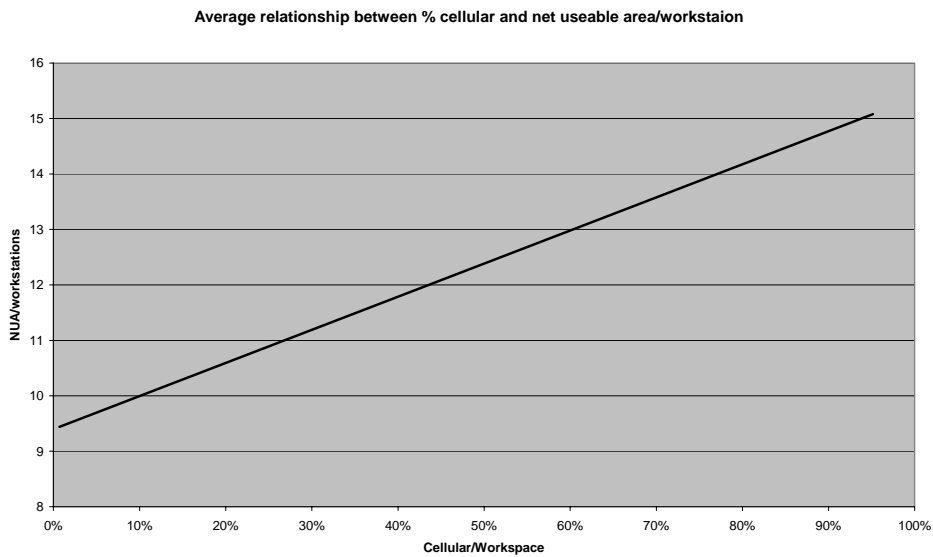
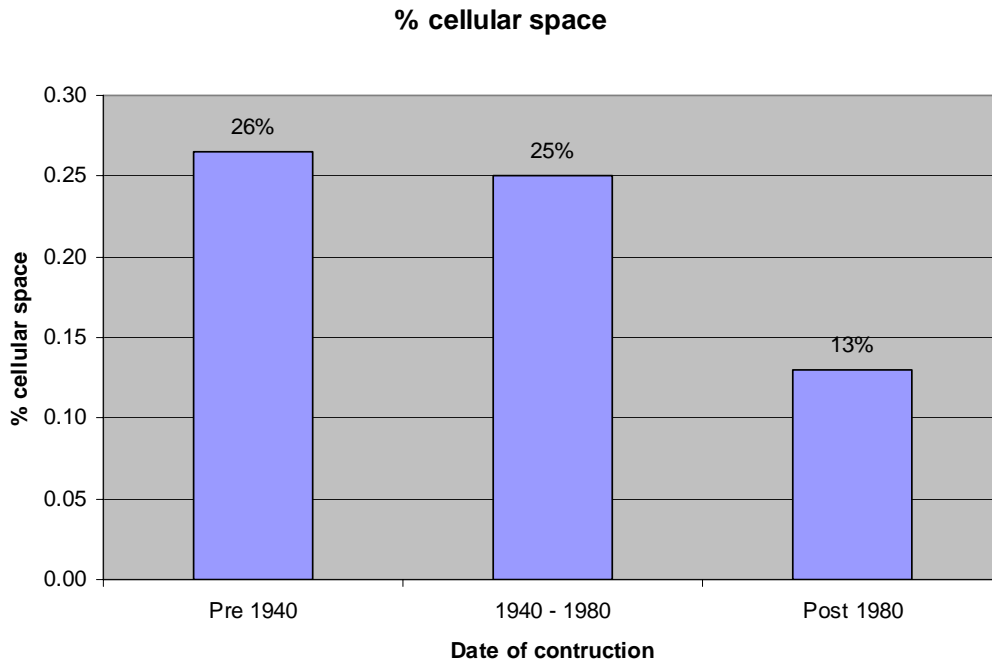
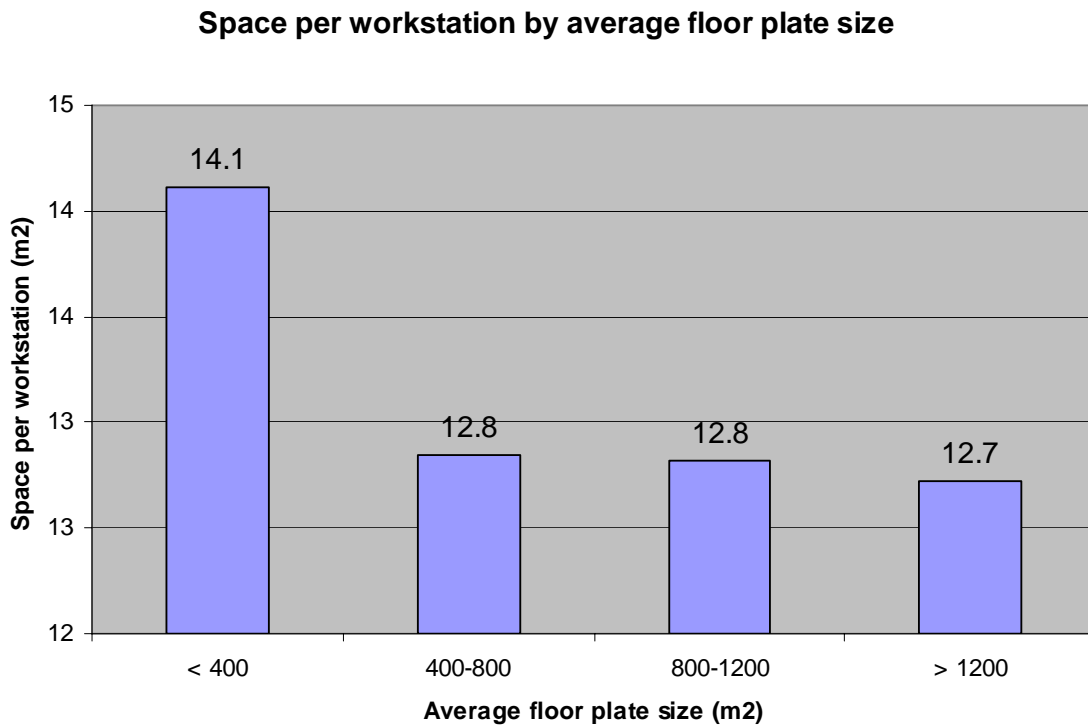


Figure 8



9.2 Influence of floorplate

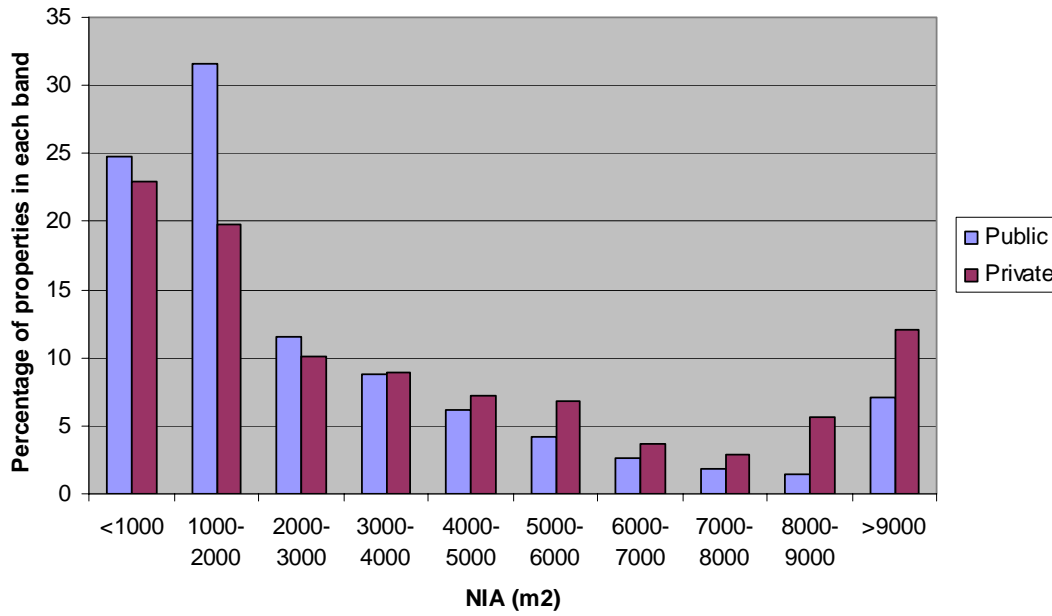
Figure 9



9.3 Office property size

Figure 10

Distribution of properties by total NIA



9.4 Influence of building age

Figure 11

Space per person

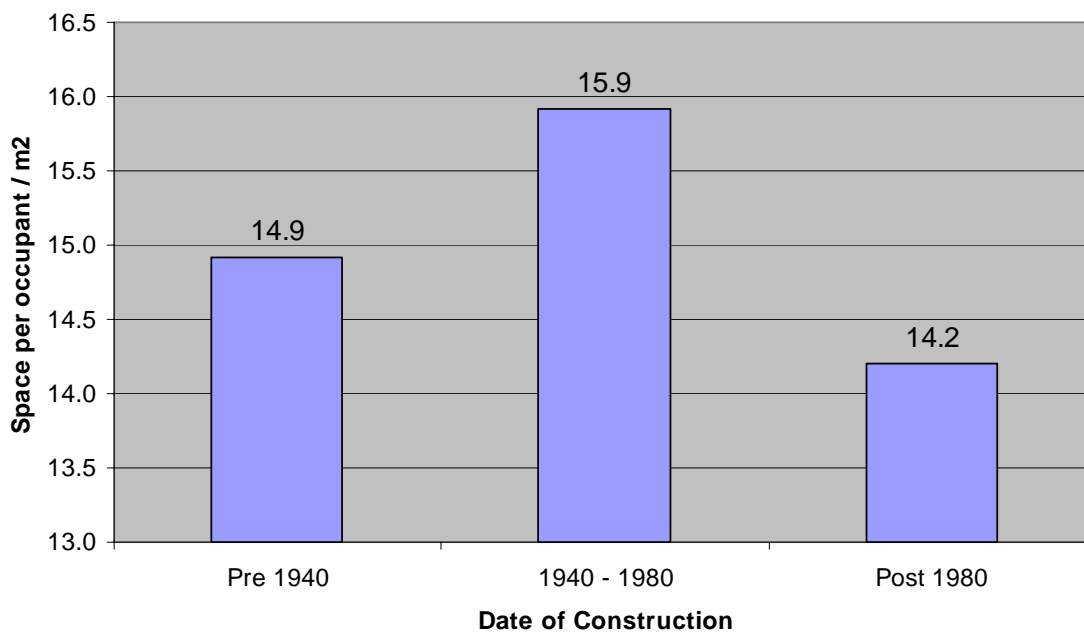
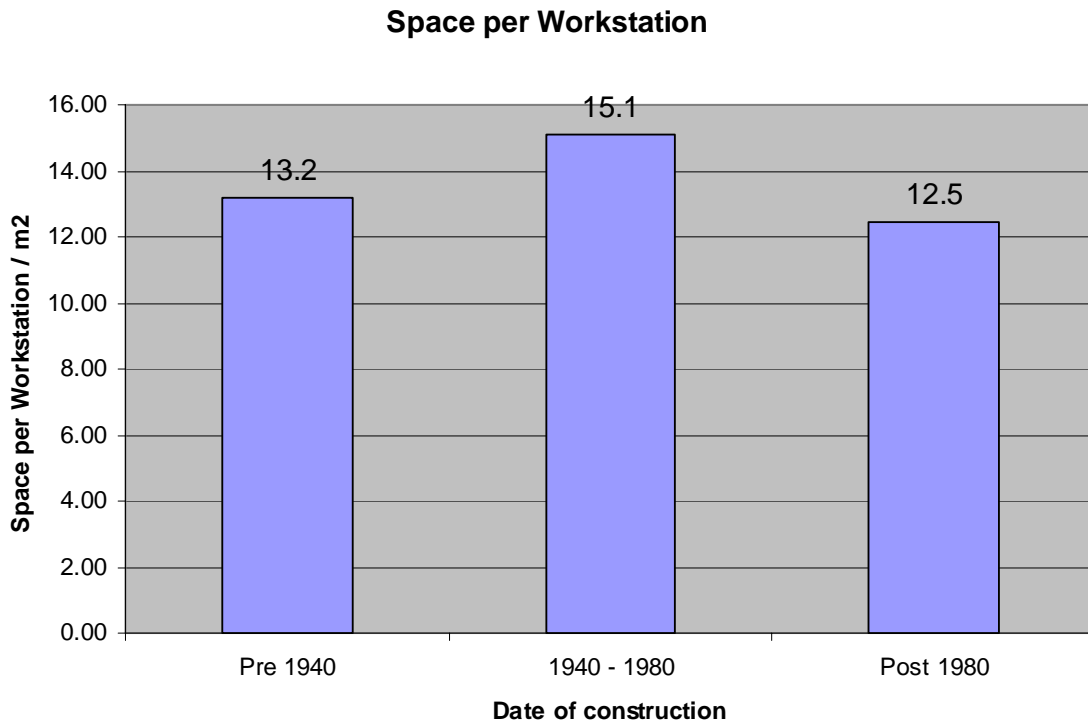


Figure 12



9.5 Influence of office type

Figure 13

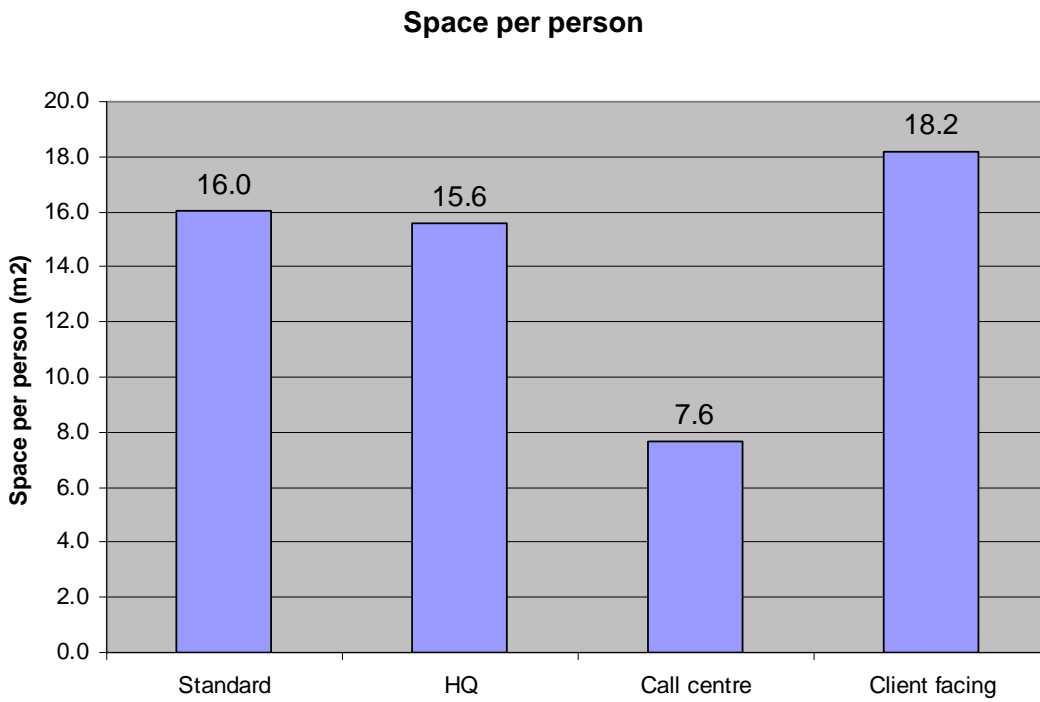
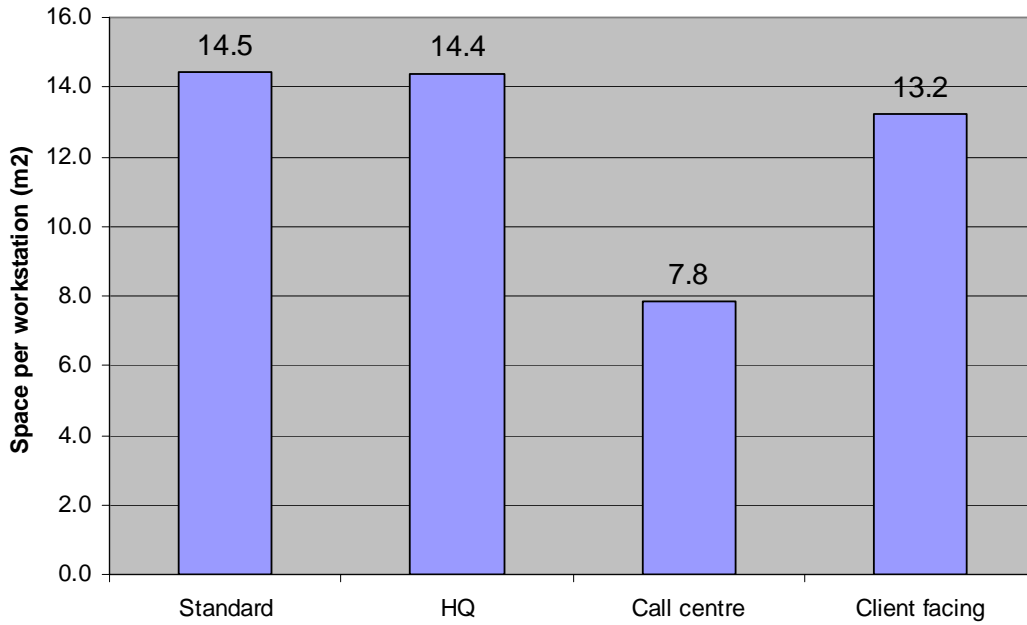


Figure 14

Space per workstation



9.6 Meeting space

Figure 15

Meeting space per person

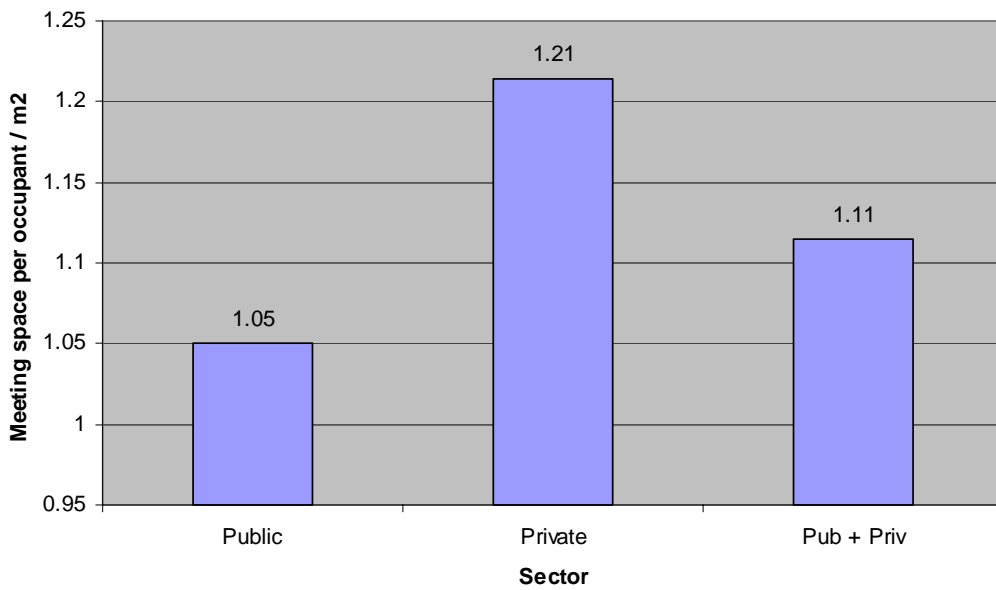
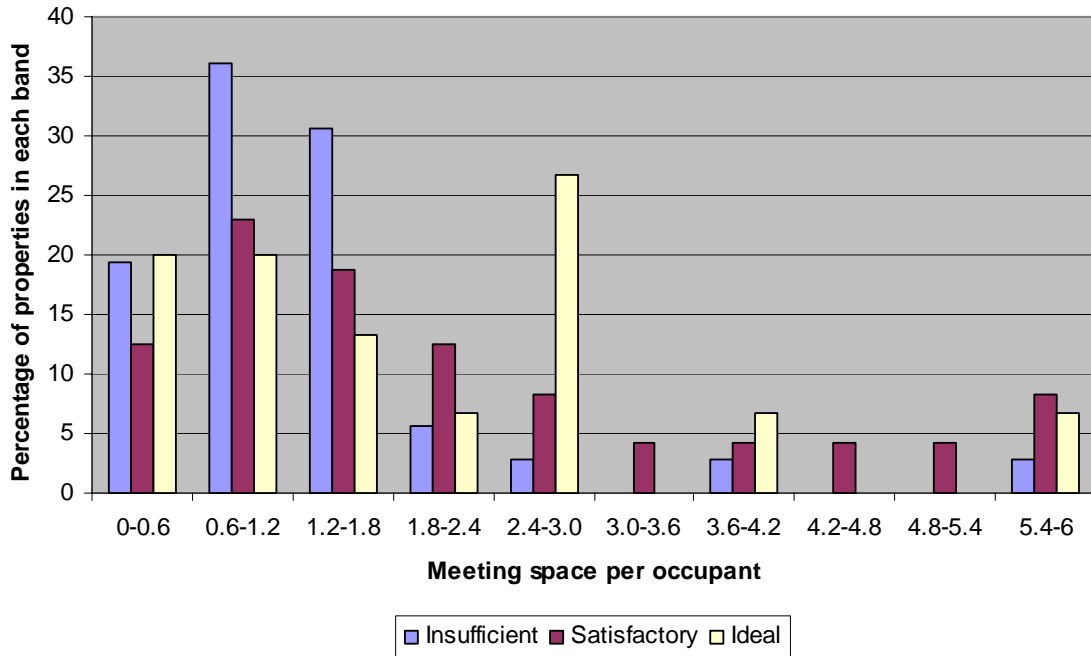


Figure 16

Distribution of satisfaction across meeting space per person



9.7 Employee satisfaction evidence

Figure 17

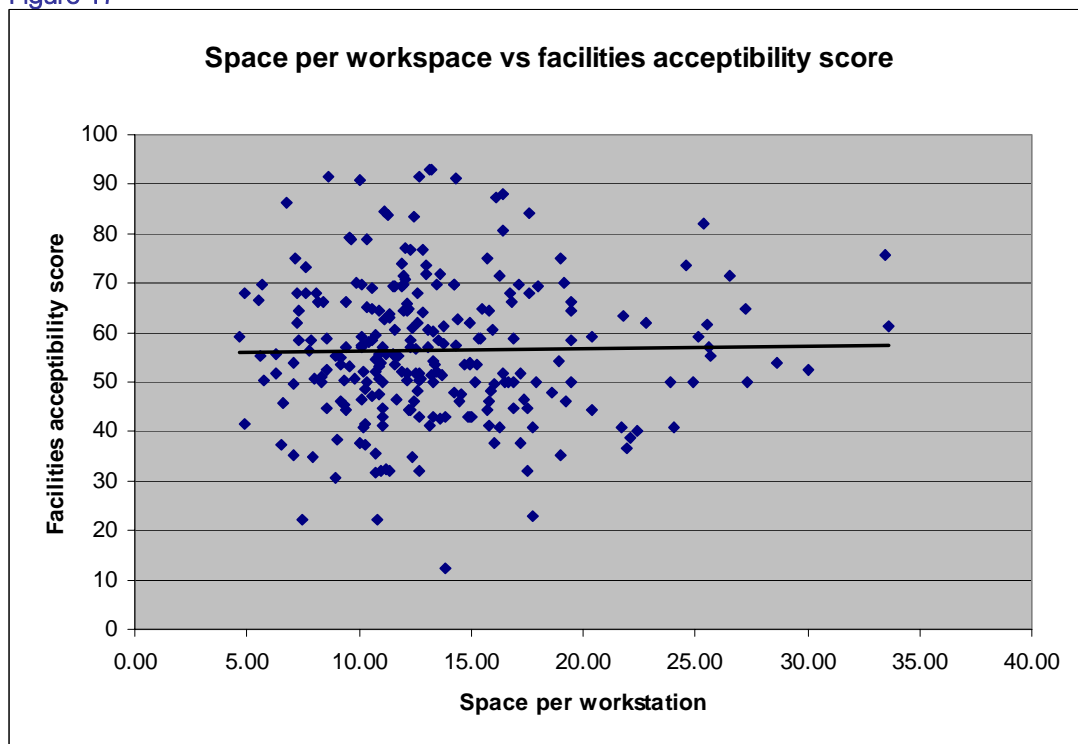


Figure 18

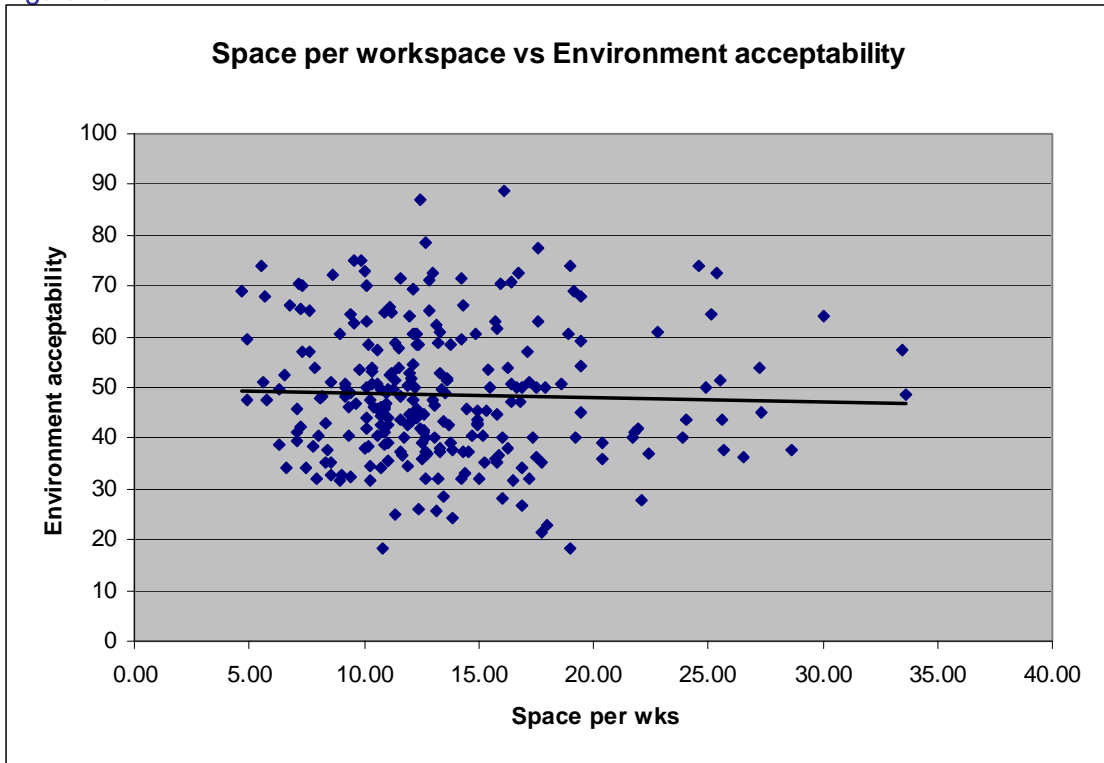


Figure 19

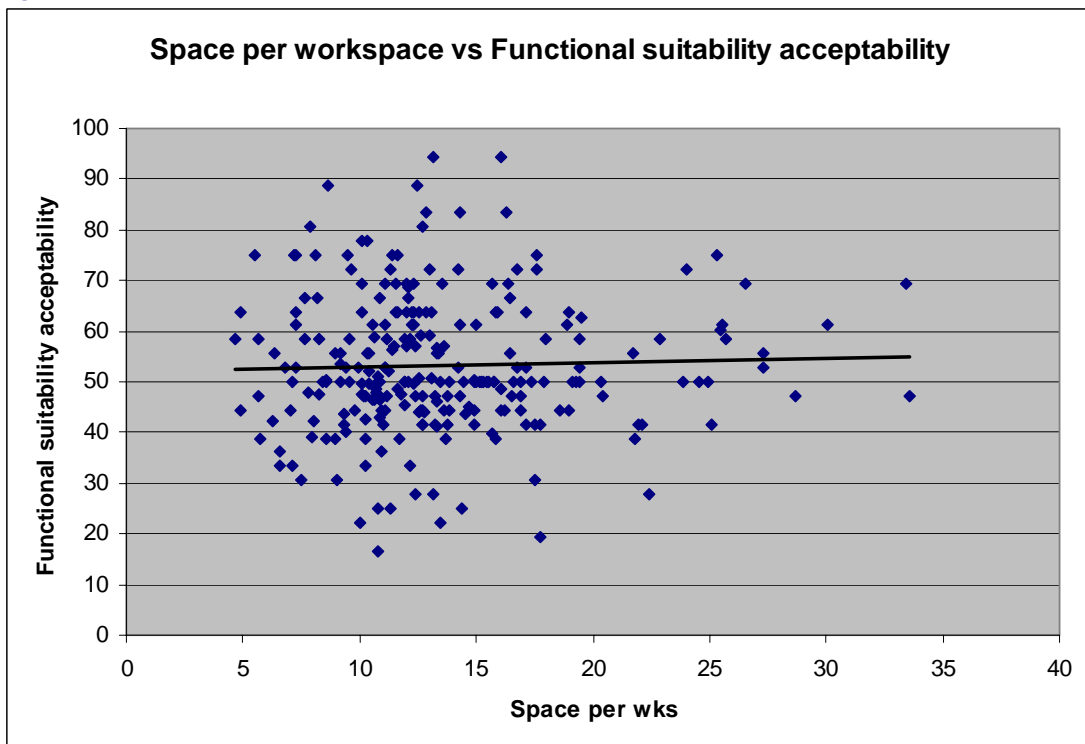
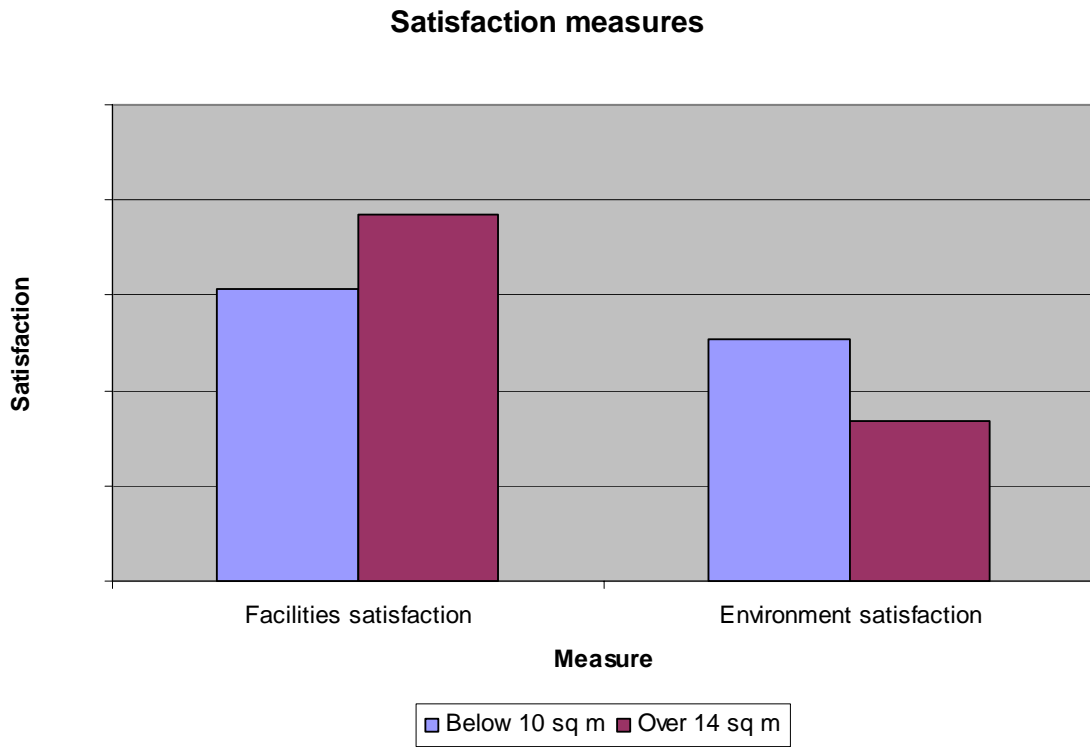


Figure 20



9.8 Environmental evidence

Figure 21

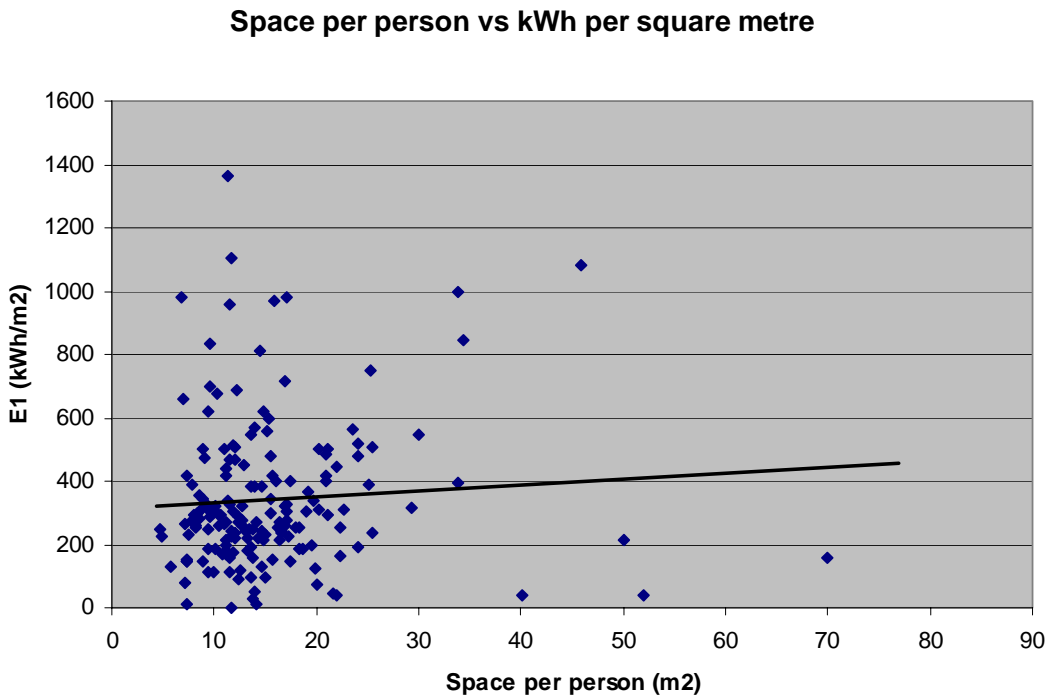
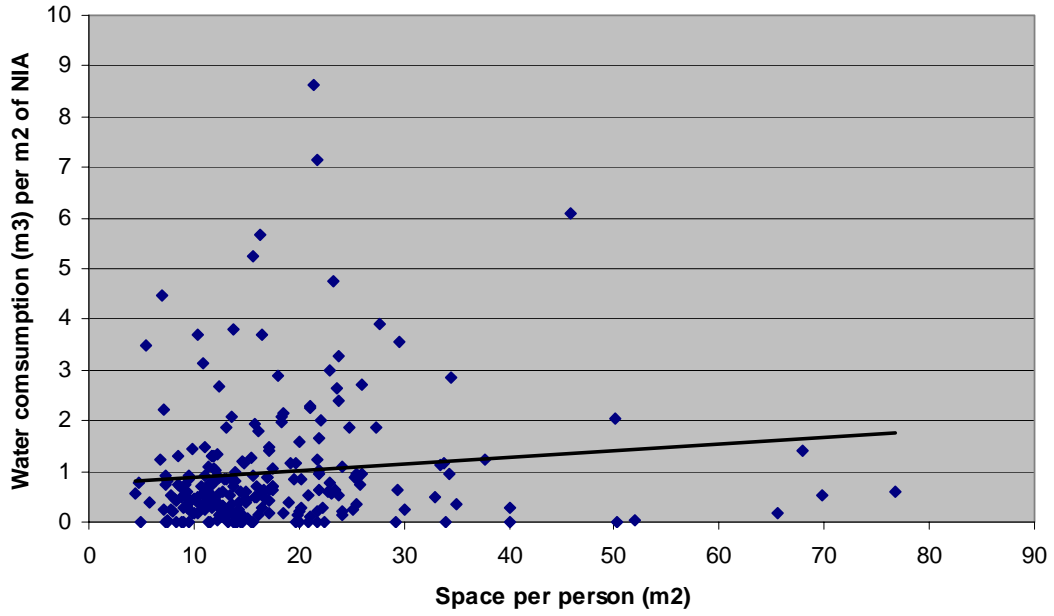


Figure 22

Space per person versus water consumption per square metre



10 Appendix 5: Space budget calculations

10.1 Space requirements

By way of example we have analysed the space requirements for a 600 workstation office building. For the building configuration, we used a six story building with approximately 1,550 m² per floor based on a 1.5 metre grid. We have identified six different types of workspace: with three enclosed and three open plan with different levels of space provision.

Of the 600 workstations, 5% are enclosed type I, 5% are enclosed type II, 10% are enclosed type III, 20% are open plan type I, 20% are open plan type II, and 40% are open plan type III. A summary of the analysis is presented below.

Spaces	no.	sq. m.	total
enclosed - I	30	17.25	517.50
enclosed - II	30	12.38	371.25
enclosed - III	60	7.50	450.00
open plan - I	120	10.50	1260.00
open plan - II	120	7.88	945.00
open plan - III	240	5.25	1260.00
Work Area			4803.75
Per workstation			8.01
large meeting space (1 per 100 FTE)	6	40.50	243.00
small meetings space (1 per 50 FTE)	12	18.00	216.00
print and copy (1 area per 25 FTE)	24	5.06	121.50
mailboxes (1 stack per 10 FTE)	60	0.15	9.00
filing (1 cabinet per 2 FTE)	300	0.56	168.75
storage (1 cabinet per 5 FTE)	120	1.13	135.00
break out area (1 area per 100 FTE)	6	18.00	108
Local Support			1001.25
Per workstation			1.67
conference room(s)	1	150.00	150.00
seminar room(s)	1	180.00	180.00
resource room(s)	1	240.00	240.00
restaurant/cafeteria	1	300.00	300.00
storage	1	240.00	240.00
mail/repro	1	180.00	180.00
IT/comms	1	150.00	150.00
Central Support			1440.00
Per workstation			2.40
Net Usable Area			7245.00
Per workstation			12.08
Primary Circulation			805.00
Per workstation			1.34
Net Internal Area			8050.00
Per workstation			13.42

Aiming for an optimal ratio of Work Area: Local Support : Central Support of 65% : 15% : 20% and adding a relatively efficient 10% for Primary Circulation (over Net Internal Area), the average space per workstation is 13.4 m² NIA. Taking this figure and adding further space for toilets, entrance halls and plant rooms, the following table calculates the required gross internal and external areas.

Net Internal Area			8050.00
Per workstation			13.42
toilets (1 per 25 FTE)	24	4.22	101.25
cleaners' room (1 per floor, but six floors)	6	5.06	30.38
Hygiene Area			131.63
entrance hall	1	145.8	145.80
lift lobby	1	36.45	36.45
Entrée Area			182.25
stairwells (2 per building, but six floors)	12	6.75	243.00
lift-wells (1 per 200 FTE, but six floors)	18	5.06	91.13
Vertical Circulation			334.13
lift/plant rooms (2.5% of Net Internal Area)	1	201.25	201.25
vertical ducts (1 per 100 FTE, but six floors)	36	0.56	60.75
Technical Area			262.00
Gross Internal Area			8960.00
Per workstation			14.93
Internal Structure (0.75% of GIA)			69.82
External Structure (3.0% of GIA)			279.27
Gross External Area			9309.09
Per workstation			15.52

Adding Hygiene Area, Entrée Area, Vertical Circulation and Technical Area, we get workstations with an average of 15.52 m² Gross External Internal Area.

A summary of both the area taken up by an average workstation and the most important space ratios is presented below.

Work Area	8.01	Work Area / Net Usable Area	66.30%
Local Support	1.67	Local Support / Net Usable Area	13.82%
Central Support	2.40	Central Support / Net Usable Area	19.88%
Net Usable Area	12.08		
Primary Circulation	1.34	Work Area / Net Internal Area	59.67%
Net Internal Area	13.42	Local Support / Net Internal Area	12.44%
Hygiene Area	0.22	Central Support / Net Internal Area	17.89%
Entrée Area	0.30	Primary Circulation / Net Internal Area	10.00%
Vertical Circulation	0.56		
Technical Area	0.44		
Gross Internal Area	14.93	Net Usable Area / Gross External Area	77.83%
Internal Structure	0.12	Net Internal Area / Gross External Area	86.47%
External Structure	0.47	Gross Internal Area / Gross External Area	96.25%
Gross External Area	15.52		

The Work Area takes up about 60% of Net Internal Area. Accordingly Local Support, Central Support and Primary Circulation take up 12%, 18% and 10% of Net Internal Area respectively. In addition, the Net Usable Area takes up 78% of Gross External Area; the Net Internal Area takes up 86% of Gross External Area; and the Gross Internal Area takes up 96% of Gross External Area.

10.2 The impact of workplace type

Fitting the same building described previously with one type of workplace only, the area taken up per workstation in each of the six models differs significantly. Depending on the type of workplace type, the average Net Internal Area per workstation ranges from 10.4m² to 23.7m². Similarly, the average Gross External Area per workstation ranges from 12.0m² to 27.2 m².

	enclosed grade I	enclosed grade II	enclosed grade III	open plan grade I	open plan grade II	open plan grade III
Work Area	17.25	12.38	7.50	10.50	7.88	5.25
Local Support	1.67	1.67	1.67	1.67	1.67	1.67
Central Support	2.40	2.40	2.40	2.40	2.40	2.40
Net Usable Area	21.32	16.44	11.57	14.57	11.94	9.32
Primary Circulation	2.35	1.82	1.29	1.61	1.33	1.04
Net Internal Area	23.67	18.26	12.85	16.18	13.27	10.36
Hygiene Area	0.26	0.24	0.22	0.23	0.22	0.21
Entrée Area	0.53	0.41	0.29	0.37	0.30	0.24
Vertical Circulation	0.98	0.76	0.53	0.67	0.55	0.43
Technical Area	0.77	0.59	0.42	0.53	0.43	0.34
Gross Internal Area	26.21	20.26	14.32	17.97	14.77	11.57
Internal Structure	0.20	0.16	0.11	0.14	0.12	0.09
External Structure	0.82	0.63	0.45	0.56	0.46	0.36
Gross External Area	27.23	21.05	14.87	18.68	15.35	12.02

Looking at the most important space ratios, the Work Area takes up 51% of Net Internal Area for open plan type III offices and 73% for enclosed type I offices. With Primary Circulation averaging around 10% for all workplace types, both Local Support and Central Support as a percentage of Net Internal Area decreases significantly when shifting from open plan offices to enclosed offices. This can be explained by the fact that these two space types are workstation or person related.

WA / NUA	80.91%	75.26%	64.83%	72.07%	65.93%	56.34%
LS / NUA	7.83%	10.15%	14.42%	11.45%	13.97%	17.91%
CS / NUA	11.26%	14.60%	20.75%	16.47%	20.09%	25.75%

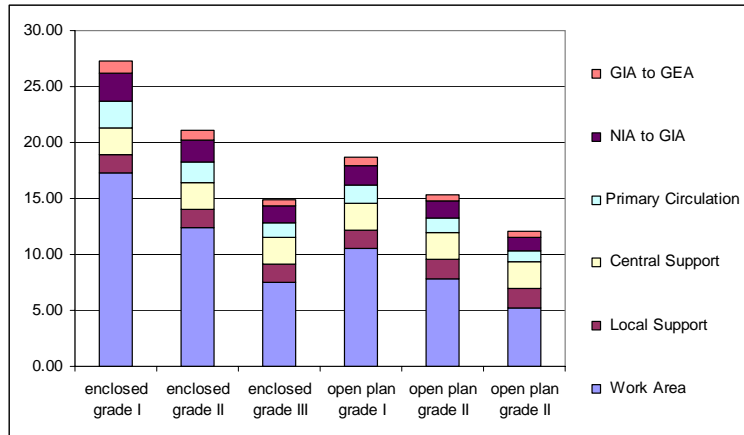
WA / NIA	72.87%	67.76%	58.34%	64.88%	59.34%	50.68%
LS / NIA	7.05%	9.14%	12.98%	10.31%	12.57%	16.11%
CS / NIA	10.14%	13.14%	18.67%	14.83%	18.08%	23.17%
PC / NIA	9.95%	9.97%	10.01%	9.98%	10.00%	10.04%

NUA / GEA	78.30%	78.11%	77.78%	78.01%	77.82%	77.51%
NIA / GEA	86.94%	86.76%	86.43%	86.66%	86.46%	86.16%
GIA / GEA	96.25%	96.25%	96.25%	96.25%	96.25%	96.25%

In addition, the Net Usable Area takes up 78% of Gross External Area; the Net Internal Area takes up 86% to 87% of Gross External Area; and the Gross Internal Area takes up 96% of Gross External Area. Although these differences seem negligible, it means that the space allocated to Hygiene Area, Entrée Area, Vertical Circulation and Technical Area strongly relate to the Net Internal Area per workplace type. Making up 10% to 11% of Gross External Area, the associated service charges for these areas in enclosed offices can be much higher per workstation when compared with open plan offices.

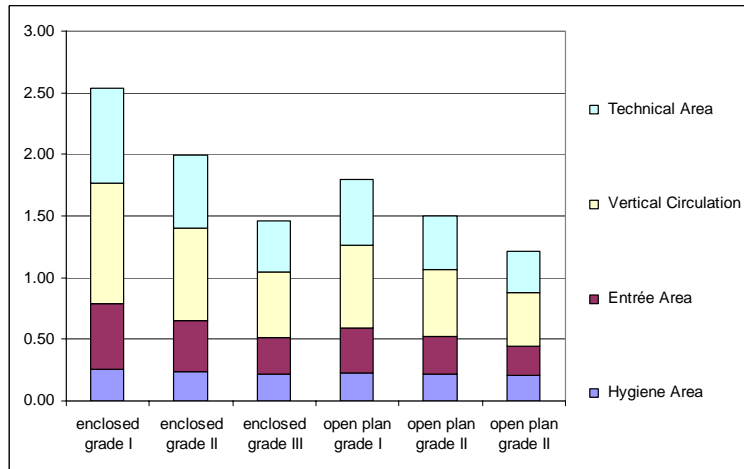
Impact on rent

With rent being calculated over the Net Internal Area, and this figure increasing from 10.36 m² for open plan type III offices to 23.67 m² for enclosed type I offices, the associated rent will increase by 230%.



Impact on service charges

With a large chunk of the service charges being strongly related to the difference between Gross Internal Area and Net Internal Area, and this figure increasing from 1.21 m² for open plan type III offices to 2.53 m² for enclosed type I offices, the associated service charges are likely to increase.



Work Area	6.71
Local Support	1.67
Central Support	2.40
Net Usable Area	10.78
Primary Circulation	1.20
Net Internal Area	11.98
Hygiene Area	0.22
Entrée Area	0.30
Vertical Circulation	0.56
Technical Area	0.40
Gross Internal Area	13.46
Internal Structure	0.10
External Structure	0.42
Gross External Area	13.98

Based on any chosen ratio of workplace types within one building, one can easily calculate the resulting average floor areas. If one were to plan 10% enclosed type II, 10% enclosed type III, 20% open plan type II, and 60% open plan type III, you multiply these ratios with the related floor area, add up the outcomes, and divide them by 100%. Following this example, the average Net Internal Area per workstation would be 12.0 m².

Looking at Gross External Area per workstation, the average would be 14.0 m². Accordingly one can fit 666 workstation in the same building; a 11% increase.

10.3 The impact of flexible working

Using the same building described previously, but applying a desk-sharing policy of 1.2 people per workstation, one can significantly reduce the Net Internal Area per person. The total space allocated to the 600 workstations stays exactly the same, but is now shared by 720 people as opposed to 600. With both Local Support and Central Support being person related, these totals increase by 20%. Since the building size and configuration stay the same, Primary Circulation can be kept at 10% of Net Internal Area. A summary of the analysis is presented below.

Spaces	no.	sq. m.	total
enclosed - I	30	17.25	517.50
enclosed - II	30	12.38	371.25
enclosed - III	60	7.50	450.00
open plan - I	120	10.50	1260.00
open plan - II	120	7.88	945.00
open plan - III	240	5.25	1260.00
Work Area			4803.75
Per workstation			6.67
large meeting space (1 per 100 FTE)	7	40.50	291.60
small meetings space (1 per 50 FTE)	14	18.00	259.20
print and copy (1 area per 25 FTE)	29	5.06	145.80
mailboxes (1 per 10 FTE)	72	0.15	10.80
filing (1 per 2 FTE)	360	0.56	202.50
storage (1 per 5 FTE)	144	1.13	162.00
break out area (1 per 100 FTE)	7	18.00	129.60
Local Support			1201.50
Per workstation			1.67
conference room(s)	1	180.00	180.00
seminar room(s)	1	216.00	216.00
resource room(s)	1	288.00	288.00
restaurant/cafeteria	1	360.00	360.00
storage	1	288.00	288.00
mail/repro	1	216.00	216.00
IT/comms	1	180.00	180.00
Central Support			1728.00
Per workstation			2.40
Net Usable Area			7733.25
Per workstation			10.74
Primary Circulation			859.25
Per workstation			1.19
Net Internal Area			8592.50
Per workstation			11.93

Net Internal Area			8592.50
Per workstation			11.93
toilets (1 per 25 FTE)	24	4.22	101.25
cleaners' room (1 per floor, but six floors)	6	5.06	30.38
Hygiene Area			131.63
entrance hall	1	174.96	174.96
lift lobby	1	43.74	43.74
Entrée Area			218.70
stairwells (2 per building, but six floors)	12	6.75	243.00
lift-wells (1 per 200 FTE but six floors)	21.6	5.06	109.35
Vertical Circulation			352.35
lift/plant rooms (2.5% of Net Internal Area)	1	214.81	214.81
vertical ducts (1 per 100 FTE but six floors)	43.2	0.56	72.90
Technical Area			287.71
Gross Internal Area			9582.89
Per workstation			13.31
Internal Structure (0.75% of GIA)			74.67
External Structure (3.0% of GIA)			298.69
Gross External Area			9956.25
Per workstation			13.83

A summary of both the area taken up by an average workstation and the most important space ratios is presented below.

Work Area	6.67	Work Area / Net Usable Area	62.12%
Local Support	1.67	Local Support / Net Usable Area	15.54%
Central Support	2.40	Central Support / Net Usable Area	22.35%
Net Usable Area	10.74		
Primary Circulation	1.19	Work Area / Net Internal Area	55.91%
Net Internal Area	11.93	Local Support / Net Internal Area	13.98%
Hygiene Area	0.18	Central Support / Net Internal Area	20.11%
Entrée Area	0.30	Primary Circulation / Net Internal Area	10.00%
Vertical Circulation	0.49		
Technical Area	0.40		
Gross Internal Area	13.31	Net Usable Area / Gross External Area	77.67%
Internal Structure	0.10	Net Internal Area / Gross External Area	86.30%
External Structure	0.41	Gross Internal Area / Gross External Area	96.25%
Gross External Area	13.83		

As one can see the Work Area decreases to about 56% of Net Internal Area, whereas both Local Support and Central Support increase to about 14% and 20% of Net Internal Area respectively. Primary Circulation stays at 10% of Net Internal Area.

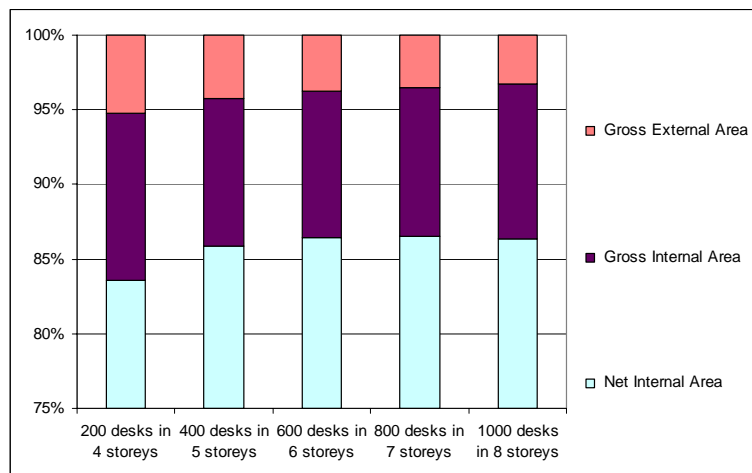
With Hygiene Area, Entrée Area, Vertical Circulation and Technical Area being strongly related to the number of people, the associated space also increases by up to 20%, therefore resulting in a slightly less favourable Net Internal Area - Gross External Area ratio.

10.4 The impact of building size

Since we used a bottom-up approach to our space requirements exercise, building size does not directly affect the Net Internal Area space requirement. Important for owner-occupiers, however, is the fact that building size will impact both the Gross Internal Area and the Gross External Area. A summary analysis is presented below for five different building sizes.

	200 desks in 4 storeys	400 desks in 5 storeys	600 desks in 6 storeys	800 desks in 7 storeys	1000 desks in 8 storeys
Work Area	8.01	8.01	8.01	8.01	8.01
Local Support	1.67	1.67	1.67	1.67	1.67
Central Support	2.40	2.40	2.40	2.40	2.40
Net Usable Area	12.08	12.08	12.08	12.08	12.08
Primary Circulation	1.34	1.34	1.34	1.34	1.34
Net Internal Area	13.42	13.42	13.42	13.42	13.42
Hygiene Area	0.27	0.23	0.22	0.21	0.21
Entrée Area	0.20	0.25	0.30	0.35	0.41
Vertical Circulation	0.91	0.63	0.56	0.53	0.53
Technical Area	0.40	0.42	0.44	0.45	0.47
Gross Internal Area	15.20	14.95	14.93	14.97	15.03
Internal Structure	0.17	0.13	0.12	0.11	0.10
External Structure	0.67	0.53	0.47	0.43	0.40
Gross External Area	16.05	15.62	15.52	15.51	15.53
NUA / GEA	75.25%	77.31%	77.83%	77.84%	77.74%
NIA / GEA	83.62%	85.90%	86.47%	86.49%	86.38%
GIA / GEA	94.75%	95.75%	96.25%	96.50%	96.75%

With Hygiene Area and Vertical Circulation decreasing proportionally more than the increase on Entrée Area and Technical Area when comparing a larger building to a smaller building, larger buildings seem to result in more favourable Net Internal Area - Gross External Area ratios.



Due to the exponential impact of lifts, however, the Vertical Circulation will start to increase again at a certain building size.

Combining the two observations, the 7 storey building housing 800 desks, results in the most favourable Net Internal Area - Gross External Area ratio.

10.5 The impact of building configuration

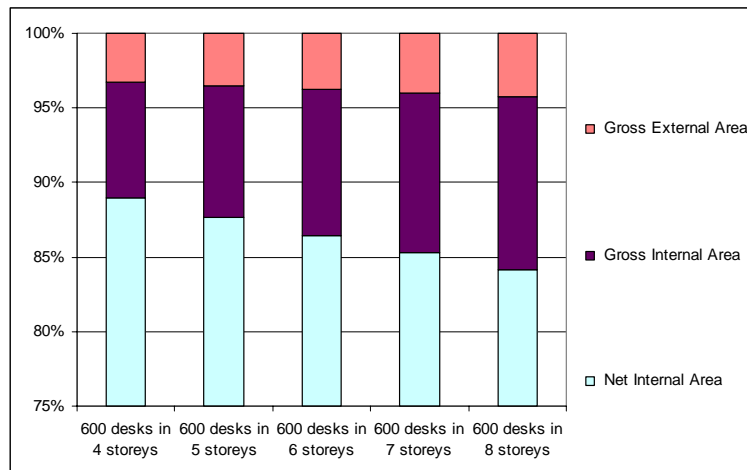
A similar analysis can be carried out to test the impact of varying the number of storeys to house the 600 workstations. The example below takes buildings in 4 to 8 storeys with different sized floorplates.

	600 desks in 4 storeys	600 desks in 5 storeys	600 desks in 6 storeys	600 desks in 7 storeys	600 desks in 8 storeys
Work Area	8.01	8.01	8.01	8.01	8.01
Local Support	1.67	1.67	1.67	1.67	1.67
Central Support	2.40	2.40	2.40	2.40	2.40
Net Usable Area	12.08	12.08	12.08	12.08	12.08
Primary Circulation	1.34	1.34	1.34	1.34	1.34
Net Internal Area	13.42	13.42	13.42	13.42	13.42
Hygiene Area	0.20	0.21	0.22	0.23	0.24
Entrée Area	0.20	0.25	0.30	0.35	0.41
Vertical Circulation	0.37	0.46	0.56	0.65	0.74
Technical Area	0.40	0.42	0.44	0.45	0.47
Gross Internal Area	14.60	14.76	14.93	15.10	15.27
Internal Structure	0.10	0.11	0.12	0.13	0.14
External Structure	0.39	0.43	0.47	0.50	0.54
Gross External Area	15.09	15.30	15.52	15.73	15.95
NUA / GEA	80.04%	78.92%	77.83%	76.76%	75.71%
NIA / GEA	88.93%	87.69%	86.47%	85.29%	84.12%
GIA / GEA	96.75%	96.50%	96.25%	96.00%	95.75%

With Hygiene Area, Entrée Area, Vertical Circulation and Technical Area all increasing when comparing a high-rise building with small floor plates to a low-rise building with large floor plates, high-rise buildings result in less favourable Net Internal Area - Gross External Area ratios.

Based on this observation, the most favourable Net Internal Area - Gross

External Area ratio can be achieved when housing 600 desks in a 4 storey building.



11 Appendix 6: Case Study details

11.1 Project case studies

The following text summarises the main themes to emerge from a series of visits to six central Government department buildings. The visits took place on Wednesday 25th July, Thursday 26th July and Friday 27th July. The building tours were led by local building managers. For the purposes of confidentiality requested by departments, this report does not name the buildings but all buildings were located in central London.

The overwhelming themes to emerge from the visits is the importance of cultural barriers and an understanding of the influence of business functions associated with the property in achieving improvements in occupancy efficiency. While physical constraints in the buildings can impose some inefficiencies (eg through poorly configured space), and while budgetary constraints can impose others (eg through the lack of financial resource to make changes), the cultural issues and perceived necessity to occupy space in a particular manner as determined by business needs predominate. The ability of senior individuals and functional areas within buildings to set their own rules and to countermand those set down by building managers is a major cause of inertia.

Organisational issues

What goes on in the building? What are the main work types? Has the organisation changed recently? How long in occupation? How easy to forecast are headcount numbers?

Change management It is clear from the building visits that “change” is a fact of life for most of the building managers. To a greater or lesser extent five of the six building have experienced internal reconfiguration in recent times. departmental restructuring, combined with frequent “new policy initiatives”, and demand from short-term project teams, mean that the managers are under regular pressure to reconfigure their space. This fact reinforces the importance of having flexible furniture and layouts, together with mainly open plan space, to enable people to move without expensive furniture moves and dismantling of internal partitions.

Work patterns The nature of work undertaken in the buildings varies quite significantly and as a consequence impacts heavily on the manner in which the space is used. While there is an element of “Standard administrative work” in some of the space, it is also clear that many people are working in quite specific ways. Some are listed below.

- Highly confidential work, involving personnel and legal documentation, some requiring two separate terminals to work from.
- Highly concentrated, solo work, involving policy and legislative drafting.
- Collaborative work, for short-term projects and cross-department work.
- “Customer” facing work, including meetings with the public and external bodies.
- Press and public relations, where external relations are important.
- Ministerial support, where access and response times are critical
- “Corporate services” (IT, Property, HR and Finance) where cross department contact is critical

All the above workstyles have space implications. In some of the case studies the building visited is one of a number occupied by the department and associated NDPBs and Executive Agencies. In these cases, daily headcounts in the buildings change quite significantly and unpredictably, as visitors attend some quite large meetings.

Cultural issues It is clear in much of the space visited that deep cultural attitudes and behaviours frustrate more efficient use of space. During the case study several building managers indicated that they were not adverse to open plan working environments but could not implement them on the grounds that the business functions could not operate in such an environment. Part of the emphasis in driving greater space efficiencies has to therefore come through education in order to illustrate how open plan environments can be used, in certain circumstances, effectively to meet these perceived 'exceptional' workplace styles.

The most pervasive issue is that senior individuals or particular teams/functions are allowed to override the recommendations of the building manager. Two generic examples illustrate the point.

- Some individuals (senior staff as well as Ministers) demand very large offices and associated functions (eg dedicated meeting rooms) on the grounds of seniority or "need" (see RH). Seniority often goes unquestioned, while building managers lack the authority to question "need".
- Certain departments or functions "manage" their space differently to the remainder (see Arts department in SG) of the building. This normally means less a well managed environment, and therefore less efficient use of space.

In addition the case study identified certain traits, possibly unique to Government, which posed its own problems when trying to drive through space efficiencies. Firstly, one department identified a need to be located in close physical proximity to other departments / areas of the city because that is where the heart of the 'industry' takes place. In these instances location is paramount with the nature of the available space and its potential for space efficiency not as important as the physical location itself e.g. legal London. A second factor influencing space utilisation between similarly functioning agencies within a department is the importance placed on being seen to be independent. In effect the creation of Chinese Walls has to be established to maintain transparency and avoid the impression of undue influence which will influence how departments can plan for space allocation and in some instances limit their options.

Such behaviours can have a dramatic effect on the overall measured efficiency of a building.

Building management

Has the fit out been changed recently? What has been done? If so, what changes have been made, with what effect? How have densities changed? If there have been no changes, why not? What could be done to improve efficiency of space use?

As noted above, the buildings visited have undergone regular internal change. Much of this change appears to have been reactive, but the net result has been increased efficiencies.

Building strategy It is clear in a number of the case studies that there is no overall "occupancy strategy" for the building. Working to often very short time horizons this is not unsurprising. However, the presence of such a strategy would set down space standards, workplace protocols (for example, behaviour), and office procedures (for example, meeting room booking, etc). They are now common in the corporate sector, and very good reasons have to be provided for "breaking the rules".

In the case studies, the absence of a building strategy has allowed quite diverse space management solutions to evolve, introducing inefficiencies such as over-provision of support

facilities. Many of the physical changes that were described by the building managers had been instigated by demands from user groups for specific purposes rather than as part of an overall strategy. If estate teams could be engaged earlier within any planning process those who better understand and appreciate the space demands on a property may well be able to provide significant input to more practical and realistic space planning requirements before the plans are too far down the line to affect any change.

Internal changes The most common change to the fit out of the buildings visited is the removal of internal partitions. This has happened in at least three of the buildings. Not surprisingly these are the three most efficient buildings in the sample, all reporting significant increases in densities over recent years.

Perhaps the second most common feature of internal change is the spread of informal meeting and drop-in areas. At least four of the six case studies have good provision of such space, mostly recently introduced.

Sub-leasing At least three of the case studies have “sub-tenants” on MOTO arrangements. They have been able to reduce their own occupied space through increased densities, and to release surplus space to other users.

Potential improvements The case studies all have very committed and enthusiastic local building managers, who have sought to maximise the efficient use of their space. Given physical and financial constraints, it was reported that one of the greatest challenges remaining is the mindset change required to absorb the implications of flexible working patterns.

Building constraints

What are the main physical constraints in the building? Consider: configuration, depth, planning grid, circulation, M&E, etc.

In at least three of the case studies (RH, CH and HG) the historic character of the buildings creates major inefficiencies in terms of circulation space. Not surprisingly, these three buildings are the least efficient of the six buildings in the sample in their space use. The primary circulation routes in each case are wide, very significantly affecting the amount of net usable space available.

In these buildings, there is a good deal of structural division of the space. This has introduced rooms, often large, where they are not needed, although in some cases they have been efficiently used as team or project rooms. In one case a mansard roof also limits the efficiency of the top floor of the building. In another case study it was reported that the current increased space per person of the building has led to an under-provision of toilets.

The other three buildings show few serious physical constraints, each with a good supply of efficient and light space.

Layout

What are the main layout characteristics (enclosure, open plan, furniture)? Is there a dominant layout form? What is the typical desk size and configuration?

There is a wide variety of layout solutions in the sample buildings, partly driven by building configuration, but also strongly influenced by furniture solutions and local approaches to space

management. There are no formal “rules” or “standards”, with local users more typically determining the precise layouts, within the constraints of a given furniture solution.

There is plentiful evidence of internal partitions being removed in recent times to introduce more open plan space, although there remains a significant proportion of often generously-proportioned individual rooms. The predominant layout pattern is open plan, with a small number of cellular offices.

Desks The case studies contain a wide variety of desk configurations. At least two buildings visited have recently switched from larger L-shaped desks with CRT screens, to rectangular desks and flat screens, with hard drives slung beneath desks. The impact on densities was significant. However, some of the rectangular desks are large (1800mm long), and in several instances, single rectangular desks have been supplemented with returns and in-fills. This negates the gains made through a more efficient desking solution.

Technology One organisation in the case studies is planning the introduction of thin client technology, which is a key enabler of workplace mobility. The expectation is that a currently quite limited flexible working pilot will see significant growth. The essence of thin client technology is that space-efficient screens are fed from centralised servers, while users carry smart cards, providing them access to their files from any workstation in the building. In another example secure networks were in place to allow working from home and secure access to servers externally but the workplace culture and technological limits (speed) had not yet fully developed in order to allow this to be more successfully embraced.

Desk sharing The overall incidence of desk sharing and flexible working appeared to be low. The only pilot project to be seen was in BS. In the other buildings there is provision of “drop-in” facilities for staff visiting from other buildings, but very little desk sharing.

At BS desk sharing has been introduced on one floor as a pilot for a building-wide initiative aimed at achieving an 8:10 ratio (Desks:People). Occupation of the floor has increased from around 135 to c165. However, despite the use of mobile file cabinets (“K9s”) to enable mobility, many people in practice use the same desk each day, and there was plentiful evidence of desk ownership and semi-permanent occupation.

Local support space

Does the ancillary provision look well planned? Are printers shared? How many vending/break out points? Is filing generous or tightly rationed? How is storage managed?

Management of local support This varies widely across the sample buildings. In some of the space visited, control over local support space is quite weak. Desks and their immediate surroundings are very cluttered with both personal and work effects. Some of those interviewed have no policy in place, for example, to control the amount of filing and storage per person. In other cases where policies exist, they are clearly not tightly enforced. In two cases domestic fridges are scattered randomly around the floors.

Some of the building managers interviewed recognise that control over “house keeping” issues is poor. Office clutter, local storage and personalised space all contribute to space inefficiency. Two of the case studies undertake periodic “bag it and bin it” campaigns to reduce the level of clutter, but the impact is limited. The approach to local support reinforces the overriding conclusion from the case studies that cultural issues lie at the heart of potential further improvements in space efficiency.

Meeting rooms, break outs and vending areas These important components of the local support space budget must be managed carefully to ensure adequate provision. In the case studies, combined break out and vending areas have been introduced and are reported to be popular. Meeting rooms, because of the partitioning involved tend to be fixed and take up space in prime office areas.

There was little evidence during the visits that smaller desk allocations and increased meeting and break out space had been rigorously planned and balanced. Most allocations appear to be “responsive” in nature. There also appears to be little connection between the incidence of large cellular offices with meeting space, sometimes for up to twelve people, and the number and distribution of meeting rooms.

Filing and storage Provision of local filing and storage in most cases is only loosely controlled. In one case a policy of three linear metres of filing per person is in force (*best practice* is normally regarded as one linear metre per person) but, visually, provision seems to be higher.

In other buildings storage on the office floor is high with the inevitable spread of untidiness and, ultimately, inefficient use of space.

Printers In much of the space viewed printers have been rationalised, with networked printers being shared by a large number of people. Such a strategy is an important component of shared desking. Confidentiality issues are addressed using security systems at the printer. Where multi function devices (MFDs) have been introduced, further efficiencies have been achieved. At one case study, a roll out programme of MFDs is underway. In other cases, there is no clear rule for allocating printers.

Waste management Approaches to the management of waste and recycling vary quite widely in the buildings. While in some cases there is a clear strategy, with shared and well managed facilities, others are much less so. In one case, desks have two, and sometimes three bins each, rather than shared or centralised systems.

Central support space

How has support space been planned? What provision is made for meeting and conference room, dining and vending areas, health and welfare, storage, reprographics, reception, and so on?

One of the features of the case studies is that the central support space allocations appear to be the result of “evolved demand” rather than as a result of a planned provision. This particularly applies to central meeting rooms. There is little evident rationale for provision, and when questioned, building managers produced few “rules” or “standards” of provision. In several instances local and central meeting rooms simply blur into a “general provision”, which sometimes flexes according to the demand for cellular offices

In some cases, while not measured precisely, support space was generous.

The case studies showed, where possible, creative use of otherwise underutilised spaces such as atria and light wells. Several had been designed for use as informal meeting areas.

Central filing and storage This is often a major issue, taking up valuable space. In at least three of the case studies, this was so. At one of the buildings central filing has been reduced very

significantly, and continues to be reduced further, but remains a major user of space. One of the constraints is the need for ad hoc, immediate access to, for example, case files.

In one case study there was a demand for a large central library. In the existing space, much of the basement was dedicated to library space, and perhaps 30% again was distributed around the meeting rooms (in addition to books held locally by individuals).

Meeting rooms Approaches to the management of meeting rooms ranged from, more or less, provision on demand, to centrally managed facilities. During the visits, occupancy rates of meeting rooms (and break out spaces) were remarkably low. Various reasons were provided (Parliament rising, holidays, time of the day, etc) along with assurances that they were normally very well used. In some examples where buildings were multi-tenanted the centrally managed booking system allowed for departments to book meeting rooms in different department areas within the same building.

It also appeared to be the case that the provision of meeting rooms (generally, not entirely) had evolved over time rather than been planned according to need.

In one case, the building manager reported 35% “no shows” where a meeting room was booked, only for the meeting to fail to take place.

Training and conference As already stated, some of the buildings visited acted as HQs for wider departmental families. To this extent they act as focal points for activities such as training and conferencing, and so provision of such space is “over-provided” when compared to local building demand. However, where such spaces are provided, they are often efficiently used. For example one building houses a conference facility which on average is used within the department for 40 working days out of a potential 240. Furthermore the conference facility was used an additional 170 working days by other customers ensuring an effective use of the space.

Other comments

General comments on building layout, efficiency and opportunities. What would the manager do, given a budget, to increase efficiency? Obvious ideas in relation to each of the areas discussed above.

Each of the building managers was asked what they would do to improve space use in their buildings. The common theme among the responses was that they had done most of what they could do.

Building management team authority At one building it was clear that the building management team were struggling to exert their authority over the use of the space. One of the main constraints to better use of space cited by the team was “people behaviour”. The team seemed unable, for example, to enforce a clear desk policy in the shared desking pilot, which was encouraging people to use desks on a semi-permanent basis. While there is a docking station for each mobile cabinet, few in fact are used.

Similar issues were evident in one of the buildings where the overriding authority of Ministers and senior staff negated the potential to increase space use efficiency. The outcome of such a situation is that the approach to building management becomes – culturally as well as technically – a reactive process rather than one that leads.

A number of the case studies referred in various ways to the difficulties attached to educating people into more efficient use of space.

In one case study, each Directorate within the building had a “Directorate Co-ordinator” responsible for liaising with the building manager on workplace issues. This relationship was further aided by a direct dialogue between the PFI provider, estates team and representative building user group which met on a quarterly basis allowing an open forum for discussion and input into the direction of future workplace change.

11.2 National Audit Office Study

In 2006 the National Audit Office published a report aimed at demonstrating to Government departments the potential to make better use of their office space.³⁵ The cornerstone of the study was a series of fifteen case studies demonstrating best practice. The case studies ranged across the public and private sectors, and across large and small organisations; and they comprised the following:

- Adult Learning Inspectorate
- British Airports Authority
- BP
- BT
- Cambridgeshire County Council
- DTI
- Ernst & Young
- GCHQ
- Hertfordshire County Council
- IBM
- Norfolk County Council
- PricewaterhouseCoopers
- Suffolk County Council
- Sun Microsystems
- Vodafone

The case studies had all recently undergone change management programmes where real estate was used as a catalyst for organisational change as well as to effect space efficiency savings. There were a number of themes which emerged from the case studies, and the most successful projects contained a combination of the following features.

- Clearly stated business drivers, giving them authority, momentum, clarity, and focus.
- A coherent, explicit change management approach, led from the top.
- Integrated property, human resources, and technology solutions.
- Best practice workplace techniques and support, including breakout spaces, web-enabled space booking methods, concierge support, state of the art security techniques, and excellent facilities management service provision.
- Mobile staff received excellent support, ranging from technology and communication solutions, to courier collections and off-site 24/7 administrative support.
- Office services were provided to a good standard, often through outsourced arrangements with appropriate service level agreements. As a result the staff (regarded now as customers) receive excellent support.
- Several, but not all, chose evolution and continuous change over revolution. This suited better those businesses with budget constraints, or those that overtly preferred an exploratory rather than a “big bang” approach.

35 National Audit Office (2006) Getting the Best from Public Sector Office Accommodation NAO, London

The case studies demonstrated two generic routes to space efficiency savings.

- Some organisations used best practice space management techniques simply to save space – by 37per cent across the relevant case studies. For example, Ernst & Young, a management consultancy, doubled its London occupancy levels by breaking the “me and my desk” culture, and by providing staff with enabling technology and flexible human resource practices.
- Others chose to retain the same estate, and create more capacity within it – by 67per cent across the relevant case studies, thus avoiding new costs. For example, Norfolk County Council introduced innovative layouts and hot-desk arrangements to increase capacity and reduce their headcount costs.

Learning from this experience, it is clear that Government departments can both release surplus space and reduce maintenance costs, thereby reducing their total occupancy costs; and introduce the concept of “spaceless” growth, whereby flexible working solutions are adopted to enable growth and flexibility without the traditional resort to extra space.

Figure One summarises some of the key experiences from the case studies. One of the most fundamental lessons from all of the case studies is that newly-agreed standards, or guidelines, for space efficiency have not simply been used to squeeze space per person, but they have been used far more creatively in a change management context to change the *way* people work. Consequently higher densities are achieved by introducing flexibility in people’s working patterns and by providing a much more diverse range of work environments. The traditional choice of working at a desk or in a meeting room have been supplemented with more collaborative, social and informal spaces, allowing the space to suit the work, as well as taking away much of the fear associated with losing personal space.

National Audit Office study: Case Study Overview

<p>Adult Learning Inspectorate – Showing how a property strategy, supported by integrated IT and HR policies, and by new working practices, helped two organisations with highly mobile workforces merge. Building occupancy levels rose from 50% to 90%, yielding savings and giving rise to improved staff satisfaction.</p>	<p>Hertfordshire County Council – Showing that, having had one project fail, an organisation can learn from the experience and then carry out a full change management programme by aligning its business, property, ICT and HR goals.</p>
<p>BAA– Demonstrating the value of evolution rather than revolution. With the progressive implementation of flexible working BAA now uses 50% less office space, and has measured higher staff satisfaction and productivity.</p>	<p>IBM– Showing improved operating efficiency and a 20% occupancy cost saving by extending flexible working arrangements supported by integrated space management, technology, and HR strategies.</p>
<p>BP– Showing how a large organisation can use a campus environment to significantly reduce operating costs, and adopt mobile working and innovative HR policies to generate improved business performance. This project reduced property costs by 35%.</p>	<p>Norfolk County Council – Illustrating how a public body can introduce flexible working and change its management culture through piloting new standards of accommodation and services, leading to improvements in service delivery and value for money, and achieving a reduction of 16% in occupancy costs.</p>
<p>BT – A large business transformation project, involving major reductions in space and property costs, while at the same time introducing radically new working patterns, accommodation solutions, and technology support. As a result, BT is claiming annual savings in occupancy costs of over £70m.</p>	<p>PricewaterhouseCoopers – Showing how a decision to invest in innovative methods and service levels for managing space and facilities captured the imagination of staff and clients, improved working arrangements, released surplus space, and cut overheads by £3m pa from just two properties. Floor area reduced by 45%, and capacity rose by 119%.</p>
<p>Cambridgeshire County Council – Illustrating achievement of an improved service offering to the public through integrating a new property strategy with new working practices, led and supported by senior management with alignment between resource areas and the newly centralised Facilities Management support function.</p>	<p>Suffolk – An example of how agility and responsiveness to a property opportunity greatly enhanced a live business transformation programme to become a catalyst for further change.</p>
<p>DTI– Showing a Government department undertaking a change programme to reduce its property costs and through introducing cultural changes and moving to team-based, flexible working. The DTI used this project to shrink its main London estate from eight to three buildings, saving more than £7m pa.</p>	<p>Sun Microsystems – Showing how state-of-the-art technology and aligned HR and real estate strategies enables flexible working, improves staff retention and productivity and saves large amounts of overhead cost. The total cost avoidance in real estate globally, under this programme over five years since 2000, is estimated as \$319 million excluding technology and utilities.</p>
<p>Ernst and Young – An example of how a major property rationalisation and relocation was the enabler of a business transformation, based on a strong vision, senior management involvement and clear business and technical targets. E&Y halved its floor space by 50%, while housing the same number of staff, and adopted team-based accommodation solutions.</p>	<p>Vodafone – Showing how moving to a new campus environment helped a rapidly growing and changing organisation leave behind its legacy business cultures and enabled it to modernise working practices and integrate the business culture. Vodafone occupies 30% less space than before, and has measured significant improvements in staff satisfaction.</p>
<p>GCHQ – A large PFI property deal involving thorough project programming in order to achieve whole-business change, including a new approach to workplace planning, while satisfying strict security demands. The building has been able to accommodate a significant increase in staff through a number of measures, including the introduction of approximately 15% desk sharing.</p>	

Government experience In some parts of the Government estate significant progress has already been made towards smarter occupancy. For example, the evidence presented in *Working Without Walls*³⁶ demonstrates that open plan environments are more common than they were, as enclosed offices have decreased in number, densities have risen and shared meeting and project areas have increased. Such trends reflect the more fluid context in which most departments now work, and the growing need to accommodate projects and short-term requirements rather than the traditionally more stable process-led style of work. Two examples from the study's many case studies illustrate the main themes.

- **Her Majesty's Treasury** This project involved the redevelopment of Government offices in Great George Street, as part of a PFI agreement in 1999. The key objectives of the project were to make more efficient use of the internal space, change the character of the building to facilitate team working, improve circulation and access for staff and to modernize the building services to provide value for money, low-energy accommodation. More than seven miles of internal walls were removed to allow all staff to be accommodated in either perimeter team spaces or larger open plan areas around the internal courtyard. A wide range of collaborative spaces were provided on the ground floor to encourage openness and creativity. The design has also sought to foster better internal and external communications, and to project a modern, professional and welcoming image.

A post-occupancy evaluation report found that the project met all its original objectives. Of the survey's respondents, some 83% believed that the new workplace provided a better working environment than the previous accommodation, and when questioned staff were unanimous that the building encourages collaboration and is improving communication and knowledge sharing.

- **Ministry of Defence** In 1996 the MoD started to refurbish its building in Whitehall Place, and in 2000 signed a PFI agreement with Modus, for a 30 year lease and service contract. The redevelopment of the building became the focus of a rethink of how the office worked and served the department, whose functioning was recognized to rely on the knowledge and expertise of its people and on access to collective information.

The previous accommodation featured cellular offices, multiple sites and separate IT platforms: all seen as a hindrance to the less hierarchical, collaborative team working and knowledge sharing that the MoD wanted to encourage. Hence the new accommodation was designed to provide a more open environment with one central IT system for the 3,100 occupants. The programme brought together four concurrent strands of change:

- working together in open plan;
- leading and managing change;
- information access and management through IT, and
- process and working practice improvement. It was thus much more than a building project.

Following full reoccupation of the building in September 2004, the building is seen at senior levels within the MoD as a catalyst and enabler, actively supporting cultural and organisational change: a better building, better equipped, with better processes and working practices resulting in better decisions, faster.

Experience from four other departments, cited as case material in the National Audit Office study (above) serve to illustrate further, more recent progress.

36 Allen T, Bell A, Graham R, Hardy B & Swaffer F (2004) *Working Without Walls*, OGC/DEGW, London

- The **DTI** has achieved a significant consolidation of its estate, from nine to two buildings, by adopting a policy of 8 desks per 10 people. The capacity of its main building, One Victoria Street, increased by over 40% and has a more flexible environment, with “team villages”, and with technology systems to enable mobility.
- The **OGC’s** occupancy of Trevelyan House, London SW1 is also a good example of modern best practice. To enable consolidation in London, the department made a 20% reduction in its total space requirement and a 25% reduction in space per workstation. A variety of work settings, electronic room booking and DECT phone technology enables mobile working within the building. Staff satisfaction and self-assessed productivity increased as a result.
- **DEFRA**, with its large family of Agencies and NDPBs, is considering offering a flexible “office hotel” environment within its building at 55 Whitehall. Staff visiting from out-of-London locations can find short-term space to work for short periods of days or weeks. DEFRA has also embraced the potential benefits of shared service centres. Its York SSC provides department-wide estates, finance, HR and procurement services.
- In Newcastle **HMRC** and **DWP** rationalised 17 buildings into four strategic sites using a PFI vehicle, known as the “Newcastle Estate Partnership”. Multiple facilities contracts were replaced with one contract ranging from crèche provision to cleaning services. The two departments have overcome technological and security issues, have standardised space and furniture to secure economies of scale, and have introduced desk sharing. This is an important development: they have effected a cultural shift from “me and my desk” and “me and my building” to one of shared space and shared buildings. As a consequence the buildings, which were originally designed to accommodate 13,400 staff, now accommodate over 17,000 people.

The spread of flexible working styles Once the preserve of technology-based companies and a few management consultancies, flexible working styles have been implemented in a wide range of organisations. Below is a sample of organisations whose flexible working programmes have been reported in trade and national press.

A Sample of Organisations Adopting Flexible Working Styles

Sector	Organisation
Financial	Abbey National, ABN Amro, Capital One, Prudential
Technology	BT, Cisco, DEC, Fujitsu, Hewlett Packard, IBM, ICL, Motorola, Nokia, Sun Microsystems, Vodafone
Local Government	Cambridgeshire CC, Hertfordshire CC, LB Ealing, LB Islington, Suffolk CC, Surrey CC
Central Government	Child Benefit Agency, DEFRA, DTI, GCHQ, HMRC, HM Treasury, OGC
Business Services	Deloitte, E&Y, KPMG, PricewaterhouseCoopers
Other	BA, BAA, BP, Centrica, Marks & Spencer