Improving the efficiency of central government's office property: Methodology

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1. Overview of methodology

1.1   This supporting paper is for the NAO report 'Improving the efficiency of central government's office property'. **Figure 1** shows the methodological approach that we applied.

1. Overview of research methodology	
Scope Area	**Methods applied**
Analysis of central government spending on office property (Described in section 2)	• review of an existing central database to identify office property belonging to central government departments (the ePIMS database administered by OGC) • discussion with each central government department to validate their ePIMS generated list of office property • extraction of data from ePIMS to pre-populate a census of central government's office property to provide a comprehensive picture of spending in 2005-06 • validation of the data received through the census with each department
Assessment of office property asset management strategies and capabilities (Described in section 3)	• development, and application, of a framework against which to assess departments' capabilities in key asset management processes and process enablers • review of departments' existing documentation • interviews with department staff from estate team members through to board level
Review of the role of OGC in improving the efficiency of central government's office property (Described in section 4)	• interview with key members of OGC's Government Estate Transformation Division • examination of High Performing Property implementation plan milestones
Benchmarking property and assessing potential efficiency savings (Described in section 5)	• benchmarking of data collected on central government's office property against like for like private sector buildings • assessment of source of potential efficiency savings based on building by building comparison with benchmark buildings
Supporting research (Described in section 6)	• review of existing literature including NAO Value For Money reports

Source: NAO

2. Analysing central government spending on office property

Census among central government departments

2.1   As there is no comprehensive, single, reliable source of data on government's office property, a specific piece of primary research was required to produce a definitive picture of spending on office property. At the time of our analysis 2005-06 was the most recent year for which a full set of audited accounts data was available across all departments. We commissioned IpsosMORI to conduct an online survey, between April and June 2006, to collect data on office property. The survey was initially issued to five departments as part of a pilot exercise to test the research process, survey questions and assess potential difficulties in completing the survey. Estate managers completed a feedback form which captured their views on survey questions, methodology and any suggested changes. Following the pilot study, comment boxes were added to the bottom of each page to allow respondents to describe any estimates to their calculations.

2.2   The full survey took the form of a census of 16 central government departments and a questionnaire was completed for each building classified as office property. Our definition of office property included buildings where less than 50 per cent of the space is used to serve the public face-to-face. Each department nominated a central contact, normally the estate manager, whom took responsibility for co-ordinating and completing the building questionnaires. The estate managers could delegate the completion of building questionnaires to the building manager or manage the completion of the forms themselves. **Figure 2** lists the departments involved in the survey and the number of completed questionnaires we received.

2.3   Data from ePIMS, an existing central database of office property information administered by the Office of Government Commerce, was pre-populated into the survey where applicable. This allowed the respondent to check or amend existing data.

2.4   The census collected information on the location of the building, tenure, floor-area and space layout, rental costs and operating costs. Some environmental information was also requested in the form of energy consumption, recycling and whether or not the building was air-conditioned.

Key Metrics

2. Organisations surveyed		
Department	**Buildings surveyed**	**Number returned**
Cabinet Office	14	14
Department for Communities and Local Government	8	8
Department for Constitutional Affairs	19	19
Department for Culture Media and Sport	4	4
Department for Education and Skills	5	5
Department for International Development	2	2
Department for Transport	10	10
Department for Work and Pensions	62	62
Department of Environment, Food and Rural Affairs	128	128
Department of Health	5	5
Department of Trade and Industry	11	11
Foreign and Commonwealth Office	5	5
HM Revenue and Customs	483	483
HM Treasury	5	5
Home Office	101	82
Ministry of Defence	34	34
Total	**896**	**877**

Source: NAO

Note: GCHQ was excluded from the analysis on security grounds

2.5   A small number of core questions, such as rental costs, operating costs, number of people and area occupied, allowed us to analyse how well government departments were managing the costs of their estate on key metrics (**figure 3 page 4**) and allowed comparisons between departments (**figure 4 page 4**).

The Median Average

2.6   The number of buildings within each department's estate varies greatly, (from 2 buildings to 483) and this can influence presentation of the comparisons. For example departments which own only a small number of buildings with large amounts of meeting space, conference, training and specialist facilities can skew average figures. To

	3. Key variables used to analyse the performance of office property	
	Key variable	**Description**
A	Area (sq m)	The Net Internal Area (the area within a building measured to the internal surface of the perimeter walls at each floor level) provided by the departments in square metres
B	No. of people	The number of full time equivalents (permanently-employed, temporary staff, contract staff and outsourced staff) in the part of the building occupied by the department
C	No. of workstations	Total number of workstations (designated "desk" or other work places) in the office
D	Rent Total (£)	All rental charges a department pays on the building, any unitary charges - in the case PFI buildings - or any other charge incurred on a building in lieu of rent
E	Operating Costs (£)	Total amount spent on operating costs (includes utilities, waste disposal, building maintenance and repairs and business support). In the case of PFI buildings the operating costs are often included in the unitary charge and are not separately recorded
F	Accommodation Costs (£)	Rent Total + Operating Costs

Source: NAO

allow for this we have reported on the median average and used this for our comparisons, as this is not influenced to the same extent, as the mean, by extreme or outlying values. Using the example in **figure 5** we can see that the median rent per person is £2,714 and the mean rent per person is £4,822. This mean figure is skewed upwards by one building that has a large rent per person of £13,192.

Dealing with missing data for department analysis

2.7   Not all census responses were complete and we had to make adjustments to accommodate missing data. In the calculation of median values

for each department we based our calculation on the buildings which did have the core questions answered. For example, a department with eight buildings may not fill in the number of people for one of their buildings.

The corresponding key metric for that building, rent per person, can not be calculated and is therefore left blank. The median value is then calculated using the seven buildings with all the necessary data present.

Dealing with missing data for central government aggregate analysis

2.8   A key objective of the survey was to

4. Key metric calculations	
Key Metrics	**Calculation**
Accommodation cost per sq m (£)	=F/A
Accommodation cost per person (£)	=F/B
Accommodation cost per workstation (£)	=F/C
Rent per sq m	=D/A
Rent per person	=D/B
Operating cost per person	=E/A
Operating cost per sq m (£)	=E/B
Space per person (sq m)	=A/B
People per workstation	=B/C

Source: NAO

5. The impact of using the median or mean when analysing property data		
Number of people	**Rent (£)**	**Rent per person (£)**
5	10,000	2,000
47	79,306	2,159
500	2,633,400	5,267
200	630,616	3,153
1,100	14,511,250	13,192
19	43,226	2,275
85	182,794	2,151
12	64,302	8,381
Median rent per person		2,714
Mean rent per person		4,822

Source: NAO

understand the total amount spent on accommodation costs in central government. However, as we have noted, some departments could not complete all of the required information. We therefore calculated some estimated values at an aggregate level to account for this missing data. These estimations were made by applying an average figure calculated from those departments who had filled in all the relevant information. For example we estimated operating costs for FCO by using the average figure for utilities as a proportion of operating costs, for all other departments bar HMRC, and applying it to the utilities figure provided by FCO to calculate the FCO's operating costs. This, and examples of how we calculated proxies for other central government aggregates, is demonstrated in **figure 6 and 7 (page 6)**. (Note the majority of HMRC operating costs are included in the PFI unitary charge and as such we have not calculated a separate operating cost for HMRC.)

2.9 Where essential metrics (the number of people, workstations or operating costs) were not available it was necessary to use imputed values calculated by reference to the whole group average in relation to other metrics. Calculated proxies were only used for aggregate figures across central government. These calculated proxy values were not used in subsequent departmental analysis as the populations were considered too small. Buildings with "don't know" or blank responses have been excluded from the interdepartmental comparisons.

2.10   A proxy value has not been calculated for any of the 19 Home Office buildings missing from the survey. As there was no data at all given for any of these buildings, and there is nothing known about the size of the buildings, it was not possible to provide reasonable proxy values.

Questions with missing data

2.11   **Figure 8** provides a summary of questions that respondents did not answer or answered 'don't know'.

8. Analysis of missing key data	
NAO Question	**Number of Don't Knows / No response (out of 877)**
What is the layout of the space? (primarily cellular offices, open plan or mixed)	665
Does the building have a recycling scheme?	544
Location of building (Urban, Suburban, Rural)	522
What proportion of energy use comes from renewable sources? (%)	300
Energy consumption - Gas	289
Energy consumption - Other (usually oil)	281
Energy consumption - Electricity	265
Amount of paper recycling (tonnes)	225
Number of Workstations	186
Number of People in the building (FTE)	104
Electricity Costs (£)	90
Gas Costs (£)	87
Operating Costs (£)	58
Oil Costs (£)	41
Area (Net internal in square metres)	16
Total Rent (£)	11

Source: NAO

6. Proxy data analysis

Department	Area	No. People	No. workstation	Operating Costs (£)	Utilities Total (£)	Area per person	Workstation per person	Utilities as a proportion of operating costs (%)
Cabinet Office	38,664	2,219	2,108	10,466,390	978,489	17.42	0.95	9
DCLG	36,072	1,968	2,355	7,154,246	674,510	18.33	1.20	9
DCA	52,873	3,969	3,967	11,781,340	1,323,127	13.32	1.00	11
DCMS	11,133	620	565	2,198,487	257,563	17.96	0.91	12
DfES	69,826	4,067	5,469	4,668,543	1,232,971	17.17	1.34	26
Defra	251,378	13,359	14,016	8,942,346	3,064,063			34
DfID	27,867	1,600	1,750	4,000,000	530,143	17.42	1.09	13
DfT	26,421	1,926	1,863	2,892,166	379,402	13.72	0.97	13
DWP	374,944	20,810	Proxy	90,280,826		18.02		
DH	65,695	3,677	4,562	9,255,429	1,023,821	17.87	1.24	11
DTI	71,625	3,898	4,545	11,892,127	1,438,351	18.37	1.17	12
FCO	84,667	4,038	2,098	Proxy	3,154,215	20.97	0.52	
HMRC	1,398,818	88,325	88,325	N/A: Included in unitary charge	23,482,929	15.84	1.00	
HO	190,488	11,719	16,207	22,365,225	3,748,126	16.25	1.38	16
MoD	334,680	21,576	20,754	40,889,243	9,071,791	15.51	0.96	22
Treasury	43,687	1,474	1,884	1,144,434	498,454	29.64	1.28	44
					Average	17.85	1.07	18

Source: NAO

7. Example s of proxy calculations

1) Example proxy calculation for missing data on number of workstations	2) Example proxy calculation for missing data on number of people
DWP: Number of workstations	**FCO: Utilities Costs/Operating Costs**
No. of workstations / no. of people = Average number of workstations per person	Utilities / Operating Costs = Average utilities as a proportion of operating costs
No. of workstations / 20,810 = 1.07	3,154,215 / Operating Costs = 0.18
No. of workstation = 1.07 x 20,810	Operating Costs = 3,154,215 / 0.18

Source: NAO

3. Assessing asset strategies

The assessment framework concept

3.1 We assessed departments' performance by comparing recent activity, plans and practices against a framework developed by the NAO in conjunction with PricewaterhouseCoopers LLP.

The assessment framework helps to examine the extent to which Departments (and Arm's Length Bodies):

- Demonstrate good practice in the critical process areas concerned with asset management planning of office accommodation;

- Have in place effective 'enabling' management arrangements (e.g. appropriate governance structures) that provide assurance that the direction of travel is towards efficient and effective asset planning;

- Recognise the need to improve and are committed to learning.

Underpinning the design of the framework is the concept that the key to efficient and effective asset management is good practice in four process areas:

- Strategy;

- Planning for Delivery;

- Delivery of Change; and

- Operation (business as usual).

Since this study focuses on office asset management planning, the framework concentrates on good practice within the two process areas critical for efficient and effective asset management planning, namely:

- Strategy formulation; and

- Planning for Delivery.

Furthermore, the assessment framework is predicated on the principle that there is increased assurance of these processes being undertaken and culminating in efficient and effective use of office assets and workspace, if a number of important 'management enablers' are in place, including:

- Governance;

- Capacity and capability of the management organisation;

- Policies and procedures;

- Data, Performance Management and Review.

In summary, strong organisation and management arrangements will provide assurance that plans are likely to be delivered, there is a continuous improvement culture and the required direction of travel to deliver better value for money.

Development of the framework

3.2   We designed the framework, against which departments were assessed, in conjunction with the PricewaterhouseCoopers' Corporate Real Estate team. During its development the framework was reviewed by industry and academic representatives and also by members of OGC's Government Estate Transformation team.

3.3 The Framework was then piloted at five departments with learning incorporated into a revised version of the framework. We intend to make the revised framework publicly available in due course.

Using the framework and scoring a department's performance

3.4   We scored departments across the two processes and four enablers based on documentary evidence provided and interviews with key members of the department. **Figure 9 (page 8)** provides detail on our approach, a description of the process areas, and sub-processes, and the four enablers. Our scoring comprises an assessment across 48 key questions. For each question, a department was assessed against a set of predetermined characteristics that we would expect high performing departments to demonstrate. Questions were scored according to the evidence offered to us at the time. The scale of scores is either zero (no to minimal evidence demonstrated), 0.5 (some evidence) or 1 (comprehensive evidence). **Figure 10 (page 8)** illustrates the number of questions assessed for each process and enabler. The scores for each enabler are produced from a combined assessment across both process areas.

3.5 Department were profiled and their scores weighted based on the complexity of the department's estate and its number of Arm's Length Bodies (**Figure 11, page 9**). The different profiles results in greater or lesser weight being placed on a process area depending on the assigned profile. For

example a department profiled as a B or C, with a large number of arms length bodies, would have their scores for cross organisation strategy weighted more heavily than an organisation profiled as A or D.

3.6 A total score for both processes and each of the enablers was then converted to a corresponding Red, Red/Amber, Amber/Green or Green rating.

9. Approach to asset strategy assessment and description of the assessed processes and enablers

The approach

Evidence gathering:
1) Desk review of existing documentation
2) Interviews

Evidence assessed and scored against 48 questions covering strategy and delivery processes and four enablers of those processes

Departments profiled and scores weighted based on the size and complexity of the department. For example, those departments with large numbers of Arm's Length Bodies have more weighting applied to cross-organisation office strategy scores

Summary red/amber/green rating produced based on the weighted scores for the two process areas and each enabler

The areas assessed

Process	Description
Strategy	
Business strategy	The activities that culminate in the approval of a business strategy that fully takes into account the role and costs of office assets and workspace.
Office asset and workspace strategy	The activities that lead to an approved strategy and plan for deploying, using and managing office assets which meet the business needs and provides value for money
Cross-organisation office strategy	The activities that lead to decisions on office assets and workspace which provide best value for money for the whole organisation family
Cross-government office strategy	The activities that ensure that the deployment, use and management of office resources minimise duplication and waste across government.
Delivery	
Business case development and programme and project management	The first step in designing programmes and projects to deliver the strategy, is to develop a deep business case. The output of this process is a business case that provides full justification for investment, divestment or property change. The output of the second step of this process are defined programmes and projects and the conditions created for successful delivery of change

Enablers	Description
Governance	Good governance structures and mechanisms are required at board level, between parent organisations and Arm's Length Bodies and for delivery of property projects
Capacity and capability	Access to responsive office accommodation expertise needs to be available and sufficient to address the decision-making requirements of the organisation's Property Champion, relevant boards, stakeholders and to deliver specific property projects.
Policies and procedures	Good practice is to have policies, guidance and procedures that treat office accommodation as a corporately owned resource, aligned to organisational objectives and integrated with business planning, HR, ICT and finance.
Data and performance	Property performance indicators support a regime of continuous improvement and provide reference points against which performance is reviewed and improvement measured. In order to track performance and take appropriate decisions, good quality and up to date property data sets are required

10. Number of questions assessed for each process or enabler

Assessed processes and enablers	Strategy				Delivery	Total
	Business strategy	Office strategy	Cross organisation strategy	Cross government strategy	Business case development and programme and project management	
Strategy	2	4	4	1		11
Delivery					4	4
Governance	3	2	2	1	1	9
Capacity and capability	1	2	2	Not assessed	1	6
Policies and procedures	3	3	1	1	1	9
Data and performance	2	3	2	1	1	9

Source: NAO

11. Organisation profiling

Organisation family size
- number of agencies and bodies
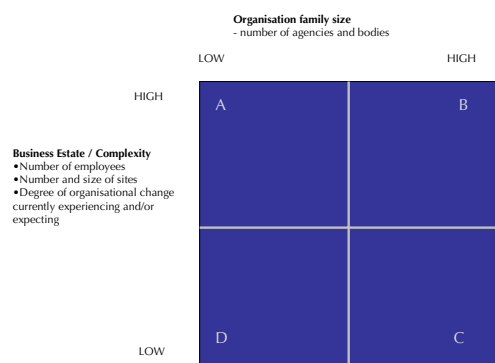
A - Four or fewer agencies, NDPBs or arms-length bodies; and over approximately 5,000 UK office based staff (in department family), or over 8 UK office buildings (parent department), or undergoing a period of major organisational change including significant workforce change

B - Five or more agencies, NDPBs or arms-length bodies; and over approximately 5,000 UK office based staff (in department family), or over 8 UK office buildings (parent department), or undergoing a period of major organisational change including significant workforce change

C - Five or more agencies, NDPBs or arms-length bodies and under 5,000 UK office based staff (in department family) and less than 8 UK office buildings (parent department) and in a period of relative organisation stability with minor workforce changes forecast

D - Four or fewer agencies, NDPBs or arms-length bodies; and under 5,000 UK office based staff (in department family) and less than 8 UK office buildings (parent department) and in a period of relative organisation stability with minor workforce changes forecast

Source: NAO

4. Benchmarking performance

The purpose and approach to benchmarking building performance

4.1   We commissioned benchmarking from a third party supplier to compare the performance of departments' buildings against the private sector and identify potential efficiency savings. The benchmarking used the data collected from our building census (totalling 877 buildings) and compared it to the benchmarking supplier's database of private sector buildings.

4.2   The benchmarking compared the performance of all the public sector buildings on an individual basis against the average performance of like for like private sector buildings. For instance a government headquarters building in a business park in Bristol would have been compared to the average performance of private sector headquarters buildings in the same location.

4.3   The benchmarking results provide a picture of relative performance and the potential for gross efficiency savings on a building by building basis by bringing performance in line with that of the benchmark buildings. The analysis focuses on two key indicators: building performance against benchmark space requirements; and performance against accommodation costs. **Figure 12** shows the relationship between space, cost and total potential efficiency savings. We have used the assessment of performance on a building by building basis to produce an aggregate picture of performance by departments and performance on a regional basis.

Dealing with missing data

4.4   The consultant has used their own preferred approach to account for missing data which differs slightly from that of the National Audit Office. Their approach is based on generating a proxy based on the performance of a like for like building. For instance, if data is missing on the number of people in a building the proxy is calculated by taking the average occupancy density per square metre of the private sector buildings in the same location and multiplying by the net internal area of the building for which the people data is missing.

12. The relationship between efficiencies from space and operating costs

In this example the operating costs for the space occupied has been reduced from £500 to £400.
If an organisation expects operating cost efficiencies of 10% then it can achieve a savings of £50 at State 1 but only £40, when space has been released, at State 2

The sum total against which potential cost efficiency savings can be achieved is reduced as space is released.

In this report the potential space efficiency savings and cost efficiency savings are calculated at State 1
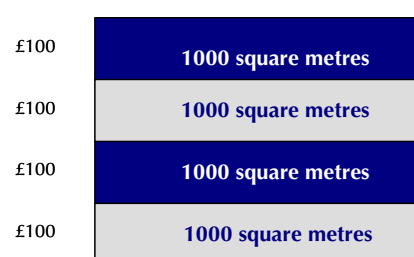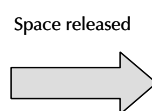The combined potential savings are calculated by adjusting downwards the cost efficiency savings as space is released

State (1)
Total space occupied = 5000 square metres
Total operating cost of space = £500
Potential efficiency from operating costs:
10 per cent of £500 = £50
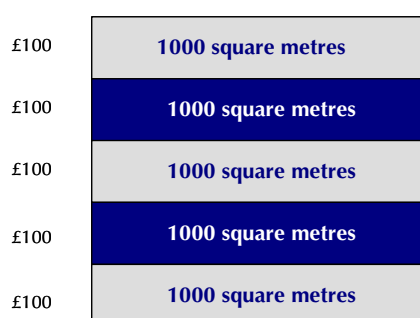
State (2)
Total space occupied = 4000 square metres
Total operating cost of space = £400
Potential efficiency from operating costs:
10 per cent of £400 = £40

£100	**1000 square metres**
£100	**1000 square metres**
£100	**1000 square metres**
£100	**1000 square metres**
£100	**1000 square metres**

Space released →

£100	**1000 square metres**
£100	**1000 square metres**
£100	**1000 square metres**
£100	**1000 square metres**

5. Reviewing the work of the Office of Government Commerce

Interview

5.1   We interviewed OGC's Director of Government Estate Transformation to review the work and role of OGC in improving the office property estate; the lessons learnt from OGC's predecessor organisations; and to assess the relative success of the OGC's new office property role.

High Performing Property progress examination

5.2   We interviewed the OGC's Head of High Performing Property Strategy and Implementation to review progress against the expected milestones of the High Performing Property implementation plan. We looked systematically at progress against each of the milestones.

6. Supporting research

Literature review

6.1   We reviewed, and used, existing literature to help shape the scope of the study and supplement our primary research. Our main sources, including other NAO value for money reports, are listed in the bibliography.

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