

Global Estate Measurement Code for Occupiers

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IPD has been helping occupiers appraise the performance of their buildings and workplaces since 1995. Today we are global leaders in performance analytics of business buildings and hold the largest independent database of occupier performance in over 32 countries. Our occupier clients are from a range of sectors including: finance, insurance, pharmaceutical, media, utilities, legal, public sector, professional services, and retail.

We measure occupier performance using the GEMCode framework to analyse costs, space, effectiveness, fitness, and environmental consumption and impact. Our services include:

- National and Multinational Performance Measurement measuring occupier performance at building level including benchmarking
- Workplace Effectiveness Surveys measuring the impact of workspace and employee productivity
- Value for Money a forensic measurement of FM services performance and cost
- Service Baselining typically used ahead of business change programmes to support evidence-based improvement measurement
- Rent Reviews a quarterly assessment of how well rent reviews have performed against the market
- Market Intelligence for occupiers, property professionals and service providers who need up to date benchmarking data quickly

More information about our services can be found at www.ipd.com/occupiers.

Users and contributors

In the course of the previous editions, we are delighted to have received comments and advice from a rich variety of occupier and industry organisations as well as professional associations and academics listed below. Any errors or omissions remain, of course, the responsibility of IPD Occupiers.

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Preface

IPD believes passionately that data helps people to make better and more informed decisions. Our idea is simple – capture the right data, enrich it through quality analysis and deliver easy-to-understand relevant outputs.

All corporate real estate managers are striving to make their portfolios support the corporate business plan by encouraging productivity in the most efficient and sustainable way. Achieving this goal is a careful balancing act. Cost control, support of productivity and sustainability are often seen as conflicting objectives. Successful asset management leaders build their strategies from a foundation of up-to-date performance evidenced that is both detailed enough to be applied to individual buildings and strategic enough to show the big picture.

Performance measurement and benchmarking is our business. We have spent the last 28 years perfecting the methodology that allows us to create a bottom up picture of estate performance and to compare buildings all over the world. This methodology for occupiers is condensed in the IPD GEMCode and I am very proud to present this tenth edition.

The GEMCode aims to make sense of BIG Data relating to property by identifying the key information required from diverse data sources through an easy-to-understand framework that enables consistent measurement.

The GEMCode has evolved through our work with clients and through discussions with other industry experts who have implemented our method of classifying their performance data.

Our main goal is to bring transparency to the industry by delivering a common, practical standard that allows occupiers, suppliers and support services to speak the same language and to set performance targets that are measured using the same methodology.

We all have an idea of how our portfolios are performing, but everybody finds surprises when the performance is measured consistently. It takes courage and determination to achieve consistent performance measurement, but it is rewarding and will reveal things about your portfolio. So it is not for the faint-hearted. The truth about performance challenges the status quo and calls for change.

Each organisation faces its own challenges. At IPD we want to provide the industry with the tools that improve the effectiveness of real estate, through data insight. Implementation of the GEMCode is only the beginning of the journey. We are always happy to share our experience in case you need any help.

Victoria Mejevitch Vice-President Occupiers, IPD

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1 Introduction

1.1 The new, integrated GEMCode

First launched in 1999 as the Total Occupancy Cost Code, the IPD Cost Code was quickly embraced as the industry standard for measuring real estate and facilities management costs in the United Kingdom by a wide variety of end-user organisations. Since the first Cost Code, IPD has developed the Space and Environment Codes to help property professionals deliver highly valuable performance information to their organisations and other stakeholders. In response to positive feedback and support from a large number of end-user organisations with a global reach, there have now been five further editions of the Cost Code, two editions of the Environment Code and one edition of the Space Code.

Today, given the challenges associated with measuring, analysing and reporting occupancy performance on a global scale, we have decided to integrate these codes into a single document, the Global Estate Measurement Code for Occupiers (GEMCode). At the same time, we have remedied a gap in the published performance framework by allowing for the need to measure effectiveness and quality of buildings in helping the occupier business meet its corporate objectives in relation to its portfolio.

The new integrated GEMCode is designed to provide a succinct and easy-to-use set of measures required to undertake performance analysis for most organisations with business property anywhere in the world. All these changes have been introduced while leaving the existing structure of data definitions largely unchanged to safeguard the considerable investment that many users have made in common systems and processes.

1.2 Need for the GEMCode

Business premises exist to allow organisations to achieve their corporate objectives. In brief, buildings need to be managed to become leaner, greener and more productive in ways that support changing business need.

Organisations need occupancy performance data and analysis that is both business-oriented and consistent. The GEMCode supports the production of the evidence that top-performing management teams require of their real estate and FM functions.

Through use of the GEMCode, all professionals working for an end-user or occupier (whether working internally or in an outsourced capacity) should be able to achieve these substantial benefits:

- The truth about the performance of each and every building in the portfolio
- A consistent view of occupancy performance across individual buildings, businesses and geographies
- Clear and rapid communication of business-relevant global real estate and FM performance round the organisation
- The ability to compare performance across industries
- Create performance targets and track progress over time

1.3 National and international standards

Globalisation reinforces the need for standard terminology to monitor and manage performance across and within borders. Comparable and consistent data is essential for a wide range of decision-makers and stakeholders in addition to the core target group for this publication: corporate and public sector end-users.

There are a large number of national, regional and global standards which are inconsistent and confusing for organisations aiming to collect a single dataset on their portfolio. We are very encouraged to see the emergence of the International Property Measurement Standards Coalition¹, which will focus, at least initially on producing international standards for space measurement and valuation. It is possible that the Coalition will cover other subjects later on. The IPD GEMCode will respond to and support the future development of the international standards, which we clearly see to be in the industry's interests.

The GEMCode itself is not a standard. It is designed to be an effective framework for data collection and occupancy performance measurement.

For the sake of simplicity and to attain consistency across an international estate, the GEMCode sets out all quantitative data in metric units, since the majority of the users of the Code will be familiar with the Système International (SI) units of measurement. This will aid global comparisons and performance analysis. However, users might prefer to collect numbers in alternative formats. (See Section 7.6 for a set of conversion tables.)

1.4 Feedback

The GEMCode is being continually improved and adapted to suit the needs of users globally. We are pleased to receive comments on any part of this text. Please contact **gemcode@ipd.com**.

2 Performance framework

2.1 The GEMCode performance matrix

The main elements of the GEMCode performance matrix are set out in Figure 1 below. This matrix is a generic summary of what most occupiers want – and need – based on IPD's 20 years of performance measurement for occupiers. Each element of the matrix can be used independently. Alternatively, it can be combined with other elements to monitor performance as part of a modular approach.

Figure 1 GEMCode performance matrix



Keeping occupancy costs under control is the first priority of most property professionals. The cost definitions within the Code comprise a well-established and internationally accepted methodology for collecting, measuring and analysing occupancy costs in real estate and facilities management.

As the number one cost and carbon driver, occupied space needs to be especially carefully managed.

Managing the effectiveness of buildings is one of the main responsibilities of real estate and facilities management. Monitoring the relationship between workplace and productivity is becoming increasingly important to workplace managers. Reviews of effectiveness still tend to revolve around post-occupancy evaluations. The mood is now changing and a method for assessing effectiveness and building fitness on an ongoing basis is set out in this GEMCode.

Reducing environmental impact is an increasingly important priority for private and public sector organisations and is part of the corporate social responsibility framework. With a large number of environmental initiatives around the world, it can be difficult to know where to begin. The need for consistent and reliable environmental performance data summarising the consumption and impact of each occupied building is becoming ever clearer.

2.2 Principles

Without a globally accepted framework for measuring and reporting on performance, many organisations are still not assessing the performance of their portfolio. Furthermore, the quality and consistency of the data collected may be questionable. This problem is especially acute for organisations with a large number of buildings around the world which need to develop a 'global view' of occupancy performance. The GEMCode provides precisely this good-practice global measurement guide.

This Code focuses on the ability of business to produce performance ratios for its occupied real estate and facilities management over time. Underlying the Code is a concept of performance that can be applied to buildings and be built up in various ways: for national, regional and global analysis; for individual and all property types; for one business unit and for all.

The concept of performance is dynamic, that is, it changes over time. We will not focus on the same priorities in ten years' time as we have now. In addition, performance will be defined in slightly different ways by almost all organisations.

Performance is also multi-dimensional. Performance is not just about costs or space efficiency or the effectiveness or quality of the buildings in the portfolio, or the sustainability of the estate. It is about all these things (and more). The GEMCode therefore defines key performance indicators relevant to corporate real estate and facilities management to facilitate the production of a balanced scorecard or RAG (red-amber-green) review if that is required by the occupier business.

A key element of the design of the IPD performance framework is to acknowledge that the assembly of data and the production of performance ratios takes time and costs money. We could, for example, go into enormous detail on how to structure total occupancy costs with perhaps 300 different cost categories. Or we could envisage environmental monitoring that specifically targets laser toner cartridges. In this code, we do not go to that level of detail; we concentrate on the more strategic issues that matter most to the business overall. The GEMCode has been designed therefore to meet the needs of business as set out in Section 1.2. This means that:

- We use objective evidence at all times for the range of performance issues that matter to business occupiers
- We want to take all buildings in the portfolio into account
- We want to add up to totals, where possible, for each and every country and building type

2.3 Performance ratios

In Chapters 3 to 6, data definitions support the production of strategic, tactical and operational ratios of performance. The precise choice of which performance ratios to use must be at the discretion of occupying businesses. Since most organisations have similar concerns and objectives, we can identify and work to a similar performance framework, especially for organisations within the same industry.

Most of the performance measures are created by dividing one number (cost, space, carbon and so forth) by another (the denominator) related to the business (space, users, business turnover etc). The main exceptions are the performance scores for quality (see Section 5).

A range of different denominators can be used to analyse building performance, allowing organisations to link building performance to the factors most critical to their overall business. Their use – for example in setting targets and benchmarks – will depend on the type of property being analysed, geographical coverage, and other factors.

Users of different types of property should consider using denominators that are based on their core activities (for example, retail sales or footfall for a retailer, students for a university, or patient numbers for a hospital). Examples of useful denominators are:

- Business numbers, for example, turnover, sales, operating expenditure, units of output
- The number of users in the building whether employees, contractors, visitors, patients, students or residents adjusted if necessary by the hours of attendance each week
- Floorspace
- Occupation units such as workstations, workplaces, and bedspaces
- Measures of capacity of a building

Using the performance matrix set out in Figure 1, a possible key set of performance ratios for an organisation might be as set out in Table 1. A full explanation of each of these items is to be found in Sections 3 to 6.

Table 1 Key performance ratios

	Main data item	Divided by
Costs	Total occupancy costsImportant component costs	 Total revenue, total expenditure Total users, total full-time equivalent (FTE) Units of output Space occupied Workstations/workplaces
Space	Space occupiedWorkstations/workplaces	 Total revenue, total expenditure Units of output Total users, total full-time equivalent (FTE) Workstations/workplaces
Effectiveness	 Expressed satisfaction with provision Expressed importance of provision Matching of satisfaction with importance 	 Averaged over all respondents
Fitness	 Condition score, 50+, 75+ Suitability score, B+ 	Total space occupied
Environment	 Total kWh energy by source Total carbon Total, unrecycled waste Total, sourced water 	 Total revenue and expenditure Total users, full-time equivalent (FTE) Units of output Space occupied Workstations/workplaces Costs of energy, waste and water

2.4 Reporting segmentation

Very often the performance of an individual building will need to be compared with other buildings on the same site, in the same urban area, in the same country and so on. A possible geographic hierarchy is set out in Figure 2. How this hierarchy fits together will strongly influence the reports produced on occupier performance.

Figure 2 Possible segmentation of analysis



Other segmentation is highly valuable. By examining which buildings are occupied by which business unit or managed by which contractor, the management team can extract highly valuable information.

2.5 Performance analysis for multiple-use buildings

Performance ratios can be usefully compared for each building of a certain type and across the whole portfolio. A list of building types is shown in Section 7.7.

There is nearly always a variety of space uses within any building. When the performance of individual buildings is compared, we need those buildings to be broadly comparable. Where there are significantly different uses operating in a building, it can be very difficult to be able to understand whether appropriate performance is being obtained on all or any part of the building. Examples of such multiple uses include:

- A regional office located within a storage facility
- The data centre operating within an office of any type
- Retail use set within a hotel or office
- Offices within a research laboratory
- A large site-based restaurant within an office

In these circumstances, it is good practice to treat the building as two, three or more separate entities with different descriptive, cost, space, effectiveness and environmental data. The result will be that the performance of each component part can be compared with any other individual buildings of the same type within the portfolio.

2.6 Descriptive data requirements

Figure 3 shows some of the most important descriptive data requirements (in addition to the core data as set out in Sections 3 to 6) that might be appropriate to collect for buildings in the portfolio. The collection of such statistics allows building managers to be able to compare like-with-like. An extended list is to be found in Section 7.2 on page 53.

Figure 3 Key data requirements



Great care should be taken in referencing all performance data to the correct time period, which for most organisations would be for a year, consistent with the business's financial reporting standards. In some cases, organisations will wish to record quarterly data or use some other time period. The same principles should apply whatever the time period chosen. The difference between numbers that reflect what has happened during a period and numbers that are correct at a point in time is important. The two concepts of stock and flow, used in financial reporting, are useful:

- 1. Stock: for pragmatic reasons, record the numbers of building users, the floorspace, workstations etc at the end of the period. Where major changes have taken place in the period, businesses may choose to average these out over the year but this will require a level of data not normally available in most information systems.
- 2. Flow: for costs and environmental data, add up the total costs, carbon, waste etc that is accruable to that period.

Businesses will need to develop methodologies for acquisitions and disposals. It will be important to record all the 'flow' data for the whole time period, while the stock data may need to be averaged out over the whole period.

2.7 Choosing key ratios

The clear definition of performance ratios is essential in any performance management system. Ratios are normally derived by dividing one number (the numerator) by another (the denominator).

Occupancy managers should carefully select a limited number of key ratios that really make a difference to their business and which reflect the overall performance of the building wherever possible. Table 1 on page 6 lists some of the main indicators that can be chosen. Please contact IPD Occupiers for advice on how to select indicators for your organisation.





Much of this GEMCode publication is taken up with defining the costs or space or carbon output associated with the physical buildings. But all of IPD's experience in occupancy performance measurement confirms that the linking of occupancy data with building user data and business data is all-important. The building user definitions are shown in Table 14 on page 34, while the main business data definitions are shown in Table 2.

Table 2 Key business data definitions

Data field	Definition / comment
BD1 Total revenue	The total gross revenue of the business as stated in the financial accounts
BD2 Total net income	Instead of using total revenue, some organisations will need to use net income, excluding the cost of sales. This will particularly apply to financial service companies such as banks or insurance companies.
BD3 Total expenditure	The total expenditure or operating expenses of the business as stated in the financial accounts.
22.4	The units of output commonly used by the business in the overall assessment of their business. Examples would include:
BD4 Units of business output	 Service or customer population numbers for service organisations
	 Passenger miles for airlines or rail operators
	 Policies processed for insurance companies

2.8 Comparing like with like

Performance ratios need to be produced on a likefor-like basis. Making fair comparisons is difficult and skilled activity. Comparisons may need to be adjusted according to a number of factors including those listed in Table 3 below. These factors are needed for satisfactory benchmarking of performance. Comparisons may be made externally outside the organisation and internally within it. Different adjustments will be needed according to the circumstances. Please contact IPD Occupiers for further information.

Table 3 Selection factors for fair comparisons

Data field	Example / comment
Business	
Industry	Legal, production, TMT
Occupying business unit	Internal comparison only
Contractors/suppliers/management team	Internal comparison only
Physical, geographical	
City, Country	
Region	Americas, EMEA, AsiaPac
Building location type	CBD, business park, shopping mall
Building	
Building size	Typically within a range
Tenure	Owned, leased
Building use	Office, distribution, laboratory, retail
Building type	Office type, laboratory type. See Section 7.7
Building grade	Building quality indicator
Heritage building	Protected status
Building condition	See Section 5.3.1
Sustainability grading	LEED, BREEAM, Greenstar ratings
Occupancy status	Occupied, part-occupied, vacant
Air-conditioning status	Y/N
Disaster recovery building	Y/N
Year of construction	Date
Year of last major refurbishment	Date
Number of floors/storeys	
Numbers of lifts, escalators, entrances etc	To be used when examining costs of detailed building services

3 Costs

3.1 Principles

3.1.1 Total occupancy costs

Businesses should be able to add up their total occupancy costs, for each building, business unit, country and region. The ability to produce a single figure for total occupancy costs aids communication with the Corporate Board.

The basis of calculation of Total Occupancy Costs differs between rented or leasehold buildings and owned or freehold buildings.

For rented buildings the Total Occupancy Costs are made up of:

- Annual operating expenses such as rent and local property taxes, repair and maintenance, service charges and support services as well as management to reflect operating costs
- Annualised capital expenses such as adaptation and equipment as well as IT infrastructure and hardware to reflect capital costs

For owned buildings the Total Occupancy Costs are made up of:

- Proxy costs for rent to reflect market rental value
- Annual operating expenses such as local property taxes and support services, repair and maintenance as well as management to reflect operating costs, and
- Annualised capital expenses such as adaptation and equipment as well as IT infrastructure and hardware to reflect capital costs

3.1.2 Overall structure of costs

To compare occupancy costs constructively and consistently at a global level use the structure of cost analysis set out in Table 4 and Table 5 overleaf.

Table 4 represents a global unifying framework for measuring occupancy costs. By providing the right amount of granularity, the framework can be applied at both international level and national levels.

Table 4 Conceptual framework for measuring occupancy costs

Cost measure		Operating cost examples		Annualised capital cost examples		Annual costs	
CA	Property occupation	CAX	Net rent	CAY	Acquisition, disposal and removal	CAZ=	CAX + CAY
СВ	Adaptation and equipment	CBX	Leased furniture	CBY	Furniture and equipment	CBZ=	CBX + CBY
СС	Building operation	CCX	Services charges	CCY	Repair and maintenance	CCZ=	CCX + CCY
CD	Business support	CDX	Catering costs	CDY	Kitchen equipment	CDZ=	CDX + CDY
CE	Property management	CEX	Staff costs	CEY	Specific information system	CEZ=	CEX + CEY
CF	Information technology	CFX	Support costs	CFY	Computers	CFZ=	CFX + CFY
	Total occupancy costs	СТХ	CAX+CBX+CCX+CDX +CEX+CFX	CTY	CAY+CBY+CCY+CDY+CEY+CFY	CTZ=	CTX + CTY

Table 5 Breakdown of total occupancy costs

Total occupancy costs		Detailed cost types		
CA	Property occupation	Net rent Unitary charge Acquisition, disposal and removal	Local property taxes Parking charges Associated facilities	Occasional space Marketing and promotion
СВ	Adaptation and equipment	Fit-out and improvement Furniture and equipment		
сс	Building operation	Consolidated services charge Insurance Internal repair and maintenance M&E repair and maintenance External / structural repair and maintenance	Minor improvements Internal moves Reinstatement Security Cleaning Waste disposal	Internal plants and decorations Grounds maintenance Water and sewerage Energy
CD	Business support	Catering Reception Courier and external distribution	Post room and internal distribution Reprographics Transport	Archiving Linen and laundry
CE	Management	Real estate management Facilities management	Project management Other management	
CF	Information technology	Infrastructure Hardware and communication	Software Support	

3.1.3 Operating expenditure

In determining annual operating expenditure:

- 1. All capitalised costs (i.e. costs which are capitalised on the balance sheet) are excluded from operating costs.
- 2. All operating costs reflect the annual cost of occupation and are recorded for a complete financial year. Normally costs would be recorded for historic financial years and managers will also want to be able to prepare budgets for future years on the same basis.
- 3. All costs should be recorded on the basis of expenditure on an accruals basis for a complete financial year. All expenditure heads should be recorded separately and are by necessity mutually exclusive. This may be difficult where support services are bundled (see next point).
- 4. In certain cases expenditure will need to be apportioned, for example where contracts cover more than one building or more than one service line. The apportionment should be based on an appropriate denominator (e.g. net internal area or full time equivalent building users). If a sufficiently accurate apportionment is not possible, enter the costs under the predominant nature of the job being done. It is best practice to require FM and other suppliers to break down the costs for each building in line with the cost classification.
- 5. All costs are to be calculated net of any income received, including any income recoverable under a service charge payable by a sub-tenant. Where occupiers have rented out any of their property to other organisations, the net costs to the occupier should be calculated.
- 6. Management costs of individual service lines should be included for each service line where the purpose of the management is purely to ensure the successful delivery of that service.
- 7. Depreciation on fit-out expenditure should be included, where this has not been rentalised.

- 8. For performance measurement purposes, it is desirable to review the cost base excluding expenditures or sales taxes. All irrecoverable expenditures and sales taxes should be included in determining Total Occupancy Costs. It is best practice to be able to distinguish the amount attributable to tax from the direct cost invoiced by a supplier.
- 9. Any expenditure covered by an insurance policy – including an internal risk charge – and any such insurance claim under that policy should be excluded both as cost and income respectively. Occupier organisations that self-insure, thereby bearing the risks themselves, will either have a nil cost under this heading or an agreed internal risk charge, if applicable.
- 10. Rebates received for overpayment and penalty payments should be included in the year the expense is incurred.
- 11. If a leasehold property benefits from a rent free period, the calculation of rent should be treated in the same manner as it is treated in the statutory accounts.

3.1.4 Capital expenditure

In determining annualised capital expenditure it is important to adhere to the following rules:

- Depreciation of adaptation and equipment, IT infrastructure and hardware, etc. should be included in the Total Occupancy Cost calculation for both rented and owned buildings to reflect both historic investment in buildings and on-going capital investment.
- The depreciation charge included in the Total Occupancy Cost calculation should correspond with the occupier's depreciation policies and the depreciation charge for adaptation and equipment, IT infrastructure and hardware, etc. included in its statutory accounts.
- 3. On some occasions, the capital expenditure on adaptation and equipment, IT infrastructure and hardware, etc. on the balance sheet may cover multiple buildings. On these occasions, the depreciation charge will need to be allocated to specific buildings; the basis of allocation will vary on a case by case basis reflecting the nature of the works done.

3.1.5 Calculation of rent for owned buildings

Whilst there may be no cash cost directly associated with owned properties, such as rent and service charges, the cost of capital needs to be reflected.

Most businesses value their owned buildings at least once every five years to estimate the open market rental value. This is the preferred basis for calculating a 'CA1 Net rent' figure for owned buildings. Using this approach makes the treatment for owned buildings as consistent as possible with that for rented buildings. It also recognises the very real resource cost of holding owned buildings, which can often be forgotten.

However, if such valuations do not exist, owners could enter the cost of capital by multiplying the value of the asset as set out in the financial statement by the organisation's weighted cost of capital to arrive at a notional rent figure. The depreciation charge incurred in connection with the land and buildings is not considered a valid measure of the notional cost of freeholds. Buildings which are subject to a rental payment that is below open market value (such as a long lease of fifty years with a capital value) should record the open market rental value and not include the actual rent paid.

3.1.6 Currency and cost conversion

Currency conversions are important for the consistent calculation of Total Occupancy Costs across a global estate. The recommended method for dealing with currency is as follows:

- At the end of each of the organisation's accounting periods convert the local currency into the base currency used by the organisation in its financial statements.
- For the purposes of performance analysis, convert all amounts recorded in the currency of the financial statement into US Dollars and Euros, where this has not already been done.
- Keep a record of the conversion rates used (a currency grid). The currency grid should allow for most types of trend analysis and local country performance analysis.
- Conversion rates used should follow the accounting practice of the organisation.

3.2 Property occupation costs

Property occupation costs include the total costs of rent, unitary charge, acquisition, disposal and removal, local property taxes, parking charges, associated facilities, occasional space as well as marketing and promotion.

- Annualised capital expenditure is calculated by depreciating any capital costs over a straight line, without any allowance for financing costs.
- Property occupation costs should include the full direct cost of labour employed (including line managers) as well as the costs of equipment, materials and external charges.
- All staff costs should be included, incorporating employment and labour tax, pensions, allowances, annual bonuses, overtime, temporary staff fill-in, training, recruitment, travel, welfare, administrative, equipment and other costs.

Category	Definition
	The annual operating expenditure of renting the building or the annualised capital expenditure associated with occupying an owned building. Organisations should record a figure for rent using at least one of the following headings:
	 CA11 Rent paid: The actual current annual rent paid to the building owner. This should be recorded for all leased buildings.
	 CA12 Rental value: The current annual open market rental value assessed in the context of local contract terms, review periods, escalation, indexation and other conditions. It is highly desirable to collect this figure especially where there is a significant difference from A1a Rent Paid or A1c Notional Rent, for example, where the building is held under a long lease and is not rack-rented.
CA1 Net rent	• CA13 Notional rent: An annual accounting charge in the form of a notional rental charge or the current depreciation charge or the current financing charge or the return on capital employed. Occupiers should always record the basis of calculation for this accounting charge. In addition, they should record the replacement value of owned assets.
	• CA14 Other rent: In the case of properties where no evidence of open market rental value is available, an annual value surrogate in the form of replacement cost or a percentage of adjusted net profit.
	Note: When collecting rental figures for performance analysis, the type of rental figure used will need to be carefully considered. It will normally be desirable to use either A1a Rent Paid or A1b Rental Value. This will allow occupiers to understand their opportunity costs of occupation, an important consideration in creating and assessing the real estates and facilities strategy. Furthermore, rent revenue should be subtracted from rent expenditure (similarly, sublet space should be subtracted from the total floorarea occupied).
CA2 Unitary charge	The annual expenditure on a total real estate and facilities services package, serviced office, etc if it is not possible to identify these items separately. This excludes the costs of all separately charged extra services such food, drinks and snacks (see CD2), reception services (see CD3), reprographics (see CD6), and annual periodic usage and service charges associated with infrastructure (see CF1) and hardware (see CF2). Such costs may be incurred in the case of property outsourcing, public private partnership, serviced offices and so on.
	Note: Unitary charges generally apply to space that is held continuously for a period of more than one month. Charges for space held intermittently or for a period of less than a month should be included under occasional space (see CA7).
CA3 Acquisition, disposal	The annual expenditure associated with the acquisition, disposal or removal of the building, particularly national and local acquisition taxes and duties (for example taxes levied on rent).
	Excludes the costs of professional, agency and brokerage fees associated with acquisitions (see CE1).

Table 6 Property occupation cost definitions

Table 6 continued

Category	Definition
CA4 Local property taxes	The annual expenditure of the building, occupational and environmental tax liability arising under national and local laws and regulations within the subject country, state and municipality. All rebates should be averaged out across the period to which the rebate relates. Includes the costs of any taxes or rates arising directly from the occupation of the building and levied on the building itself or upon the occupiers of the building Excludes the costs of all business and sales taxes that are levied on business profits and sales as distinct from the occupation of the building.
CA5 Parking charges	The annual expenditure of rent or licence fee paid for parking provision together with any local building tax charged on any on-site or off-site car parking associated with the building, whether part of the overall lease agreement or paid separately.
CA6 Associated facilities	The annual expenditure of rent or licence fee paid for associated facilities together with any local real estate/facilities tax charged on any on-site or off-site leisure, storage or any other ancillary facility directly associated with the building, whether part of the overall lease agreement or paid separately. Excludes the costs of archiving (see CD9)
CA7 Occasional space	The annual expenditure of charges for occasionally-used space, which is not managed as part of the end-user's estate, aggregated over the year. Such space is typically held either for very short periods of less than a month or intermittently (for example, every Tuesday evening). Includes the hiring of meeting spaces as well as corporate 'touchdown' deals where staff pay-as-they-go. Occasional space costs may either be collected for the estate or country as a whole or be entered against a particular building where this is more appropriate, for example where overflow space is regularly taken. Where space is not procured centrally but is independently procured by the relevant business unit or department, these costs should be ignored and treated as a general business expense.
CA8 Marketing and promotion	The annual expenditure of marketing, promotion and any other costs transferred by a landlord to a tenant as a result of the occupation of the building on the basis that it is not recorded under any other cost category. Includes the costs imposed by landlords for a tenant's share of a property's general marketing and promotion costs as well as any other similar costs.

3.3 Adaptation and equipment costs

This category includes the total costs of fit out and improvement as well as furniture and equipment.

- Annualised capital expenditure is calculated by depreciating any capital costs over a straight line, without any allowance for financing costs.
- Adaptation and equipment costs should include the full direct cost of labour employed (including line managers) as well as the costs of equipment, materials and external charges.
- All staff costs should be included, incorporating employment and labour tax, pensions, allowances, annual bonuses, overtime, temporary staff fill-in, training, recruitment, travel, welfare, administrative, equipment and other costs.

Category	Definition
	The annual expenditure associated with fit out and improvement of the building (these costs are normally – but not always – capitalised).
CB1 Fit out and improvement	Includes the costs of air conditioning, space heating, electrical installations, partitioning, internal walls, woodwork and joinery, wall linings, fixtures, fittings, lighting, flooring, carpeting, tiling, suspended ceilings and signage. For retail and/or branch buildings, the costs of shop fronts, storage racks, etc are also included.
	Excludes the costs of new physical extensions to the building, which should normally be rentalised (see CA1), M&E repair and maintenance (see CC4) and security equipment and materials (see CC9).
	The annual expenditure associated with furniture and equipment in the building (these costs are normally – but not always – capitalised).
CB2 Furniture and equipment	Includes the costs of desks, chairs, pedestals, desk lights, filing cabinets, storage cabinets, shelving, tables, soft furnishings, works of art, blinds, curtains, drapes, mechanical handling equipment and fire extinguishers.

Table 7 Adaptation and equipment cost definitions

3.4 Building operation costs

This category includes the total costs of consolidated services charge, insurance, internal repair and maintenance, mechanical and electrical repair and maintenance, external and structural repair and maintenance, minor improvements, internal moves, reinstatement, security, cleaning, waste disposal, internal plants and decorations, grounds maintenance, water and sewerage as well as energy.

- Annualised capital expenditure is calculated by depreciating any capital costs over a straight line, without any allowance for financing costs.
- Building operation costs should include the full direct cost of labour employed (including line managers) as well as the costs of equipment, materials and external charges.
- All staff costs should be included, incorporating employment and labour tax, pensions, allowances, annual bonuses, overtime, temporary staff fill-in, training, recruitment, travel, welfare, administrative, equipment and other costs.

Category	Definition
CC1 Services charge	The annual expenditure transferred to the occupier by the building owner (or manager) for the delivery of building operation services on the basis that it is not possible to identify these items separately.
	Includes the costs of insurance (if not paid for separately), internal repair and maintenance, M&E repair and maintenance, external and structural repair and maintenance, minor improvements, internal moves, reinstatement, security, cleaning, waste disposal, internal plants and decorations, grounds maintenance, water and sewerage, and energy.
	Note: Any services charge revenue should be subtracted from services charge expenditure.
CC2 Insurance	The annual expenditure of premiums for insuring the building.
	Includes the costs of all building related insurance, liability for excess and any premiums for loss of rent, subsidence, terrorism, fires, floods, burst pipes, explosions, and earthquakes
	Excludes the costs of insurance for loss of trade, public liability, damage to or theft of computers, and disaster recovery (see CD7).
	Note: Occupiers who self-insure should include an agreed internal risk charge, unless the full costs of any event are borne directly by the occupier under another cost category.
	This category may be subdivided into sub-categories: • CC21 Buildings insurance
	CC22 Contents insurance CC23 Engineering insurance
	CC24 Terrorism insurance
CC3 Internal repair and maintenance	The annual expenditure on internal repair and maintenance for the building.
	Includes the costs of regular redecoration and repair and maintenance of fit out, furniture, and equipment as well as contractor costs and the full costs of employment, special equipment, materials and other associated costs
	Excludes the costs of M&E repair and maintenance (see CC4), minor improvements (see CC6), internal moves (see CC7) and reinstatement (see CC8).
	Distinguish between planned, unplanned (or reactive) and project-related expenditure.

Table 8 Building operation cost definitions

Table 8 continued

Category	Definition
CC4 M&E repair and maintenance	The annual expenditure associated with repair and maintenance of all mechanical and electrical equipment in the building. Includes repair and maintenance to lifts, escalators, water and plumbing, sprinkler systems, and fire services as well as repair and maintenance of air conditioning and electrical installations as well as contractor costs and the full costs of employment, special equipment, materials and other associated costs Excludes the costs of fit out and improvement (see CB1) and security equipment and materials (see CC9) as well as any costs related to manufacturing or business processes. Distinguish between planned, unplanned (or reactive) and project-related expenditure. This category may be further subdivided into sub-categories: • CC41 M&E services • CC42 Lifts and escalators • CC44 Other M&E costs
CC5 External and structural repair and maintenance	The annual expenditure associated with repair and maintenance of the exterior and the structure of the building. Includes the costs of repairs and maintenance to roofs, external walls, cladding, fenestration, foundations, and drainage as well as external redecoration and external finishes as well as contractor costs and the full costs of employment, special equipment, materials and other associated costs Excludes the costs of suspended access equipment (see CC4). Distinguish between planned, unplanned (or reactive) and project-related expenditure.
CC6 Minor improvements	The annual expenditure on minor improvements of less than a certain amount, as determined by the accounting policy of the organisation. Where, possible, however, try to reallocate all such costs to CC3, CC4 and CC5 or other categories, as appropriate.
CC7 Moves	The annual expenditure associated with space allocation and reorganisation in the building or on the site. Includes the costs of redecoration as well as the costs of moving staff or teams, fit out, furniture, and equipment as well as contractor costs and the full costs of employment, special equipment, materials and other associated costs. Includes the costs of building users moving into the building from another part of the campus or site Excludes the costs of external moves (see CA3).
CC8 Reinstatement	The annual expenditure associated with the anticipated liability for dilapidation and reinstatement at the end of the lease contract of the building. Recommended write off period: length of the lease contract. Includes the costs of reinstatement through a sinking fund, replacement fund, reserve fund or depreciation fund imposed on a tenant by a landlord.
CC9 Security	The annual expenditure of securing the building. Includes the costs of access control systems, readers and passes, identity cards and badges, CCTV, detectors, alarms, lighting and central control, fences, intruder detection systems and loudspeakers, vehicular access control and road blocks as well as contractor costs and the full costs of employment, special equipment, materials and other associated costs.
CC10 Cleaning	The annual expenditure on cleaning the building. Includes the costs of cleaning desks, chairs and pedestals, floors, carpets and tiles, partitions, internal walls and doors, suspended ceilings and lighting, IT equipment and telephones, WCs, toilets and urinals, showers, pest control and window cleaning as well as contractor costs and the full costs of employment, special equipment, materials and other associated costs. Distinguish between planned, unplanned (or reactive) and project-related expenditure. This category may be further subdivided into sub-categories: • CC101 Interior cleaning • CC102 Exterior cleaning

Table 8 continued

Category	Definition
CC11 Waste disposal	The annual expenditure on waste disposal from the building. Includes the costs of removing general waste, confidential waste, recycled waste, sanitary waste, toxic waste and composted waste as well as contractor costs and the full costs of employment, special equipment, materials and other associated costs. This category may be subdivided into sub-categories: • CC111 General waste disposal • CC112 Toxic waste disposal (hazardous and radioactive) • CC113 Confidential waste disposal • CC114 Sanitary waste disposal • CC115 Recycled waste disposal (plastic, metal, paper, glass, wood, cartridges, batteries) • CC116 Composted waste disposal
CC12 Internal plants and decorations	The annual expenditure on floral planting and decoration within the building. Includes the costs of watering, feeding and pruning of plants and flowers, provision of decoration for festivals such as Christmas, and cleaning and dusting of internal plants and decorations as well as contractor costs and the full costs of employment, special equipment, materials and other associated costs. Excludes the cost of artwork and grounds maintenance (CC13)
CC13 Grounds maintenance	The annual expenditure of grounds maintenance around the building. Includes the costs of maintaining lawns, borders and window boxes, parking areas, roadways and pavements, greenhouses, pavilions and garden stores, litter clearance and snow clearance as well as contractor costs and the full costs of employment, special equipment, materials and other associated costs. This category may be subdivided into sub-categories: • CC131 Hard landscaping • CC132 Soft landscaping • CC133 Litter and snow clearance
CC14 Water and sewerage	The annual expenditure on water supply and sewerage for the building. Excludes the costs of filtered or bottled drinking water, fit out and improvement (see CB1) and M&E repair and maintenance (see CC4) of water facilities. This category may be subdivided into sub-categories: • CC141 Water supply • CC142 Sewerage
CC15 Energy	The annual expenditure on energy supply to the building. Includes the costs of electricity, gas, fuel, district heating and all other energy, but excludes the costs of fit out and improvement (see CB1) and M&E repair and maintenance (see CC4) of energy facilities. This category may be subdivided into sub-categories: • CC151 Electricity • CC152 Fossil fuels (gases, liquids, solids) • CC153 Renewable fuels • CC154 Communal non-electrical • CC155 Owned renewable electricity generation • CC156 Owned renewable combustion fuels • CC157 Owned renewable heating and cooling

3.5 Business support costs

This category includes the total costs of catering, reception services, courier and external distribution services, post room and internal distribution services, reprographics, disaster recovery, transport as well as archiving and linen and laundry.

- Annualised capital expenditure is calculated by depreciating any capital costs over a straight line, without any allowance for financing costs.
- Business support costs should include the full direct cost of labour employed (including line managers) as well as the costs of equipment, materials and external charges.
- All staff costs should be included, incorporating employment and labour tax, pensions, allowances, annual bonuses, overtime, temporary staff fill-in, training, recruitment, travel, welfare, administrative, equipment and other costs.

Category	Definition
CD1	Not used
CD2 Catering	 The annual expenditure on catering associated with the building. Includes the costs of food, drinks and snacks, catering equipment and kitchen equipment, crockery and cutlery, and subsidy and vouchers as well as contractor costs and the full costs of employment, special equipment, materials and other associated costs. Excludes the costs of fit out (see CB1), cleaning (see CC10) and energy (see CC15). Catering revenue should be subtracted from catering expenditure. This category may be subdivided into sub-categories: CD21 General catering costs for staff
	CD22 Vending machine costs for staffCD23 Meeting room hospitality for invited guests
CD3 Reception	The annual expenditure on reception services associated with the building. Includes the costs of uniforms as well as contractor costs and the full costs of employment, special equipment, materials and other associated costs. Excludes the costs of fit out costs (see CB1), furniture (see CB2), security (see CC9) and hardware (see CF2).
CD4 Courier and external distribution	The annual expenditure on courier and external distribution services associated with the building. Includes contractor costs and the full costs of employment, special equipment, materials and other associated costs Excludes the costs of internal distribution (see CC5)
CD5 Post room and internal distribution	The annual expenditure on post room and internal distribution services associated with the building. Includes the costs of distribution and collection of mail, opening and packaging mail, stamping, recording and despatching mail as well as contractor costs and the full costs of employment, special equipment, materials and other associated costs Excludes the costs of internal distribution (see CC4). This category may be subdivided into sub-categories: • CD51 Post room services • CD52 Distribution services

Table 9 Business support cost definitions

Table 9 continued

Category	Definition
CD6 Reprographics	The annual expenditure on reprographics associated with the building.
	Includes printers and photocopiers as well contractor costs and the full costs of employment, special equipment, materials and other associated costs
	Excludes the costs of consumables such as paper and toner cartridges.
	This category may be subdivided into sub-categories:CD61 Central reprographicsCD62 Distributed reprographics
CD7	Not used
CD8 Transport	The annual expenditure on transport to and from the building.
	Includes the costs of bus schemes and transport subsidy as well contractor costs and the full costs of employment, special equipment, materials and other associated costs
	Excludes the costs of vehicles provided for the personal use of members of staff.
CD9 Archiving	The annual expenditure on archiving associated with the building.
	Includes archiving systems and retrieval systems as well as contractor costs and the full costs of employment, special equipment, materials and other associated costs
	Excludes the costs of storage cabinets (see CB2).
	This category may be subdivided into sub-categories: • CD91 On-site archiving • CD92 Off-site archiving
CD 10 Linen and laundry	The annual expenditure on the provision of linen and laundry services within the building.
	Includes all labour and materials, fees, uniforms, equipment maintenance and renewal and transport.

3.6 Property management costs

This category includes the total costs of real estate management, facilities management, project management as well as other management.

- Annualised capital expenditure is calculated by depreciating any capital costs over a straight line, without any allowance for financing costs.
- Property management costs should include the full direct cost of labour employed (including line

managers) as well as the costs of equipment, materials and external charges as well as any audit, certificates and other accreditation costs.

• All staff costs should be included, incorporating employment and labour tax, pensions, allowances, annual bonuses, overtime, temporary staff fill-in, training, recruitment, travel, welfare, administrative, equipment and other costs.

Table 10 Property management cost definitions

Category	Definition
CE1 Real estate management	 The annual expenditure on real estate management of activities associated with property occupation. Includes the costs of strategic planning and reporting, valuations, acquisition and disposal fees, contract negotiations and real estate charges as well contractor costs and the full costs of employment, special equipment, materials and other associated costs Excludes the costs of facilities management (see CE2), project management (see CE3) and other management (see CE4). This category may be subdivided into sub-categories: CE11 In-house real estate management CE12 Outsourced real estate management
CE2 Facilities management	The annual expenditure on day to day facilities management of all activities associated with adaptation and equipment (see CB), building operation (see CC) and business support (see CD). The annual cost of day to day facilities management of all activities under categories CB Adaptation and Equipment, CC Building Operation and CD Business Support with the exception of project management costs (CE3) and other management costs (CE4). Includes the costs of workplace management, design and layout, space planning, FM policies and strategies, health and safety, helpdesk, concierge services, condition surveys as well as contractor costs and the full costs of employment, special equipment, materials and other associated costs Excludes the costs of real estate management (see CE1), project management (see CE3) and other management (see CE4). This category may be subdivided into sub-categories: • CE21 In-house facilities management • CE22 Outsourced facilities management
CE3 Project management	 The annual expenditure on intended project management of all activities associated with adaptation and equipment (see CB), building operation (see CC) and business support (see CD). Includes the costs of project management as well as contractor costs and the full costs of employment, special equipment, materials and other associated costs Excludes the costs of real estate management (see CE1), facilities management (see CE2) and other management (see CE4). This category may be subdivided into sub-categories: CE31 In-house project management CE32 Outsourced project management
CE4 Other management	 The annual cost of environmental management, information management and quality management associated with the building but which cannot be associated with CE1, CE2 or CE3. Includes the costs of environmental management, information management, system maintenance and quality management as well as contractor costs and the full costs of employment, special equipment, materials and other associated costs Excludes the costs of real estate management (see CE1), facilities management (see CE2) and project management (see CE3). This category may be subdivided into sub-categories: CE41 Environmental management CE42 Information management CE43 Quality management

3.7 Information technology costs

Information technology costs includes the total costs of infrastructure, hardware, software as well as support to include the full direct cost of labour employed (including line managers) as well as the costs of equipment, materials and external charges. All staff costs should be included, incorporating employment and labour tax, pensions, allowances, annual bonuses, overtime, temporary staff fill-in, training, recruitment, travel, welfare, administrative, equipment and other costs.

Category	Definition
	The annualised capital expenditure of infrastructure associated with information and communication technology in the building.
	Includes the costs of hardwired cables and wires as well as wireless components and the annual costs of periodic usage and service charges
	Excludes communication costs
	May be subdivided into sub-categories: • CF11 External infrastructure • CF12 Internal infrastructure
CF2 Hardware and communication costs	The annualised capital expenditure of hardware associated with information and communication technology in the building.
	Includes the costs of desktop phones, mobile phones, blackberries, MDAs as well as PCs, laptops and both on-site and off-site servers and the annual periodic usage and service charges.
	May be subdivided into sub-categories: • CF21 Telecommunications • CF22 Computers • CF23 Video conferencing
	The annual operating expenditure on software associated with information and communication technology.
CF3 Software	Includes the costs of operating systems and user software, but excludes alarm software (see CC9) and property management software (see CE1, CE2 or CE3).
	May be subdivided into sub-categories: • CF31 Operating systems • CF32 User software
CF4 Support	The annual operating expenditure on management of all activities associated with infrastructure (see CF1), hardware (see CF1) and software (see CF3).
	Includes contractor costs and the full costs of employment, special equipment, materials and other associated costs.
	May be subdivided into sub-categories: • CF41 Internal support staff • CF42 Outsourced support staff

Table 11 Information technology cost definitions

4 Space

4.1 Principles

To compare space use consistently at a global level there is an urgent need for an international space measurement standard. However, most countries have their own space measurement standard. Consequently Net Floorarea in mainland Europe is significantly different from Plannable Area in the United States or Net Internal Area in the United Kingdom.

Occupiers should always keep a record of the space in local national conventions, since otherwise there would be no way of relating rent and space planning to the local market. However, if international organisations are to understand how real space use varies from country to country, they should want to define space consistently with a global corporate standard.

By providing the right amount of granularity, our framework can be applied to normalise space measurements between countries. We hope that the International Property Measurement Coalition (see Section 1.3) will create a global unifying framework for measuring floorareas.

The space measurement framework set out in Figure 5 allows for full reconciliation between space measures defined by various national space measurement standards. This reconciliation would be done by adding or deleting one or more of the space components defined. For example, a UK-based occupier organisation can convert Net Floorarea (NEN) associated to their Dutch headquarter office to Net Internal Area (RICS) by subtracting Vertical Circulation (stairwells, lift wells and escalators), Plant Area (lift rooms, plant rooms and vertical penetrations) as well as Horizontal Circulation (primary circulation areas and other circulation areas).

Given the changing nature of work, it will become more and more difficult – and inappropriate – to assign users to buildings, particularly offices. In this context, it will be helpful to develop indicators showing the extent to which buildings are used to capacity. Hotels, for example, are often measured with respect to the % of bedroom capacity that is utilised. There are also indicators used in some sectors where the following can be determined:

- Frequency rate: the % of a typical working week where space is occupied to any extent
- Occupancy rate: the % of the overall capacity of the space used on average when occupied
- Utilisation rate: the proportion of all the available capacity that is used within a typical working week (this is the same as frequency rate times the occupancy rate)

There are also legal limits that apply in many countries of the number of building users that can be allowed to satisfy fire and safety and similar regulations. The capacity indicated varies considerably from country to country.

4.2 Conceptual framework

The primary space components of space for international comparison and performance analysis are shown in Figure 5². The most important elements are shown in the vertical boxes.

Figure 5 Conceptual framework for measuring floorareas in office buildings



Allowing for full reconciliation, we strongly recommend using the space components identified in this space measurement matrix to define poly-lines in CAD/CAFM systems. For more information on reconciliation between national standards and the GEMCode, please contact IPD Occupiers.

² Please note that we deliberately omitted the following space components from our conceptual framework as they can significantly skew building space ratios:

Greenhouses, garden stores, fuel stores and the like

[•] Open vehicle parking areas, garages and loading bays

[•] External open-sided balconies and uncovered roof terraces

4.3 Major space elements

Table 12 below shows the major space elements of offices; for other building types, please contact IPD Occupiers.

Rentable floorarea should be recorded for all types of property in all markets. Rentable floorarea is the amount of space deemed to be rented in the context of the local market using national market measurement standards.

Table 12 Major space elements

Data item	Definition
SA – Total floorarea	Total floorarea is the floorarea measured to the external surface of the building façade and all structural elements.
SA1 External structure	External structure is the total floorarea taken up by the perimeter walls of the building – including the façade and the external structural elements.
SA2 Internal structure	Internal structure is the total floorarea taken up by the internal structure of the building – including structural walls and columns. The structure should not include demountable partitions.
SA3 Unusable area	Unusable area is the total floorarea taken up by spaces which cannot reasonably be used for any purpose or function.
SB – Internal floorarea	The floorarea measured to the internal surface of the building façade and all structural elements
SB1 Vertical circulation	Internal floorarea taken up for vertical circulation – including stairwells, lift wells and escalators
SB2 Plant area	Internal floorarea taken up by technical installations – including lift rooms and plant rooms as well as vertical ducts and pipes
SB3 Hygiene area	Internal floorarea taken up by all hygiene amenities – including toilets, cleaners' rooms and shower facilities
SC – Total usable floorarea	The floorarea corresponding to the support of all organisational processes. Includes Primary circulation areas, other circulation areas, social and catering areas, central meeting spaces, central resource areas, break and pantry areas, local meeting spaces, local resource areas, open offices, touch downs, cubicles, team spaces, work lounges, private offices, shared offices, team rooms, study booths Excludes Perimeter and party walls, external columns and piers, structural walls and partitions, internal columns and piers, voids, atriums and cavities, other areas rendered unusable, stairwells, lift wells, escalators, lift rooms, plant rooms, vertical penetrations, toilets, cleaners' rooms, shower facilities
SC1 – Sublet floorarea	That part of the usable floorarea that is currently sublet to another organisation and is therefore not occupied or held vacant by the occupier
SC2 – Shared support (for buildings on sites with multiple buildings only)	Support space that is shared and predominantly used by users from other buildings on a site with multiple buildings. This category may feature: • SC211 Site reception areas and waiting areas • SC212 Site restaurants and cafeterias • SC213 Site health facilities and social amenities including crèches • SC221 Site auditoriums • SC222 Site conference suites • SC 223 Site seminar rooms • SC231 Site storage and archiving • SC 232 Site mailrooms and reprographics • SC 233 Site IT and communications rooms • SC24 Other shared support spaces Support space that serves only one building is classed as central support (CD2).
Table 12 continued

Data item	Definition
SC3 – Vacant floorarea	That part of the usable floorarea that is currently vacant, that is not occupied or sublet.
SD – Occupied usable floorarea	The usable floorarea currently occupied by the organisation to include all horizontal circulation, central support space, local support space and specialist support space as well as all usable floorarea Excludes Sublet or vacant space in the building
SD1 – Horizontal circulation	Horizontal circulation is the usable floorarea taken up for horizontal circulation. Includes Primary circulation areas as well as fire corridors and escape routes
SD2 – Central support	The usable floorarea used to for the benefit of most business unites occupying the property Includes Reception and waiting areas, restaurants and cafeterias (including kitchens), social and religious amenities, central meeting spaces, central resource areas (filing and storage, print and copy, mailboxes, locker areas, libraries), health facilities (for leisure and relaxation purposes). Excludes Any areas identified as shared or specialist support.
SD3 – Local support	 Local support is the usable floorarea taken up by all support spaces shared by occupiers from one department or floor level. Includes Break areas, pantry areas, smoking rooms, informal seating areas, local meeting spaces, local resource areas (filing and storage, print and copy, mailboxes, locker areas, libraries), social hubs Excludes Any areas identified as shared or specialist support. Meeting spaces that are included on central booking systems.
SD4 – Specialist support	Support space that is of a specialist nature that would not normally be found in an ordinary office, such as: • Photographic studios • Local laboratories and lab based training space • Show rooms • Large-scale medical centre • Other specific Specialist Support space
SE – Usable work floorarea	The occupied usable work floorarea directly allocated to workstations, whether open, semi-open or enclosed
SE1 – Open work floorarea	Work floorarea taken up by workstations suitable for activities with high communication and/or little concentration. Includes Open offices, touch downs, quiet zone workstations
SE2 – Semi-open work floorarea	Work floorarea taken up by workstations suitable for activities with medium communication and/or medium concentration. Includes Cubicles, team spaces, work lounges, booths
SE3 – Enclosed work floorarea	Work floorarea taken up by workstations suitable for activities with low communication and/or high concentration. Includes Private offices, shared offices, team rooms, collaboration rooms, study booths, quiet booths, focus rooms

4.4 Treatment of office space

The application of Table 12 to offices is shown in Figure 6 through Figure 9 for total floorarea, internal floorarea, occupied usable floorarea and work floorarea respectively.

Figure 6 Total floorarea

SA Total floorarea Total floorarea is the floorarea measured to the external surface of the building façade and all structural elements. Includes: perimeter and party walls, external columns and piers, structural walls and partitions, internal columns and piers, voids, atriums and cavities, and other areas rendered unusable as well as all internal floorarea.
SA1 External structure – not shown
SA2 Internal structure Internal structure is the total floorarea taken up by the internal structure of the building – including structural walls and columns.
SA3 Unusable area Unusable area is the total floorarea taken up by spaces which cannot reasonably be used for any purpose or function.

Figure 7 Internal floorarea



Figure 8 Occupied usable floorarea



Figure 9 Work floorarea



4.5 Comparing seating supply with demand

In future, there will be many more ways of linking the supply of property in terms of the capacity of the building with the amount it is used. Analysis will be developed to reflect these changing needs. A variety of ratios are interesting here but perhaps the most important are:

- 1. Total FTE building users/total building spaces
- 2. FTE employees per workstation
- 3. Building user hours as % of total building user hour capacity during standard working hours over a working year³

Figure 10 Use versus capacity



3 The building user hour capacity should be the total building spaces multiplied by the standard operating hours in a working year: for example, 100 building spaces multiplied by 250 working days multiplied by 10 working hours per working day = $100 \times 250 \times 10 = 250,000$ building user hour capacity in a year.

Table 13 and Table 14 show definitions for building capacity and building user indicators.

Table 13 Building capacity indicators

Building capacity	Definition
Workstations	A workstation must have the capacity to act as a satisfactory place of work for one employee, contractor or visitor for an entire day. This will include seating, sufficient desk space and network connectivity. Workstations may not be allocated to users at all times. Include hot desks and workstations that are currently unused.
Touch-down spaces	The number of touch-down and similar spaces that are used for short periods of time by employees, contractors and visitors. Such spaces are normally smaller that workstations but will normally have connectivity.
Meeting spaces	The total number of regular seats in formal and informal meeting rooms and areas. Exclude spaces in social and catering areas.
Social and catering spaces	The total number of spaces in social, catering, pantry and similar spaces within a building.
Total building spaces	The sum of the workstations, touch-down spaces, meeting spaces and social and catering spaces.

Table 14 Building user indicators

Building users	Definition
Full-time equivalent building population	In the absence of a more accurate basis of measurement, full-time equivalents should be calculated on the following basis: • Personnel working > 32 hours per week on a regular basis = 1.0 FTE • Personnel working 25- 32 hours per week on a regular basis = 0.8 FTE • Personnel working 17-24 hours per week on a regular basis = 0.6 FTE • Personnel working 9-16 hours per week on a regular basis = 0.4 FTE • Personnel working 8 hours or less per week on a regular basis = 0.2 FTE • More accurate means of measuring full-time equivalents includes computer log-ins, HR records, sensors on seats and swipe cards (door entry systems).
Employees FTE	The typical number of FTE employees of the organisation which are based at the building. Exclude support and ancillary staff, such as cleaners, reception, security, post room and reprographics staff, who do not require a workstation within the Work Floorarea. Also collect headcount, if appropriate.
Contractors FTE	The typical number of FTE contractors to the business, which are based at the building. Exclude support and ancillary staff, such as cleaners, reception, security, post room and reprographics staff, who do not require a workstation within the Work Floorarea. Also collect headcount, if appropriate.
Visitors	The total number of visitors to the business at the building in a calendar year. Also collect the typical and maximum number of visitors entering the building on any given working day. Count each separate visit made by each person.
Building users	The total number of people entering the building in a year. Count each separate visit made by each person.
Building user hours	The total number of people entering the building in a year (see Building Users) multiplied by the average stay per building user.
Service user population	Patients, students, residents and other users that receive a service in the building in a working year. The service users will be defined by the occupying organisation.

5 Quality

5.1 Principles and approach

Over recent years many organisations have focussed on the efficiency of their real estate. However, increasing productivity can create a higher impact on the bottom line than aggressive cost-cutting. Our methodology is to create consistent measurement of various elements of the workplace on user satisfaction as a proxy for the contribution of the workplace towards overall productivity. The framework for quality assessment is slightly different to efficiency or environmental sustainability. This is partly because few end-user organisations have consistently collected performance information in this area but mainly because quality assessments are inevitably based on qualitative rather than quantitative measurement.





Some businesses might feel that because much of this assessment is qualitative the approach is too subjective to analyse consistently across the portfolio. But to ignore these topics would be to ignore the contribution the building makes to the business and we therefore strongly recommend considering this important kind of assessment.

The main emphasis of the recommended approach to collecting data on quality is to identify from users their perception of the quality of various elements in the workplace relative to their view of the importance of those elements. This user view has to be collected by survey (see below).

The performance framework also includes a fitness score. This allows for the traditional building management concerns related to condition and also an asset management view of building suitability. When assessing building fitness, it is important to remember that the aim is to understand the ability of a building to meet business need. Condition and suitability scores will depend to some extent on the building type and use. This approach allows businesses to use the quality assessment to create a balanced scorecard of performance for each building alongside the efficiency and environmental analysis or as a stand-alone tool. The approach can be used to monitor the effect of efficiency improvements in the building or workplace on user productivity.

There is more than one way to collect this data. For this reason, we do not go into the same level of detail as for other parts of the performance framework. The key concept is that the assessment of effectiveness needs explicitly to be an integral part of the performance matrix set out in Figure 1 on page 3.

We recommend that professional real estate/facilities managers should make an assessment of condition and suitability. There may be an issue of the honesty of the ratings work being carried out by people who might be said to have a vested interest in the results. Our view is that it is better to have this data presented in an organised, consistent way than not to have it at all. If the budget permits, it is good practice to collect much of this data via independent experts.

5.2 Effectiveness

One of the main features of the IPD effectiveness rating is to compare the satisfaction of building users with their assessment of the importance of a number of elements of the workplace. Such comparison focuses attention on the most effective use of resources for provision of a productive workplace. The approach allows the management function to identify:

- 1. Areas of under-delivery
- 2. Areas of possible over-provision
- 3. Areas where provision is in line with expressed needs.

Possible alternatives to a user survey are to interview business unit managers or for a technical review by the property management team. However, the user survey provides the most objective tool to gauge building user opinion and is relatively cheap and quick to collect with a short web-based survey.

The overall effectiveness assessment might look like this. The six main subject areas are shown in sections with an average score shown for importance and satisfaction for each of the component factors.

Framework mod	lel		Comments
Brand Pride Community Well being Productive	Supporting IMPORTANCE 47% 63% 77% 42% 12%	SATISFACTION 63% over delivery 61% delivery in line with importance 78% delivery in line with importance 69% over delivery 60% over delivery	How well does the workplace support the needs of the business in the following ways: promoting the company brand; giving employees pride; encouraging a sense of community at work; providing somewhere enjoyable and productive to work? How important do building users consider each of these aspects to be in order to deliver their best?
Light quality Air quality Temperature Noise disturbance Personalisation of local space	Working e IMPORTANCE 43% 50% 43% 73% 63%	SATISFACTION 23% under delivery 53% delivery in line with importance 19% under delivery 53% under delivery 47% under delivery	How satisfied are building users with each of the following aspects of the working environment in order to maximise workplace productivity: quality of light; air quality; indoor temperature; noise disturbance and the ability for building users to personalise their local space? How important do building users consider each of these aspects to be in order to deliver their best?
Individual work Group work Private work Creative work Repetitive work Downtime & social interaction	Work : IMPORTANCE 53% 70% 60% 56% 12%	SATISFACTION 30% under delivery 43% under delivery 17% under delivery 48% delivery in line with importance 64% over delivery 26% under delivery	To what extent does the workplace support each of the following ways of working? Is each of these ways of working equally important or are some of these ways of working more important than others in the context of the roles of each building user?

Figure 12 Framework for assessing user satisfaction

Figure 12 continued

Framework mode			Comments
	Space ar	d location	How do building users feel about the following
	IMPORTANCE	SATISFACTION	physical aspects of the office: design; location and access; workspace; meeting spaces; breakout
Design and layout	30%	77% over delivery	spaces; layout; hygiene areas (toilets, showers,
Location and access	40%	75% over delivery	washrooms etc.); health and social amenities;
Reception & waiting areas	13%	72% over delivery	reception and waiting areas; focus rooms and other support spaces? How important do building users
Workspace	60%	58% delivery in line with imp	consider each of these aspects to be in order to
Meeting space	28%	68% over delivery	deliver their best?
Breakout spaces	40%	80% over delivery	
Hygiene areas	48%	80% over delivery	
Health and social amenities	46%	80% over delivery	
Focus rooms	46%	80% over delivery	
Other support space	32%	80% over delivery	
	Fac	ilities	of facilities management services: catering and
	IMPORTANCE	SATISFACTION	vending; cleaning; waste disposal; repairs; reception
Catering and vending	40%	74% over delivery	and security services; internal signage; booking
Cleaning	47%	77% over delivery	systems; health and satety provisions; post and mail? How important is each of these services in
Waste disposal	66%	61% delivery in line with imp	order to deliver a good job and are resources being
Condition and repairs	78%	21% under delivery	allocated appropriately?
Post and mail	46%	64% over delivery	
Reception	66%	61% delivery in line with imp	portance
Booking systems	69%	37% under delivery	
Security	57%	67% delivery in line with imp	portance
Internal signage	19%	34% over delivery	
Health and safety provisions	39%	45% delivery in line with imp	portance
	Euro Huno er	ad aquinmant	How fit for purpose is each of the items of furniture
	rumiture al	ia equipment	and equipment above i.e. computer hardware;
	IMPORTANCE	SATISFACTION	computer software; reprographics; communication
Computer hardware	23%	45% over delivery	
Computer software	20%	38% Over delivery	
Communication tools	42%	45% delivery in line with imp	portance
	07%	36% delivery in line with imp	
Chair	42 %	26% under delivery	
	20%		
reisonal storage	49%	55% Under deivery	

The results from this exercise are summarised in Figure 13 and Figure 14 to:

- estimate the overall productivity from the user's point of view
- ensure that resources are allocated properly
- identify areas where overall satisfaction could be significantly improved

	IMPO	RTANCE	SATISFAC	TION	
Supporting business needs		45%		63%	over delivery
Working environment		63%		18%	under delivery
Work activities		70%		45%	under delivery
Space and location		42%		69%	over delivery
Facilities		43%		57%	over delivery
Furniture and equipment		23%		44%	over delivery

Figure 13 Comparing importance and satisfaction

Figure 14 Decision-oriented matrix



Where businesses do not wish to survey their staff on buildings every year and prefer to do this more occasionally, there is normally an opportunity to include a single question within an employee survey.

The single question we would most like to ask is:

How satisfied are you that your physical workplace enables you to do your job productively?

5.3 Fitness

5.3.1 Condition score

The aim is to be able to determine the grading of each building in the portfolio. The grading will refer to the part of the building with the majority of rental value. The condition assessment should track the proportion of the portfolio which is at Grade A or B. Reasons for grading at C or D should be noted. This assessment is not a direct substitute for a building survey.

Table 15 Condition codes

Condition grade	Comments/definition
Condition A – As new condition	 Features one or more of the following: Typically built within the last five years, or may have undergone a major refurbishment within this period Maintained/serviced to ensure fabric and building services replicate conditions at installation No structural, building envelope, building services or statutory compliance issues apparent No impacts upon operation of the building. Maintenance backlog / building replacement value likely to be <5%
Condition B – Sound, operationally safe and exhibiting only minor deterioration	 Typically features one or more of the following: Maintenance will have been carried out Minor deterioration to internal / external finishes Few structural, building envelope, building services or statutory compliance issues apparent Likely to have minor impacts upon the operation of the building. Maintenance backlog / building replacement value likely to be in 5-10% range
Condition C – Operational, but major repair or replacement needed in the next 3/5 years	 Typically features one or more of the following: Requiring replacement of building elements or services elements in the short to medium-term Several structural, building envelope, building services or statutory compliance issues apparent, or one particularly significant issue apparent Often including identified problems with building envelope (windows/roof etc.), building services (boilers/chillers etc) Likely to have major impacts upon the operation of the building, but still allow it to be operable. Maintenance backlog / building replacement value likely to be in 10-50% range
Condition D – Inoperable/ serious risk of major failure or breakdown	 Typically features one or more of the following: Building is inoperable, or likely to become inoperable, due to statutory compliance issues or condition representing a health and safety risk or breach May be structural, building envelope, or building services problems coupled with compliance issues The conditions are expected to curtail operations within the building (exclude very minor items which can be rectified easily). Maintenance backlog / building replacement value probably >50%

Adapted from RICS definitions of condition

5.3.2 Suitability score

Suitability is an important element of the performance assessment. The Suitability score tests how appropriate a building in its current use is to the occupier's business needs. As with the effectiveness rating, there are many ways to assess suitability.

Occupiers would normally wish to create a scoring system that mirrors their own priorities, which is acceptable since suitability of a building in the portfolio would not normally be compared with the suitability in any other. Carrying out this assessment is especially useful with very large global estates where no one can be expected to know each building well.

In these circumstances the factors are scored out of 10, where 10 represents complete suitability and 0 represents complete unsuitability. Grades are awarded for individual categories (and for the building as a whole) as follows:

Score 8 – 10	Green – Highly suitable
Score 5 – 7	Amber/green – Suitable
Score 2 – 4	Amber/red – Limited suitability
Score 0 – 1	Red – Unsuitable

The example end-user weights all the factors evenly (a weighting can be given to each of these factors, if desired) and regularly reviews each building in the portfolio every year. Its assessment for a building might be represented in Table 16. It is often useful to compare each of the factors across all the buildings in the portfolio.

Factor	Scoring out of 10 or 100	Grading
Accessibility	6/10	Amber-green
Brand	4/10	Amber-red
Flexibility	2/10	Amber-red
Layout	5/10	Amber-green
Lease length	10/10	Green
Location	2/10	Amber-red
Security	7/10	Amber-green
Size	1/10	Red
Specification	8/10	Green
Tenure	8/10	Green
Total suitability score	115.3/100	Amber-green

Table 16 Key business data definitions

6 Environmental sustainability

6.1 Principles and approach

Corporate and residential property is responsible for about 40% of global greenhouse gas emissions (such as carbon dioxide) through heating, lighting and servicing of buildings. As such they are one of the most significant contributors to climate change. (Although buildings have a large amount of embedded carbon from the construction and installation processes, these are not currently taken into account in the current performance measurement framework.)

Environmental performance should be assessed for the whole portfolio, with performance analysis produced down to building level. Only by collecting information at building level can totals be estimated accurately.

Analysis should allow for individual countries to be clearly identified, not least to satisfy the increasing levels of compliance and other governance issues usually operated at national level.

Performance indicators should be capable of being tracked over time. This means that the many labels available in the market to signify environmental sustainability such as LEED 'Platinum', GreenStar 'Six Star' and BREEAM 'Outstanding', although highly valuable, should run alongside a determined effort to see reductions in environmental damage from buildings each and every year. That means collecting numbers.

The production of an energy performance figure per m² can be essential to understand the differences between one building and another. Analysis per m² is the basis for many standards introduced by national governments, and UNEP's Common Carbon Metrics. However, some caution needs to be exercised in using these per m² metrics, for example when:

- Higher energy/m² involves a reduction in the total energy consumed, where the total floorarea has declined by more than the energy/m² increases.
- Percentage indicators for waste recycling or renewable energy rise at the same time as the total environmental damage of the portfolio is increasing.

Higher energy costs/m² may well be the result of high procurement costs per unit of energy – IPD regularly finds that the unit costs of energy in terms of \$/m² vary by a factor of two or more between one building and another.

Figure 15 shows this issue graphically.

Figure 15 High procurement costs may be the problem



We advise business occupiers to monitor their environmental impacts in the same way as their financial budgets. We therefore refer to environmental 'budgets', which represent the total carbon, energy, waste or water produced by the organisation through its buildings.

6.2 Consumption and impact

GEMCode distinguishes between consumption and impact in relation to the environmental assessment, as shown in Figure 16.

Figure 16 Environmental performance matrix



The consumption figure aims to collect the total kWh of energy, the total m³ of water and the total tonnes of waste, breaking these down as appropriate. These can be converted into ratios, such as kWh/FTE or m³ water/m². By contrast the impact data seeks to identify the most harmful elements of the consumption. The difference between consumption and impact is often to do with recycling.

Table 17 Example environmental ratios for consumption and impact

Factor	Consumption	Impact
Energy	 Year on year change in total kWh (%) Total kWh/m² or FTE Change in total kWh/m² or FTE 	 Year on year change in CO₂ (%) CO₂/m² or FTE Change in CO₂/m² or FTE (%)
Water	 Year on year change in total water (%) Water m³/m² or FTE Change in water m³/m² or FTE (%) 	 Year on year change in sourced water (%) Sourced water m³/m² or FTE Change in sourced water m³/m² or FTE (%)
Waste	 Year on year change in total waste – tonnes (%) Total waste – tonnes /m² or FTE Change in total waste – tonnes /m² or FTE(%) 	 Year on year change in unrecycled waste – tonnes (%) Total unrecycled waste – tonnes /m² or FTE Change in total tonnes of unrecycled waste / m² or FTE (%)

6.3 Energy and carbon measures

The GEMCode distinguishes between conventional 'imported energy' (energy that is supplied to a building or site from an external source) and owned renewable energy, typically generated on-site. Moreover, data items are grouped by broad energy type (e.g. electricity, fossil fuels, and renewable fuels). These broad energy types have different thermodynamic values and need to be recorded and analysed separately. We recognise that occupiers may export energy to nearby sites. Appropriate adjustments to energy figures may be required in these circumstances.

Table 18 Core energy data

Category	Definition
EA1 Electricity	The total annual imported electricity (kWh) used to provide electrical services to a building. Includes the sum of EA11, EA12 and EA13
EA11 Mains electricity	The annual electricity (kWh), as metered, to a building supplied by the mains supply. Includes all mains electricity supplied to the building Excludes electricity provided by on-site renewable generation, communal electricity, owned off-site facility electricity.
EA12 Communal electricity	The annual electricity (kWh), as metered, to a building supplied by communal power sources. Includes all electricity supplied by communal schemes, for example a community Combined Heat and Power scheme or community wind turbine Excludes all mains supplied electricity (EA11), owned off-site facility generated electricity (EA13)
EA13 Owned off-site facility	 The annual electricity (kWh), as metered, to a building supplied by the organisation's, or building owner's, own off-site electricity supply. Includes all electricity supplied to the building as a result of direct investment in an off-site supply by the building owner or occupier. For example, off site wind turbines. Excludes all mains supplied electricity (EA11), communal electricity (EA12)
EA2 Fossil fuels	The annual energy equivalent (kWh) to a building supplied by fossil fuels (as detailed in EA21 to EA23 below) Where possible, provide data on the specific fuel type set out below. See Section 7.6 for advice on converting fuel use from mass or volume to kilowatt hours. Includes the sum total of EA21 to EA25 below Excludes other imported energy sources listed under categories EA1, EA3 and EA4
EA21 Gases	The annual gas from fossil fuel sources (kWh equivalent), as metered, used to provide space and water heating and associated functions to a building. Excludes biogases (EA31) For the purposes of accurate calculation of carbon emissions, the recording of gas fuels by specific type is recommended: 1. Natural Gas 2. Liquid Petroleum Gas (LPG) 3. Coal gas 4. Compressed Natural Gas (CNG) 5. Other (add as appropriate)

Table 18 Core energy data continued

Category	Definition
EA22 Liquids	The annual liquid fossil fuel (kWh equivalent), as metered, used to provide space and water heating and associated functions to a building. Excludes renewable liquid fuels (EA32) For the purposes of accurate calculation of carbon emissions, the recording of liquid fuels by specific type is recommended: 1. Oil 2. Ethanol 3. Diesel 4. Gasoline 5. Other (add as appropriate)
EA23 Solids	The annual energy equivalent (kWh) of solid fossil fuel use. Excludes renewable solid fuel (EA33) For the purposes of accurate calculation of carbon emissions, the recording of solid fuels by specific type is recommended: 1. Coal 2. Anthracite 3. Lignite 4. Bitumen 5. Other (add as appropriate)
EA3 Renewable fuels	The annual energy equivalent (kWh) of imported renewable fuels. Includes the sum total of EA31, EA32 and EA33 below Excludes other imported fuels listed under categories EA1, EA2 and EA4 Note: See EA8 for advice on reporting carbon emissions for fuels under EA3.
EA31 Gases	The annual energy equivalent (kWh) of renewable gases. Excludes non-renewable fossil fuel gases (EA21) <i>Note: Biogas is a mixture of gases, principally methane and carbon dioxide, produced from the</i> <i>anaerobic breakdown of organic material, e.g. from landfill or in sewage digesters. Methane is</i> <i>a potent greenhouse gas, 21 times more so than carbon dioxide over 100 years; and even more</i> <i>potent in the short term</i> For the purposes of accurate calculation of carbon emissions, the recording of renewable gas fuels by specific type is recommended: 1. Biogas 2. Biomethane (landfill gas) 3. Bioethanol 4. BioETBE 5. Other (add as appropriate)
EA32 Liquids	The annual energy equivalent (kWh) of renewable liquid fuels. Excludes non-renewable liquid fossil fuels (EA22) For the purposes of accurate calculation of carbon emissions, the recording of renewable liquid fuels by specific type is recommended: 1. Biodiesel 2. Biogasoline 3. Biopetroleum 4. Vegetable oil 5. Other (add as appropriate)
EA33 Solids	The annual energy equivalent (kWh) of biomass used. Includes solid 'biofuels' derived from biomass (i.e. organic material made from plants and animals) Excludes non-renewable solid fossil fuels (EA23) <i>Note: Burning of biomass does still release greenhouse gases including CO2 (see EA8 for details on biomass-related CO2 accounting).</i>

Table 18 Core energy data continued

Category	Definition
EA33 Solids (continued)	For the purposes of accurate calculation of carbon emissions, the recording of renewable solid fuels by specific type is recommended: 1. Wood pellets 2. Black liquor 3. Charcoal 4. Manure 5. Other (add as appropriate)
EA4 Communal non-electrical energy	 The annual non-electrical energy equivalent (kWh) supplied to a building by communal sources. If possible, provide specific data on the type of communal energy imported, as set out in EA41 and EA42 below. Includes the sum total of EA41 and EA42 Excludes other imported fuels listed under categories EA1, EA2 and EA3 Note: Communal Energy can be generated using a range of primary fuel sources and so to determine the CO₂ equivalent emissions users will need to refer to their local supplier for details.
EA41 Communal heating	The annual energy equivalent (kWh) to a building supplied by communal heating sources. Includes hot water or steam from district schemes, for example a community Combined Heat and Power scheme <i>Note: District Heating means a system supplying heat that is generated centrally in one or several</i> <i>locations to a non-restricted number of customers. It is distributed by means of a network using</i> <i>hot water or steam as a medium. District heating can allow the utilisation of low-grade energy that</i> <i>otherwise would be wasted, such as municipal refuse and waste heat from different sources.</i>
EA42 Communal cooling	The annual energy equivalent (kWh) to a building supplied by communal cooling sources. Includes chilled water from district schemes Note: District Cooling means a system producing cooling services by means of a distribution network, supplying centrally produced chilled water to customers in a number of different buildings.
EA5 Owned renewable electricity generation	The annual electrical energy (kWh) generated (typically on-site) through renewable sources. Includes for example, photovoltaic systems, wind turbines, hydro turbines
EA6 Owned renewable combustion fuels	The annual energy equivalent (kWh) generated (typically on-site) through renewable combustion fuels. Includes for example, on-site harvested biomass
EA7 Owned renewable heating and cooling	The annual thermal energy equivalent (kWh) generated (typically on-site) through renewable sources. Includes the sum total of EA71 and EA72 below
EA71 Renewable heating	The annual heating energy equivalent (kWh) generated (typically on-site) through renewable sources. Includes for example, solar energy, direct geothermal heating
EA72 Renewable cooling	The annual cooling energy equivalent (kWh) generated (typically on-site) through renewable sources. Includes for example, groundwater cooling
EA8 CO2 equivalent	The annual CO_2 equivalent emissions based on the sum of relevant items under the headings EA1, EA2, EA3 and EA4 above.
EA9-11	Not used

Sub-metering is now best practice (utilising technology such as smart-meters) for both landlords and tenants. Sub-metering can be a valuable way to better understand energy use in buildings: either by functional activity or occupant. Such sub-metering is strongly advised for buildings in multiple-use, where data may need to be produce for each of the component uses for example, a data centre within an office).

For many business users of property the main point of collecting all the energy data outlined above is to calculate the carbon produced by the building, as set out in EA8.

6.4 Water measures

The global supply of clean water is under threat from global warming and a range of other factors. Water consumption is increasingly likely to be the subject of legislation in the future. Business managers should therefore be able to produce accurate figures of water consumption tracked over time. Currently, these figures vary widely between one building and the next.

Table 19 Core water data

Category	Definition
EB1 Mains water consumption	The annual volume (m ³) of mains supplied water used in a building. Includes mains supplied water for general use, for example, catering, washrooms, cleaning Excludes bottled drinking water, on-site extracted water, on-site harvested rain and snow water, recycled 'graywater', water used for production processes (for example heavy industry)
EB2 Water extracted on-site	The annual volume (m ³) of water extracted directly on site and used in a building. Includes water extracted on-site through boreholes or water courses (for example rivers and streams) Excludes all mains-supplied water, harvested rain and snow water
EB3 Use of harvested rain and snow water	The annual volume (m ³) of collected rain and snow water and used in a building. Includes all rain and snow water that is collected (after falling on the building) and used on site (for example watering grounds or flushing toilets)
EB4 Use of recycled water	The annual volume (m ³) of recycled 'graywater' used in a building. Includes waste water produced from baths, sinks, showers, clothes washers, dishwashers and lavatories. This can be recycled and reused if an appropriate system is installed.

6.5 Waste measures

Good waste management is a key component of an environmentally effective building. As with water, legislation on waste production is increasingly likely to affect the occupying business. Therefore, ensure that similarly accurate figures can be collected. Our recommendations are set out in Table 20.

Table 20 Core waste data

Category	Definition
EC1 Total non-recycled waste	The annual mass (tonnes) of waste arisings from a building sent to landfill and incineration. If possible, please provide specific data on methods of waste disposal as set out in EC11, EC12 and EC13 below. Includes any waste produced on site which is not reused or recycled. Mass weight (tonnes) is the preferred measure but, where mass is not available, it is acceptable to use approximations by volume. Excludes all recycled waste and composted waste, construction waste, waste returned to producers (e.g. under EU WEEE Regulations or other national or international regulations)
EC11 General waste sent to landfill	The annual mass (tonnes) of waste arisings from a building sent to landfill (landfill is defined as a waste disposal site for the deposit of the waste onto or into land). Includes internal waste disposal sites (i.e. a landfill where a producer of waste is carrying out its own waste disposal at the place of production) Excludes facilities where waste is unloaded in order to permit its preparation for further transport for recovery, treatment or disposal elsewhere; storage of waste prior to recovery or treatment (for a period less than three years as a general rule), or storage of waste prior to disposal (for a period less than one year)
EC12 Incinerated general waste with energy recovery	The annual mass (tonnes) of waste arisings from a building sent for incineration (with energy recovery). Energy Recovery from waste describes the process in which energy (in the form of heat) is recovered from the incineration of waste, and used to generate electricity which is then fed back into the national electricity 'grid' or network, or to provide both electricity and heat (combined heat and power) to nearby communities or other uses. This is an option for the disposal of high calorific-value wastes such as tyres and plastics.
EC13 Incinerated general waste with no energy recovery	The annual mass (tonnes) of waste arisings from a building sent for incineration (with no energy recovery). This is often the most suitable option for hazardous chemicals and clinical waste. For example, the EU Landfill Directive bans certain wastes from being sent to landfill (liquid waste, explosive, corrosive or flammable waste).
EC14 Hazardous waste	 The annual mass (tonnes) of hazardous waste arisings from a building sent for treatment and either incineration or landfill. Hazardous waste, defined by waste regulation, is typically either ignitable, corrosive, reactive, or toxic. Hazardous waste includes hazardous chemicals, fluorescent tubes and clinical waste. For example, the EU Landfill Directive bans certain wastes from being sent to landfill (liquid waste, explosive, corrosive or flammable waste). Excludes radioactive waste (regulated separately and included here under EC14) all recycled waste (e.g. batteries) and composted waste, construction waste, waste returned to producers (e.g. under EU WEEE Regulations or other national or international regulations) Note: For the purposes of effective waste management, hazardous waste may be sub-categorised according to type or source.

Table 20 Core waste data continued

Category	Definition
EC15 Radioactive waste	 The annual mass (tonnes) of radioactive waste arisings from a building sent for specialist treatment and disposal. Radioactive waste is defined by regulations (see International Atomic Energy Agency, www.iaea.org and national regulations). Includes all mixed waste (radioactive/hazardous) Excludes hazardous waste (EC14) For the purposes of waste management it will be necessary to distinguish between types of radioactive waste, based on the level of radioactivity (and/or life): Low-level waste (LLW) Intermediate-level waste (ILW) High-level waste (HLW) Other (add as appropriate)
EC2 Recycled waste	The annual mass (tonnes) of waste arisings from a building that are recycled. Includes many wastes can be recycled, for example paper, cardboard, glass, metal, plastics, batteries, waste electronic equipment, laser printer cartridges, fluorescent tubes, wood (for example, pallets) Excludes general waste for incineration or landfill, composted waste, waste returned to producers (e.g. under EU WEEE Regulations or other national or international regulations) For the purposes of effective waste management specific separated waste streams should be recorded individually from comingled recycled waste: • Single-stream (comingled) recycled waste • Plastics • Metals • Paper • Glass • Wood • Other biomass • Toner cartridges • Batteries • Clothing and textiles • Other (add as appropriate)
EC3 Composted waste	The annual mass (tonnes) of waste arisings from a building that are composted. Includes biodegradable waste

7 Appendices

7.1 Selected list of national and global standards

7.1.1 Cost

 France: Association Apogée, Institut Français du Management Immobilier – Observatoire des coûts d'exploitation des bureaux.

See www.apogee-perigee.com.

- Germany: DIN 18960 User Costs in Buildings. See **www.beuth.de**.
- Netherlands: NEN 2748 Termen voor Facilitaire Voorzieningen. See **www.nen.nl**.
- United States: BOMA Chart of Account. See **www.boma.org**.

7.1.2 Space

- Australia: Method of Measurement for Lettable Area, PCA. See **www.propertyoz.com.au**.
- Europe: EN 15221-6 Facilities Management Space Measurement. See **www.en-standard.eu**.
- France: See Circulaire 34719 at www.circulaire.legifrance.gouv.fr.
- Germany: DIN 277 Areas and Volumes of Buildings. See **www.beuth.de**.
- International: ISO 9836 Definition and calculation of area and space indicators. See **www.iso.org**.
- Netherlands: NEN 2580 Oppervlakten en Inhouden van Gebouwen (Areas and Volumes of Buildings). See www.nen.nl.
- UK: RICS Code of Measuring Practice: A guide for surveyors and valuers
- USA: ANSI/BOMA Z65.1 Standard Method for Measuring Floorarea in Office Buildings. See www.buildingareameasurement.com.
- USA: IFMA/BOMA A Unified Approach for Measuring Office Space – See www.ifma.org and www.boma.org.

7.1.3 Environment

- Australia: NABERS National Australian Built Environment Rating System. See **www.nabers.gov.au**. Also: GreenStar: Green Building Council of Australia. See **www.gbca.org.au**.
- Brazil: AQUA Brazilian certification. See **www.vanzolini.org.br**.
- Canada: Green Globes design and management tool. See **www.greenglobes.com**.
- China: Green Building Assessment Method, Ministry of Construction. See **www.cngbn.com**.
- France: High Quality Environmental (HQE) certificate for construction. See **assohge.org/hge**.
- Germany: Certification through German Sustainable Building Council. See **www.dgnb-system.de**.
- India: GRIHA is the national rating system. See **www.grihaindia.org**.
- Japan CASBEE is a voluntary evaluation tool. See **www.ibec.or.jp/CASBEE/english/**.
- Malaysia: the Green Building Index green-rating tool. See **www.greenbuildingindex.org**.
- Philippines: Building for Ecologically Responsive Design Excellence. See **www.berdeonline.org**.
- South Africa: Greenstar SA. See www.gbcsa.org.za.
- UK: BRE Environmental Assessment Method (BREEAM). See **www.breeam.org**.
- USA: the Leadership in Energy and Environmental Design (LEED) approach, developed by the US Green Building Council. See **www.usgbc.org**.

7.2 The GEMCode data template

All data relating to individual buildings can be loaded onto this template. However, some business data is likely to refer to groups of buildings and so is excluded from this list.

Occupiers may not wish to use the entire list of data fields but it needs to be understood that missing data might make some performance analysis impossible.

More detail may be required in some circumstances. Please contact IPD Occupiers for further information.

D DESCRIPTIVE DATA

Data field	Type of entry
DR Unique referencing	α -numeric
DA Business information	
DA1 Occupying business units	Code
DA2 Management team	Code
DA3 FM supplier	Code
DB Physical, geographical	
DB1 Address	Text
DB2 Country	Code
DB3 Building location type	Code
DC Building	
DC1 Tenure	Code
DC2 Building type	Code
DC3 Building grade	Code
DC4 Heritage building	Code
DC5 Building condition	Code
DC6 Sustainability grading	Code
DC7 Sustainability grading body	Code
DC8 Disaster recovery building	Code

D DESCRIPTIVE DATA

Data field	Type of entry
DD Building characteristics	
DD1 Building operating hours	Numeric
DD2 Disaster recovery status	Code
DD3 Year of construction	Numeric
DD4 Year of last major refurbishment	Numeric
DD5 Number of floors/storeys	Numeric
DD6 Floors/storeys occupied	Numeric
DD7 Number of lifts and escalators	Numeric
DD8 Building entrances	Numeric
DD9 Number of car parking spaces	Numeric
DE Building capacity	
DE1 Workstations	Numeric
DE11 Allocated Workstations	Numeric
DE12 Flexible Workstations	Numeric
DE2 Touch-down spaces	Numeric
DE3 Meeting spaces	Numeric
DE4 Social and catering spaces	Numeric
DE5 Total building spaces	Numeric
DF Building users	
DF1 Total FTE	Numeric
DF2 Total headcount	Numeric
DF3 Employees FTE	Numeric
DF4 Employees headcount	Numeric
DF5 Contractors FTE	Numeric
DF6 Contractors headcount	Numeric
DF7 Visitors	Numeric
DF8 Visitor hours	Numeric
DF9 Building users	Numeric
DF10 Building user hours	Numeric
DF11 Service user population	Numeric

C OCCUPANCY COSTS

Data field	Type of entry
CT TOTAL OCCUPANCY COSTS	Numeric
CA Property occupation costs	Numeric
CA1 Net rent	Numeric
CA2 Unitary charge	Numeric
CA3 Acquisition, disposal and removal	Numeric
CA4 Local property taxes	Numeric
CA5 Parking charges	Numeric
CA6 Associated facilities	Numeric
CA7 Occasional space	Numeric
CA8 Marketing and promotion	Numeric
CB Adaptation and equipment costs	Numeric
CB1 Fit out and improvement	Numeric
CB2 Furniture and equipment	Numeric
CC Building operation costs	Numeric
CC1 Consolidated services charge	Numeric
CC2 Insurance	Numeric
CC3 Internal repair and maintenance	Numeric
CC4 M&E Repair and Maintenance	Numeric
CC5 External/structural repair and maintenance	e Numeric
CC6 Minor improvements	Numeric
CC7 Internal moves	Numeric
CC8 Reinstatement	Numeric
CC9 Security	Numeric
CC10 Cleaning	Numeric
CC11 Waste disposal	Numeric
CC12 Internal plants and decorations	Numeric
CC13 Grounds maintenance	Numeric
CC14 Water and sewerage	Numeric
CC15 Energy	Numeric

CD Business support costs	Numeric
CD1 No longer used	Numeric
CD2 Catering	Numeric
CD3 Reception	Numeric
CD4 Courier and external distribution	Numeric
CD5 Post Room and internal distribution	Numeric
CD6 Reprographics	Numeric
CD7 No longer used	Numeric
CD8 Transport	Numeric
CD9 Archiving	Numeric
CD 10 Linen and laundry	Numeric
CE Management costs	Numeric
CE1 Real Estate management	Numeric
CE2 Facilities management	Numeric
CE3 Project management	Numeric
CE4 Other management	Numeric
CE41 Environmental management	Numeric
CE42 Information management	Numeric
CE43 Quality management	Numeric
CE Information technology costs	Numeric
CF1 Infrastructure	Numeric
CF2 Hardware and communication	Numeric
CF3 Software	Numeric
CF4 Support	Numeric

S FLOORSPACE

Data field	Type of entry
SA TOTAL FLOORAREA	Numeric
SA1 External structure	Numeric
SA11 Perimeter and party walls	Numeric
SA12 External columns and piers	Numeric
SA2 Internal structure	Numeric
SA21 Structural walls and partitions	Numeric
SA22 Internal columns and piers	Numeric
SA3 Unusable area	Numeric
SA31 Voids, atriums and cavities	Numeric
SA32 Other areas rendered unusable	Numeric
SB Internal Floorarea	Numeric
SB1 Vertical circulation	Numeric
SB11 Stairwells	Numeric
SB12 Lift wells	Numeric
SB13 Escalators	Numeric
SB2 Plant area	Numeric
SB21 Lift rooms	Numeric
SB22 Plant rooms	Numeric
SB23 Vertical penetrations	Numeric
SB3 Hygiene area	Numeric
SB31 Toilets	Numeric
SB32 Cleaners' rooms	Numeric
SB33 Shower facilities	Numeric
SC Usable floorarea	Numeric
SC1 Sublet floorarea	Numeric
SC2 Shared support floorarea	Numeric
SC21 Social and catering areas	Numeric
SC22 Site meeting spaces	Numeric
SC 23 Site resource areas	Numeric
SC24 Site specialised areas	Numeric
SC25 Other site support space	Numeric
SC3 Vacant floorarea	Numeric

SD Occupied usable floorarea	Numeric
SD1 Horizontal circulation	Numeric
SD11 Primary circulation areas	Numeric
SD12 Other circulation areas	Numeric
SD2 Central support	Numeric
SD21 Social and catering areas	Numeric
SD22 Central meeting spaces	Numeric
SD23 Central resource areas	Numeric
SD3 Local support	Numeric
SD31 Break and pantry areas	Numeric
SD32 Local meeting spaces	Numeric
SD33 Local resource areas	Numeric
SD4 Specialist support area	Numeric
SE Work floorarea	Numeric
SE1 Open work floorarea	Numeric
SE11 Open offices	Numeric
SE12 Touch downs	Numeric
SE2 Semi-open work floorarea	Numeric
SE21 Cubicles	Numeric
SE22 Team spaces	Numeric
SE23 Work lounges	Numeric
SE24 Open booths	Numeric
SE3 Enclosed work floorarea	Numeric
SE31 Private offices	Numeric
SE32 Shared offices	Numeric
SE33 Team and collaboration rooms	Numeric
SE34 Focus rooms	Numeric
SE35 Study and guiet booths	Numeric

Extra detail on floorarea may be collected as follows (all numeric data fields are linked through to the relevant two digit code from page 55):

S DETAILED FLOORSPACE CATEGORIES

Data field
SA Categories
SA111 Perimeter walls
SA112 Party walls
SA121 External columns
SA122 External piers
SA211 Structural walls
SA212 Structural partitions
SA221 Internal columns
SA222 Internal piers
SA311 Voids (such as crawl ways)
SA312 Atriums (apart from base level)
SA313 Cavities
SA321 Areas with a net height of less than 1.5 m
SA322 Areas with a floorarea of less than 0.5 m ²
SA323 Areas with a net length or width of less than 0.25 m
SB Categories
SB111 Enclosed staircases
SB112 Open staircases
SB113 Ramps
SB121 Passenger lifts
SB122 Goods lifts
SB123 Lift lobbies
SB221 Electrical conductors and power generation systems
SB222 Gas installations and heating and hot water systems
SB223 Ventilation, air-conditioning and cooling systems
SB231 Services risers
SB232 Shafts and ducts
SB311 Men's toilets
SB312 Women's toilets
SB313 Disabled toilets
SB331 Changing rooms
SB332 Showers

SC Categories

SC211 Site reception areas and waiting areas
SC212 Site restaurants and cafeterias (including kitchens)
SC213 Site exercise facilities and social amenities
SC214 Site religious amenities
SC221 Site auditoriums
SC222 Site conference suites
SC223 Seminar rooms
SC231 Site storage and filing
SC232 Site mailrooms and reprographics
SC233 Site IT and communications rooms
SC241 Crèches
SC242 Site laboratories and lab based training space
SD Categories
SD111 Corridors
SD112 Hallways (including entrance halls)
SD113 Conveyors
SD121 Fire corridors
SD122 Escape routes
SD211 Reception and waiting areas
SD212 Restaurants and cafeterias (including kitchens)
SD213 Exercise facilities and social amenities
SD214 Religious amenities
SD221 Auditoriums
SD222 Conference suites
SD223 Seminar rooms
SD231 Central storage and filing
SD232 Mailrooms and reprographics
SD233 IT and communications rooms
SD311 Break out areas
SD312 Pantry areas
SD313 Smoking rooms
SD321 Small meeting room
SD322 Large meeting room
SD323 Small meeting space
SD324 Large meeting space
SD325 Brainstorm room
SD326 Meeting point

SD331 Filling space
SD332 Storage space
SD333 Print and copy area
SD334 Mailboxes
SD335 Locker areas
SD336 Libraries
SD401 Photographic studios
SD402 Laboratories and lab based training space
SD403 Show rooms
SD404 Crèches
SD405 Medical centre
SD406 Other specialist support space
SE Categories
SE111 Allocated open offices
SE112 Bookable open offices
SE113 Flexible open offices
SE121 Bookable touch downs
SE122 Flexible touch downs
SE211 Allocated cubicles
SE212 Bookable cubicles
SE213 Flexible cubicles
SE221 Allocated team spaces
SE222 Bookable team spaces
SE231 Bookable work lounges
SE232 Flexible work lounges
SE241 Bookable open booths
SE242 Flexible open booths
SE311 Allocated private offices
SE312 Bookable private offices
SE321 Allocated shared offices
SE322 Bookable shared offices
SE331 Allocated team rooms
SE332 Bookable team rooms
SE341 Bookable focus rooms
SE342 Flexible focus rooms
SE351 Bookable study and quiet booths
SE352 Flexible study and quiet booths

Q QUALITY

Data field	Type of entry
QA EFFECTIVENESS SATISFACTION SCORE	Numeric
QA1 Business need – satisfaction	Numeric
QA2 Space and location – satisfaction	Numeric
QA3 Facilities – satisfaction	Numeric
QA4 Working environment – satisfaction	Numeric
QA5 Ways of working – satisfaction	Numeric
QA6 Furniture/equipment – satisfaction	Numeric
QB EFFECTIVENESS IMPORTANCE SCORE	Numeric
QB1 Business need – importance	Numeric
QB2 Space and location – importance	Numeric
QB3 Facilities – importance	Numeric
QB4 Working environment – importance	Numeric
QB5 Ways of working – importance	Numeric
QB6 Furniture/equipment – importance	Numeric
QC FITNESS SCORE	Numeric
QC1 Condition score summary	Numeric
QC2 Suitability score summary	Numeric

E ENVIRONMENTAL

Data field	Type of entry
EA TOTAL ENERGY CONSUMPTION	Numeric
EA1 Electricity	Numeric
EA11 Mains electricity	Numeric
EA12 Communal electricity	Numeric
EA13 Owned off-site facility	Numeric
EA2 Fossil fuels	Numeric
EA21 Gases	Numeric
EA22 Liquids	Numeric
EA23 Solids	Numeric
EA3 Renewable Fuels	Numeric
EA31 Gases	Numeric
EA32 Liquids	Numeric
EA33 Solids	Numeric

EA4 Communal non-electrical energy	Numeric
EA41 Communal heating	Numeric
EA42 Communal cooling	Numeric
EA5 Owned renewable electricity generation	Numeric
EA6 Owned renewable combustion fuels	Numeric
EA7 Owned renewable heating and cooling	Numeric
EA71 Renewable heating	Numeric
EA72 Renewable cooling	Numeric
EA8 CO2 EQUIVALENT	Numeric
EB TOTAL WATER CONSUMPTION	Numeric
EB1 Mains water consumption	Numeric
EB2 Water extracted on-site	Numeric
EB3 Use of harvested rain and snow water	Numeric
EB4 Use of recycled water	Numeric
EC TOTAL WASTE PRODUCTION	Numeric
EC1 Total non-recycled waste	Numeric
EC11 General waste sent to landfill	Numeric
EC12 Incinerated general waste with energy recovery	Numeric
EC13 Incinerated general waste with no energy recovery	Numeric
EC14 Hazardous waste	Numeric
EC15 Radioactive waste	Numeric
EC2 Recycled waste	Numeric
EC3 Composted waste	Numeric

7.3 Cost mapping guide

This section allocates different types of occupancy cost to a cost category. In some cases, the word 'exclude' indicates that this cost item should not be included in occupancy costs.

Cost item	Code
Access control systems, readers and passes	CC9
Acquisition tax and duty	CA3
Acquisition, disposal and removal	CA3
Acquisitions and disposals	CE1
Adaptation and equipment	СВ
Air conditioning (fit out and improvement)	CB1
Air conditioning (repair and maintenance)	CC4
Alarms (security)	CC9
Archiving	CD9
Archiving systems	CD9
Asbestos removal	CC3
Associated facilities	CA6
Badges	CC9
Blackberries	CF2
Blinds	CB2
Borders	CC13
Building operation	CC
Burst pipes (premiums)	CC2
Bus schemes	CD8
Business support	CD
Cables and wires	CF1
Car parking	CC13
Carpeting	CB1
Carpets (cleaning)	CC10
Catering	CD2
Catering equipment	CD2
CCTV	CC9
Central control (security)	CC9
Central control (telephones)	CF2
Chairs (cleaning)	CC10
Chairs (furniture and equipment)	CB2
Charges (real estate)	CE1
Christmas decoration	CC12

Cost item	Code
Cladding	CC5
Cleaning	CC10
Cleaning (internal plants and decorations)	CC12
Collection (mail)	CD5
Composted waste disposal	CC11
Concierge services	CE2
Condition surveys	CE2
Confidential waste disposal	CC11
Consolidated services charge	CC1
Contract negotiations	CE1
Courier and external distribution services	CD4
Crockery and cutlery	CD2
Curtains	CB2
Design and layout	CE2
Desk lights	CB2
Desks (cleaning)	CC10
Desks (furniture and equipment)	CB2
Desktop phones	CF2
Despatch (mail)	CD5
Detectors	CC9
Disposal costs	CA3
Distribution (mail)	CD5
District heating	CC15
Doors (cleaning)	CC10
Drainage	CC5
Drapes	CB2
Drinks	CD2
Dusting (internal plants and decorations)	CC12
Earthquake (premiums)	CC2
Electrical installations (fit out and improvement)	CB1
Electrical installations (repair and maintenance)	CC4
Electricity	CC15
Energy	CC15
Environmental management	CE4
Environmental tax	CA4
Equipment (internal moves)	CC7
Equipment (repair and maintenance)	CC3

Cost item	Code
Escalators	CC4
Explosion (premiums)	CC2
External and structural repair and maintenance	CC5
External decoration	CC5
Facilities management	CE2
Feeding (internal plants and flowers)	CC12
Fences	CC9
Fenestration	CC5
Filing cabinets	CB2
Fire (premiums)	CC2
Fire extinguishers	CB2
Fire prevention services	CC4
Fire safety training	CE2
Fit out (internal moves)	CC7
Fit out (repair and maintenance)	CC3
Fit out and improvement	CB1
Fittings	CB1
Fixtures	CB1
Flood (premiums)	CC2
Flooring (fit out and improvement)	CB1
Floors (cleaning)	CC10
Flowers (external)	CC13
Flowers (internal)	CC12
Food	CD2
Foundations	CC5
Furniture (churn)	CC7
Furniture (repair and maintenance)	C3
Furniture and equipment	CB2
Garden stores	CC13
Gas	CC15
General waste disposal	CC11
Greenhouses	CC13
Grounds maintenance	CC13
Handsets	CF2
Hardware	CF2
Health and safety	CE2
Help desk	CE2

Cost item	Code
Hospitality provision	CD2
Identity cards	CC9
Information management	CE4
Information technology	CF
Infrastructure	CF1
Insurance	CC2
Internal moves	CC7
Internal plants and decorations	CC12
Internal repair and maintenance	CC3
Internal walls (cleaning)	CC10
Internal walls (fit out and improvement)	CB1
Intruder detection and alarm systems	CC9
IT equipment (cleaning)	CC10
Kitchen equipment	CD2
Laptops	CF2
Laundry and linen services	CD10
Lawns	CC13
Liability for excess	CC2
Lifts	CC4
Lighting (cleaning)	CC10
Lighting (fit out and improvement)	CB1
Lighting (security)	CC9
Line charges	CF2
Litter clearance	CC13
Local property taxes	CA4
Loss of rent (premiums)	CC2
Loudspeakers	CC9
M&E repair and maintenance	CC4
Maintenance contract (security)	CC9
Marketing and promotion	CA8
MDAs	CF2
Mechanical handling equipment	CB2
Minor improvements	CC6
Mobile phones	CF2
Mobile phones (not call costs)	CF2
Municipal tax	CA4
Newspapers	Exclude

Cost item	Code
Notional rent	CA1
Occasional space	CA7
Oil	CC15
Opening (mail)	CD5
Operating systems	CF3
Other management	CE4
PABX	CF2
Packaging (mail)	CD5
Parking areas	CC13
Parking charges	CA5
Partitioning (fit out and improvement)	CB1
Partitions (cleaning)	CC10
Pavements	CC13
Pavilions	CC13
PCs	CF2
Pedestals (cleaning)	CC10
Pedestals (furniture and equipment)	CB2
Pest control	CC10
Photocopiers	CD6
Post room and internal distribution services	CD5
Porterage	CD5
Postage	Exclude
Printers	CD6
Project management	CE3
Property management	CE
Property occupation	CA
Pruning (internal plants and flowers)	CC12
Quality management	CE4
Rates	CA4
Real estate management	CE1
Reception services	CD3
Recording (mail)	CD5
Recycled waste disposal	CC11
Redecoration (external)	CC5
Redecoration (internal)	CC3
Reinstatement	CC8
Removal costs	CA3

Cost item	Code
Rent	CA1
Rent paid	CA1
Rental value	CA1
Reprographics	CD6
Retrieval systems	CD9
Road blocks	CC9
Roadways	CC13
Roof	CC5
Sanitary waste disposal	CC11
Seasonal decorations	CC12
Security	CC9
Security barriers (in car park)	CC9
Security contractors	CC9
Security staff	CC9
Servers	CF2
Service charge	CC1
Sewerage	CC14
Shelving	CB2
Shop fronts	CB1
Signage (fit out and improvement)	CB1
Sinking fund	CC8
Snacks	CD2
Snow clearance	CC13
Soft furnishings	CB2
Software	CF3
Space heating	CB1
Sprinkler systems	CC4
Stamping (mail)	CD5
Stationery	Exclude
Storage cabinets	CB2
Strategic planning and reporting	CE1
Subsidence (premiums)	CC2
Subsidy (food and drink)	CD2
Support	CF4
Suspended ceilings (cleaning)	CC10
Suspended ceilings (improvement)	CB1
Switchboard systems	CF2

Cost item	Code
Tables	CB2
Telephone switchboard staffing	CD3
Telephones	CF2
Telephones (cleaning)	CC10
Terrorism (premiums)	CC2
Tiles (cleaning)	CC10
Tiling	CB1
Toilets (cleaning)	CC10
Toxic waste disposal	CC11
Transport	CD8
Travel subsidy	CD8
TV license	Exclude
Uniforms (reception)	CD3
Uniforms (security)	CC9
Unitary charge	CA2
Urinals (cleaning)	CC10
User software	CF3
Valuations (real estate)	CE1
Vehicular access control	CC9
Voicemail	CF2
Vouchers (food and drink)	CD2
Wall linings	CB1
Walls (external)	CC5
Walls (internal)	CB1
Waste compactors	CB2
Waste disposal	CC11
Water and plumbing	CC4
Water and sewerage	CC14
Water supply	CC14
Watering (internal plants and flowers)	CC12
WCs (cleaning)	CC10
Window boxes	CC13
Windows (cleaning)	CC10
Wireless components	CF1
Woodwork and joinery	CB1
Workplace management	CE2
Works of art	CB2

7.4 Measuring rules

7.4.1 Three measurement rules

When determining floorareas in buildings, it is important to adhere consistently to the following three measurement rules:

- Floorareas for buildings and rooms shall be measured at floor level at the top of a finished floor.
- Floorareas must be determined as the area of the vertical projection onto an (imaginary) horizontal plane.
- Floorareas are determined separately for each storey in the building, both above and below the ground.

Floorareas with varying heights within one storey are also calculated separately.

7.4.2 Boundary lines

When determining boundary lines, structural walls and exterior wall are measured along their limiting faces. Non-structural internal walls, however, are measured to their centre.

Some existing standards advocate using dominant portion when determining boundary lines. As a result, perimeter windows placed to the outside of the façade as opposed to the inside will simultaneously decrease the external structure and increase the usable floorarea. In addition, this will increase the net volume of buildings and rooms. As this will have a negative impact on both space ratios and the environment (in terms of heating and cooling additional volume), we feel that the use of dominant portion is not feasible.

A few standards advocate measuring all walls to their limiting faces – including non-structural internal walls. As this can have a significant impact on the space ratios, we feel that non-structural internal walls are to be measured to their centre – not least because these walls are put up by choice.

When determining boundary lines, incidental indentions or protruding part of the building must be ignored if their floorarea is smaller than 0.1 m².

Some existing standards advocate using floorareas smaller than 0.5 m² when determining boundary lines. As a result, perimeter niches with a width of 0.8 m and

a depth of 0.6 m are included in external structure. Also, internally protruding parts or even free standing internal columns measuring 0.7 m by 0.7 m are regarded as usable floorarea, whereas external part and columns are ignored all together. As this can have a significant impact on space ratios, we felt that a measure of 0.1 m² is more appropriate when determining boundary lines.

7.4.3 Stairwells, atriums and mezzanines

Figure 17 shows the rules for measuring stairwells, atriums and mezzanines.

Figure 17 Measuring stairwells, atriums and mezzanines



The floorarea for stairs is determined by their vertical projection onto an imaginary horizontal plane at the upper storey level. The floorarea underneath the lowest staircase in a building is partly classified as unusable floorarea and partly according to its function

Measuring stairwells

Measuring atriums

The floorarea for atria with clear height above is measured at floor level only, regardless of their storey height.



Measuring mezzanines

The floorarea for mezzanines intended for use with permanent access is measured at floor level. The floorarea on the storey below does not count as part of the atrium, but is classified according to its function.

7.4.4 Unusable areas

Floorareas rendered substantially unusable include areas with a net length or width of less than 0.25 m (after RICS), areas with a floorarea of less than 0.5 m² (after NEN) and areas with a net height of less than 1.5 m (after NEN and RICS). Areas with a net height of less than 1.5 m below staircases and ramps are not regarded as unusable areas as they belong to vertical circulation or horizontal circulation respectively. However, the floorarea underneath the lowest staircase in a building is partly classified as unusable floorarea and partly according to its function.

Some existing standards advocate using a net length or width of less than 0.5 m and/or a floorarea of less than 1.0 m² when determining unusable area. We believe, however, that these values are on the high end and that they discourage organisations from making optimal use of available floor space.

Figure 18 Unusable area due to limited length and/or width



Some existing standards advocate using a net height of less than 1.8 m when determining unusable area. Again, we believe that this value is on the high end and that they discourage organisations from making the best use of available floor space.

Figure 19 Unusable area due to limited height


7.5 Space components

Table 21 below shows the essential breakdown of space in an office and some other types of building.

Table 21	Space	components - continued	on	next page
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Space measure	Total floorarea	External structure	Internal structure	Unusable area	Internal floorarea	Vertical circulation	Plant area	Hygiene area	Usable floorarea	Sublet area	Shared support
Space component	SA	SA1	SA2	SA3	SB	SB1	SB2	SB3	sc	SC1	SC2
Perimeter walls (and party walls)	~	~			Х				х		
External columns and piers	~	~			х				х		
Structural walls and partitions	v		~		х				х		
Internal columns and piers	~		~		х				х		
Voids, atriums and cavities	v			~	Х				Х		
Other areas rendered unusable	v			~	Х				х		
Stairwells	v				~	~			Х		
Lift wells	v				✓	~			х		
Escalators	v				✓	✓			Х		
Lift rooms	v				✓		✓		х		
Plant rooms	v				✓		✓		х		
Vertical penetrations	v				✓		✓		х		
Toilets	v				~			✓	Х		
Cleaners' rooms	v				✓			✓	х		
Shower facilities	v				~			~	х		
Sublet area	v				~				~	~	
Shared support area	v				✓				✓		✓
Vacant area	v				~				~		
Primary circulation areas	v				~				~		
Other circulation areas	v				~				✓		
Social and catering areas	~				~				~		
Central meeting spaces	~				~				~		
Central resource areas	v				~				~		
Break and pantry areas	~				~				~		
Local meeting spaces	v				~				~		
Local resource areas	v				~				~		
Specialist support area	v				~				✓		
Open offices	~				~				~		
Touch downs	~				~				~		
Cubicles	~				~				~		
Team spaces	~				~				~		
Work lounges	~				~				~		
Open booths	~				~				~		
Private offices	~				~				~		
Shared offices	~				~				~		
Team rooms	~				~				~		
Focus rooms	~				~				~		
Study booths	~				~				~		

Table 21 Space components continued

Space measure	Vacant area	Occupied usable floorarea	Horizontal circulation	Central support	Local support	Specialist support	Work floorarea	Open work area	Semi-open work area	Enclosed work area
Space component	SC3	SD	SD1	SD2	SD3	SD4	SE	SE1	SE2	SE3
Perimeter walls (and party walls)		Х					Х			
External columns and piers		Х					Х			
Structural walls and partitions		Х					Х			
Internal columns and piers		Х					Х			
Voids, atriums and cavities		Х					Х			
Other areas rendered unusable		Х					Х			
Stairwells		Х					Х			
Lift wells		Х					Х			
Escalators		Х					Х			
Lift rooms		Х					Х			
Plant rooms		Х					Х			
Vertical penetrations		Х					Х			
Toilets		Х					Х			
Cleaners' rooms		Х					Х			
Shower facilities		Х					Х			
Sublet area		Х					Х			
Shared support area		Х					Х			
Vacant area	~	Х					Х			
Primary circulation areas		~	~				Х			
Other circulation areas		~	~				Х			
Social and catering areas		~		~			Х			
Central meeting spaces		~		~			Х			
Central resource areas		~		~			Х			
Break and pantry areas		~			~		Х			
Local meeting spaces		~			✓		Х			
Local resource areas		~			✓		Х			
Specialist support area		~				✓	Х			
Open offices		~					~	✓		
Touch downs		~					~	✓		
Cubicles		✓					✓		~	
Team spaces		✓					✓		~	
Work lounges		~					~		~	
Open booths		~					~		~	
Private offices		~					~			~
Shared offices		~					~			~
Team rooms		~					~			~
Focus rooms		~					~			~
Study booths		~					~			~

7.6 Conversion tables

In this section, we provide an overview of unit conversion tables for common units of energy, volume, mass and lengths together with calorific values of common fuel types. If these tables do not provide the conversions you are looking for, a more complete list of conversions can be found at: **www.onlineconversions.com**.

Fuel	Calorific value	Renewable fuels	Calorific value
1 m ³ natural gas	11.02 kWh	1 m ³ biogas	8.02 kWh
1 litre LPG	6.98 kWh	1 m ³ biomethane	9.89 kWh
1 litre ethanol	6.50 kWh	1 litre bioethanol	5.91 kWh
1 litre gas oil	10.41 kWh	1 litre vegetable oil	9.53 kWh
1 litre diesel	10.02 kWh	1 litre biodiesel	9.20 kWh
1 litre gasoline	9.12 kWh		
1 kg domestic coal	8.05 kWh	1 kg wood pellets	4.62 kWh
1 kg industrial coal	7.10 kWh		
1 kg anthracite	8.24 kWh		

Calorific values for common fuel types

From-to multiply by	Gigajoule	Kilowatt hour	Therm	Tonne oil equiv	kcal
Gigajoule	1	277.78	9.47817	0.02388	238,903
Kilowatthour	0.0036	1	0.03412	0.00009	860.05
Therm	0.10551	29.307	1	0.00252	25,206
Tonne oil equivalent	41.868	11,630	396.83	1	10,002,389
Kilocalorie	0.000004186	0.0011627	0.000039674	0.000000100	1

Conversions for common units of energy

From-to multiply by	Litre	M ³	Cu ft	Imp. gal.	US gal.
Litres	1	0.001	0.03531	0.21997	0.26417
Cubic metres	1000	1	35.315	219.97	264.17
Cubic feet	28.317	0.02832	1	6.2288	7.48052
Imperial gallon	4.5461	0.00455	0.16054	1	1.20095
US gallon	3.7854	0.0037854	0.13368	0.83267	1

Conversions for common units of volume

From-to multiply by	Kilogram	Tonne	Long ton	Short ton	Pound
Kilogram	1	0.001	0.00098	0.00110	2.2046
Metric tonne	1000	1	0.9842	1.1023	2204
Long ton	1016	1.016	1	1.120	2240
Short ton	907	0.9072	0.8929	1	2000
Pound	0.454	0.0004536	0.0004464	0.00050	1

Conversions for common units of mass

From-to multiply by	Metre	Foot	Mile	Kilometre	Nautical miles
Metre	1	3.281	0.0006214	0.001	0.00053996
Feet	0.3048	1	0.0001894	0.0003048	0.00016458
Mile	1609	5280	1	1.609	0.86898
Kilometre	1000	3281	0.6214	1	0.53996
Nautical miles	1852	6076	1.151	1.852	1

Conversions for common units of length 1

From-to multiply by	Metre	Foot	Inch	Centimetre	Yard
Metre	1	3.28084	39.37008	100	1.09361
Feet	0.30480	1	12	30.48000	0.33333
Inch	0.02540	0.08333	1	2.54000	0.02778
Centimetre	0.01	0.03281	0.39370	1	0.01094
Yard	0.91440	3	36	91.44000	1

Conversions for common units of length 2

7.7 Building types

Building types are specified in various sources such as the OSCRE/Appraisal Institute standard or OmniClass. Table 22 is by necessity incomplete but it is an appropriate working list for the majority of occupiers.

Table 22 Working list of property types

Property types

Commercial

Bank/financial services branch Conference/convention centre Gas filling station Hotel Other motor trade

Distribution and storage

Archives Covered single-storey parking Distribution centre Hangar Multi-storey parking Warehouse

Disaster recovery facility

Education

Child care and kindergarten Community college Library Primary school Secondary school Student leisure and related facilities University

Health care

Ambulance station Animal healthcare Crematoriums and cemeteries Dental facility Health/medical centre Hospital Mental health residential Nursing home Outpatient care facility

Laboratory

Laboratory (process type) R&D laboratory

Leisure

Bar/pub/cafe Cinema Concert hall Integrated arts and leisure facility Marina Members' club Nightclub Opera house Restaurant Sports club Sports club Sports stadium Swimming pool Theatre

Manufacturing, utility

Bakery Brewery Factory Foundry Gas supply Mining Power generation Refinery Solid waste treatment Water supply Workshop/repair

Office

Administrative office Call centre Client-facing office Data centre Prestige HQ Representative offices Training centre

Public building

Central government assembly Community hall assembly Courthouse Embassy, consulate Fire station Local government assembly Palace Police station Prison

Residential

Apartment block, condominium Attached house Barracks Children's homes Detached house Halls of residence Sheltered/elderly housing

Religious facility

Retail

Department store Food store Market Plant nursery Post office Shopping mall/centre Shopping unit

Transit building

Airport Bus terminal Ferry building Metro station Signal box/rail facility Taxi facility Train/rail station

Exclusions

Agricultural Land uses without buildings Mining Military Non-enclosed buildings Structures

8 Index

This index does not cover all the terms listed in the GEMCode. Please also see the data template in Section 7.2, the cost mapping guide in Section 7.3 and the list of building types in Section 7.7.

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