Management of Floor Space in Further Education Colleges

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1) Introduction

This document provides guidance to Colleges on the management of floor space. It is designed to update the advice previously offered by the now dissolved Learning and Skills Council's (LSC) document: *Guidance for Further Education Colleges on the Management of Floor Space (May 2007* - an annex to the Capital Handbook issued in November 2006).

This earlier advice was based upon previously established techniques and upon original research (carried out in 2006). At that time an LSC property team would review a College's application of these techniques and make recommendations; however, given the present relatively limited availability of central expertise, we have chosen to set out some of the underlying assumptions behind the methods in more detail.

Despite changes in the sector, much of the 2007 advice continues to hold true; but in certain respects the advice reflected a time of significant capital investment and emphasis on large new buildings (in which, with proper planning, it is generally easier to achieve greater efficiency). We have attempted to reflect the present emphasis on using existing floorspace (often as part of an Area Review).

2) The Relationship Between Floorspace, Costs and an Estate Strategy

Sector data (including 'E-mandate') indicates that most colleges spend at least £60/square metre/year on estates costs (lighting, energy, cleaning, maintenance etc.). The provision of a 25-person classroom typically requires a minimum of 52 square metres. Within a regular college building it is normal to add an allowance of around 33% to any allocation for "balance space"; balance space includes corridor circulation, stairwells, toilets etc. Therefore the provision of a single 25-person classroom requires around 70 square metres and this equates to £4,200/annum in running costs.

Given the widespread acknowledgement that overprovision of floorspace is unnecessary expenditure, the Further Education sector has been rationalising its estate for almost a quarter of a century (since gaining independence from local authorities). However the rate of change has not significantly outpaced a general reduction in on-site delivery (the reduction in hours delivered is probably due to a range of factors: demographic change, changes to pedagogy, more focus on learning in the workplace and a reduction in funding in real terms).

Although no sector-wide detailed analysis is available, it is likely that there remains a general over-supply of floorspace. This does not mean that in every case there is a viable solution to reduce space. For example managers of a single-site college with a 10% over-supply of space may well conclude that the costs and disruption of partial demolition, accompanied by internal alterations to relocate displaced specialist facilities, far outweigh the benefits of any savings in estates running costs.

However if a two-site college has a 30% over-supply of space then action to close one of the sites may be appropriate, since significant estates running cost savings, plus a capital receipt upon a site sale, may be available.

Therefore establishing current and future minimum space requirements is clearly not an end in itself; but it is an important piece of information that assists decision-making and the

development of an effective long-term estates strategy. The strategy should take into account a wide range of factors including overall quality of the student experience alongside financial sustainability; floorspace reductions should only made if they have meaningful overall benefit to the college.

3) Two Comparable Methods

The guidance is founded upon two methods:

The Planned Guided Learning Hours Method

This is a development of the previously established Guided Learning Hours (GLH) methodology, essentially a **top-down** view based upon the College's planned on-site activity. Originally established via benchmarking colleges with similar levels of overall activity, this method recommends an approximate Gross Internal Floor Area (GIFA) for a college's estate based upon the number of on-site Planned Guided Learning Hours delivered annually during the daytime. It can also be used to estimate an appropriate allocation of floorspace between different types of activity.

Observed Workplace Utilisation Method

Observed workplace utilisation: a **bottom-up** approach. This method establishes, by observation (using a physical headcount survey or, alternatively, register returns), the total demand for workplaces in a sample week and compares it with the number workplaces available. After taking into account likely changes in demand, the results can also be used to plan future floorspace.

As colleges look to use space more efficiently, accurately assessing the requirement for floorspace becomes increasingly important: under-provision of space could seriously damage the performance and reputation of the institution. Both the above sets of data (planned and observed) are an expression of student attendance (and hence demand for floor space); therefore they may be used to corroborate each other. This then allows the college to identify the requirement for present and future floorspace with greater confidence.

4) Planned Guided Learning Hours Method Part One: Estimating Teaching Space

This technique assesses demand for space within teaching areas and is also be used to recommend an overall Gross Floor Area for an entire college estate. Demand for space is normally assessed during the daytime, Monday to Friday (assumed to be the peak demand period).

The technique begins by assessing the total anticipated annual demand for space in college owned or college controlled premises. The definition of 'controlled' maybe open to a degree of interpretation. Ultimately our purpose is to ensure that estates arrangements for the vast majority of learning are efficient. This would normally include all accommodation that is owned outright as well as space leased for college use. However if accommodation is small-scale or shared with others via some flexible arrangement, perhaps some license agreement, then it might be excluded from this analysis.

The standard currency here is 'On-Site/Daytime Guided Learning Hours' (GLH). GLH for this purpose is normally defined as the aggregate of 'contact-hours' (a member of staff must be present) delivered to each student over the course of one year on college premises between the hours of 9:00am and 5:00pm, Monday to Friday.

This is best established via careful analysis of centrally held college records of student activity, (traditionally Individualised Learner Records or ILR). Note that each full-time student should have between 540 and 600 contact hours annually (although in many colleges a very substantial number of students are part-time). Alongside Learner Records, reference may also be made to other centrally held information. However note that centralised college timetables have proven to be a relatively unreliable record as there is a natural human tendency to over-report the scale, frequency and length of some classes in order to reserve rooms on a contingent basis; this can lead to significant over-estimation. We would recommend that timetables be used only to 'sense-check' learner records data (for example to confirm that courses are delivered on-site and during the daytime).

So not all the hours held in central records count as GLH for these purposes. Evening hours are not normally used in this assessment as the vast majority of colleges make less use of space in the evening (provided daytime activity can be accommodated then so can the evening's activity). For those colleges majoring in the provision of adult education, the qualifying hours could be a different eight-hour span; for example, 2:00pm to 10:00pm could be used where this produces a higher GLH than the standard 9:00am and 5:00pm time-period.

The sector is increasingly using a variety of innovative 'student-centred' learning techniques, sometimes based around use of on-line learning materials; in addition there is increased use of so-called 'flipped-classes' and 'blended learning.' All these methods may be considered to be part of GLH provided a member of staff is present and actively supporting the students' learning.

Careful preparation of on-site daytime GLH is required! It should be noted that there is limited advantage in over-optimistic assessment. Historically, investigations have revealed a tendency to over-estimate GLH. Getting to the right answer will help to control space and reduce costs. It is very much in College's best interests to make this assessment as accurate as possible.

Once an assessment of total annual On-Site/Daytime Guided Learning Hours (GLH) has been made then the **Planned Average Attendance (PAA)**[1] can be calculated.

GLH/1,440 = PAA

The above calculation assumes that the majority of colleges have the opportunity to deliver learning, during the defined daytime period, for 40 hours per week (8 hours a day) over 36 weeks:

40 hours x 36 weeks = 1440 hours

This calculation could be varied slightly to suit individual college contexts and delivery patterns. However variation distorts benchmarking between institutions (the Joint Area Review Delivery Unit very much encourages a standardised approach as part of the current Area Review process).

Of course the "PAA" is just an average; the number of students receiving a guided learning experience will vary significantly hour-by-hour and throughout the year. Furthermore, with student absenteeism and lesson cancellations due to staff illness, actual numbers will inevitably be lower; this issue is discussed later, for now we are looking only at planned attendance.

Now **Workplace Utilisation Factor** (normally expressed as a percentage) is defined as the ratio of available workplaces that are in use (at an average throughout the year). In summary the Utilisation Factor maybe calculated as demand (hours) divided by supply (workplaces).

$$\frac{\text{Demand}}{\text{Supply}} = \text{Workplace Utilisation Factor (UF)}$$

Therefore:

$$\frac{\text{PAA}}{\text{Workplaces}} = \text{Workplace Utilisation Factor (UF)}$$

Prior to performing the above calculation it will be necessary to establish the number of workplaces supplied by the college's estate. It is recommended that this be done using the method statement within Annex 1. The method establishes the workplace capacity by dividing the internal area of each teaching space (m^2) by the appropriate area standard (m^2/workplace) for that particular type of teaching activity. These area standards were provided in previous LSC guidance.

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[1] This calculation is also known as the **'Minimum Number of Workplaces' (MNW)** since in theory, if students attended in a completely even fashion, then the college might manage with this number of workplaces. This even attendance is, of course, impossible and Planned Average Attendance might be considered a more helpful description, particularly when thinking about Utilisation Factors (see the remainder of this page).

In the past some colleges have chosen to measure utilisation against their own seating arrangements (rather than the area allowances within Annex 1) and, whilst at first sight this makes perfect sense, colleges have been found to operate to quite different area standards for similar activities. Therefore the standards within the Annex represent a recommendation for colleges (subject to appropriate health and safety assessments within environments containing specialist equipment) and their application to the utilisation calculation also allows realistic comparisons between different colleges (this is particularly valuable during an Area Review).

The previous LSC guidance suggested that a **General Further Education College** should target a Workplace Utilisation Factor of at least 44% (on a Planned Hours basis). In the event that the college has recorded a utilisation factor lower than 44%, and demand (PAA) in the future is assumed to be constant, then a recommended future number of workplaces can be identified by expressing the equation on the last page as follows:

$$\frac{\text{PAA}}{\text{Workplace Utilisation Factor (UF)}} = \text{Workplaces}$$

Therefore the college may estimate its requirement for workplaces as follows:

$$\frac{\text{PAA}}{44\%} = \text{Workplaces}$$

Of course if a college expects growth (or a reduction) in student numbers, fuelled by changes in demand, or alternatively due to changes brought about by an Area Review, then this needs to be factored into the equation. A percentage adjustment in anticipated GLH would adjust the PAA by an equivalent percentage and likewise the number of workplaces required.

Research indicates that within **General Further Education Colleges** the average workplace requires approximately 3.1 m^2 of floor space; this masks a wide variation in the sample ranging from Lecture Theatres at 1.0 m^2 per workplace to some Installation Trades, typically requiring 7.5 m^2 (see Annex 1 for more details). However experience indicates that when estimating teaching floorspace requirements, 3.1 m^2 per workplace is a good starting point.

Therefore as a rule of thumb, in General Further Education Colleges:

3.1 m^2 x number of workplaces = recommended teaching floorspace (in m^2)

Note that it is generally much easier to share, and therefore achieve better levels of utilisation, in small-scale classroom environments than it is larger-scale specialist vocational environments (this is discussed in more depth later). In the case of **Sixth Form Colleges**, or similar institutions that do not use large-scale specialist vocational space, it is possible to consider both a higher level of assumed utilisation, say 50% (as opposed to 44%), and a lower average floor area per workplace of 2.8 m^2 (as opposed to 3.1 m^2). Therefore the above calculation can be adjusted accordingly.

Worked Example: Sheet One (Planned GLH: Estimating Teaching Space)

Using the above calculation a sample General Further Education College with a GLH of 2,000,000 would have a **Planned Average Attendance (PAA)** or "MNW" of 1,389 students; that is over the course of the year there will be an average of 1,389 students receiving some form of guided learning experience in college premises during the day-time:

2,000,000/1,440 = 1,389

In our sample General Further Education College (where the PAA is 1,389) we shall assume that there are 4,444 workplaces in the college (occupying 13,070m^2 of floorspace). Therefore the workplace utilisation factor (measured against planned activity) is understood to be:

$$\frac{PAA}{Workplaces} = \text{Workplace Utilisation Factor (UF)}$$

$$\frac{1,389}{4,444} = 31\%$$

That is, at an average, throughout the year, we should expect that around 31% of workplaces would be occupied (at least on a planned basis prior to the affects of absenteeism etc.). 31% is a modest level of Utilisation and this represents room for improvement. If we target a 44% Workplace Utilisation Factor (UF) (as recommended earlier) it becomes possible to estimate the requirement for workplaces:

$$\frac{PAA}{\% \ UF} = \text{Workplaces}$$

In our sample General Further Education College (where the GLH is 2,000,000 and therefore the PAA is 1,389) 3,157 Workplaces are required:

$$\frac{1,389 \ (PAA)}{44\% \ (UF)} = 3,157 \ \text{Workplaces}$$

In this example we will assume that the demand is steady for the foreseeable future, therefore 3,157 workplaces are assumed be adequate to meet demand.

Therefore an estimate of the required quantity of floorspace for Teaching would be:

3.1 m^2 x 3,157 = 9,788 m^2

5) Planned Guided Learning Hours Method Part Two: Gross Floor Area

Of course the above calculations are for teaching floorspace and this is only part of the total Gross Internal Floor Area (GIFA). The broadly accepted definition of Gross Internal Floor Area is: the total floor space (whatever its use), at all floor-levels, enclosed by the internal face of the external walls.

Note: atria/light-wells should only be measured at their lowest level; voids in upper floors are usually discounted from the Gross Internal Floor Area (although small voids, such as service risers, are normally counted as floor space).

Total GIFA for a college can be broken down in a number of ways; however for the purposes of this exercise we have identified four categories:

- **Teaching Space:** where GLH activity typically occurs (as calculated above).
- **Study Space/LRC:** space closely associated with the above activity but primarily for independent study and the accommodation of supporting resources/books etc.
- **Other Usable/Support Space:** teaching staff, administrative, social, catering, sport, stores etc.
- **Balance Space:** corridors, stairwells, toilets, lifts, plant rooms, and the footprint of internal walls.

Previous guidance defined 'atria' as a category; however we would suggest that generally space within atria is capable of definition under the above categories (albeit usually a combination of uses rather than just one). Some colleges, especially those with large-scale open-plan environments, have spaces that are effectively made up of a number of uses. For example, Bradford College's David Hockney building has large-scale open floors that include teaching, study, social and circulation space. In large-scale environments it is appropriate to identify principal circulation routes (typically 1.5 to 2.5 metres wide) and count them as 'balance'.

With respect to the entire GIFA, the previous LSC advice, based upon benchmarking techniques, proposed:

- **General Further Education Colleges:**
  a GIFA of between 11.5m^2 and 14.5m^2 per MNW (or PAA)
  (plus a fixed allowance of 1650m^2).
- **Sixth Form Colleges:**
  a GIFA of between 10.0m^2 and 13.0m^2 MNW (or PAA)
  (plus a fixed allowance of 1650m^2).

As a principle we would recommend that all Colleges planning material changes to their estates should look to fall within the above LSC ranges and, crucially, that Colleges do not exceed the upper limits of this guidance if at all possible. However, as noted earlier, the potential benefits of any floor-space adjustments need to be considered within the context of an overall estates strategy and reductions only made if they have meaningful overall benefit to the college.

Total floorspace requirements by category of space can be estimated by making assumptions for each of the four categories; unsurprisingly the demand for most space types have a reasonably good correlation with the scale of the Planned Average Attendance (PAA). Past

experience indicates that, for **a General Further Education College, appropriate maximum allowances for each of the four categories** can be estimated as:

- Teaching Space: 7.05 m^2/ PAA.
- Study Space (traditionally the Learning Resource Centre): circa 0.70 m^2/ PAA.
- Other Usable (Support Space): circa 1.75 m^2/ PAA
- Balance Space: circa 5.00 m^2/ PAA.
- The above allowances then total 14.50 m^2/ PAA
  (the maximum recommended by the previous guidance)
- Then add the fixed additional (Support Space) allowance of 1,650m^2 for all colleges.

The 7.05 m^2/ PAA allowance for teaching space is broadly consistent with the aforementioned allowance of 3.1m^2 for the average workplace and an overall planned Utilisation Rate of 44%; as a result 7.05 m^2/ PAA will achieve an almost identical answer to the method on page 6.

Institutions such as **Sixth Form Colleges**, generally lacking larger-scale specialist vocational space, may consider using a 5.55 m^2/ PAA allowance for teaching space (rather the 7.14 m^2/PAA). Therefore appropriate maximum allowances for each of the four categories would be as below:

- Teaching Space: estimated as 5.55 m^2/PAA.
- Study Space (traditionally the Learning Resource Centre): circa 0.70 m^2/ PAA.
- Other Usable (Support Space): circa 1.75 m^2/ PAA
- Balance Space: circa 5.00 m^2/ PAA.
- The above allowances then total 13.0 m^2/PAA
  (the maximum recommended by the previous guidance)
- Then add the fixed additional (Support Space) allowance of 1,650m^2 for all colleges.

Once again the 5.55 m^2/ PAA allowance for teaching space is broadly consistent with the allowance of 2.8 m^2 for the average workplace and an overall planned Utilisation Rate of 50%.

There are obviously limits to the application of a method founded upon benchmarking 'similar' colleges. Note that the scale and proportions of differing types of space are based upon analysis of existing good practice; they are for guidance only as each college's context is different. Each college is a unique response to varying local education and training requirements and it is ultimately for the college to decide upon the very best allocation of space.

Having a good understanding of existing space allocation is useful when assessing the viability of recommendations. For example if the college proposes to continue to rely upon its existing building stock (rather than rebuild), it is useful to know the quantity of existing balance space. Clearly discrepancies between the recommendation for balance space and existing balance space (which is difficult to vary) may affect the assessment of the overall space requirement.

It is important to understand the likely consequences of Area Review before confirming any material changes to the estate. However, the above analysis, consistently applied, may also inform the debate during the Review process and allow some provisional conclusions as to the likelihood of floorspace savings under different scenarios.

Worked Example: Sheet Two (Planned GLH: Gross Floor Area)

If we assume that our sample General Further Education College has a current GIFA of 27,000 m^2 then the maximum floorspace recommendation, given a PAA of 1,389 is:

	m^2 per PAA	PAA	m^2
Workplaces (Teaching Space)	7.05	1,389	9,792
Learning Resource Allowance	0.70	1,389	972
Support Space (Variable)	1.75	1,389	2,431
Support Space (Fixed)	-	-	1,650
Total of Above			14,846
Balance Space	5.00	1,389	6,945
Sum of m^2 per PAA Allowance	*14.50*		
Recommended GFA			21,791
Current College GIFA			27,000
Therefore Estimated Saving			5,210

Therefore, even by applying the above maximum allowances, the sample college would clearly appear to be over-scaled by comparison to other similar colleges. This simple analysis suggests a saving of 5,210 m^2.

6) Observed Workplace Utilisation Method

This next method relies upon similar principles to those already described; however it is based upon an observation of actual activity (rather than Planned GLH) and, as some students will be absent, this will generally mean lower 'observed' workplace utilisation factors.

It is recommended that Colleges perform a room-by-room student count (a headcount survey) once every hour over one 40-hour week (students only - no teaching staff). Unfortunately not all students complete all semesters; nevertheless they must be accommodated during their stay, so it is best to survey prior to the Christmas break. It is also best to survey during weeks that are unlikely to be affected by any unusual activity (for example a study week for A-level courses). Colleges have often performed counts in October, traditionally a period of peak demand.

Clearly, in the context of Area Reviews, this recommendation may not sit comfortably with some timescales and in many instances it will be necessary to conduct the Reviews without the benefit of this survey. However it is recommended that the survey is completed and evaluated as soon as possible and before any material changes to the estate are confirmed.

Some Colleges may wish to use Register Returns as an alternative to carrying out a room-by-room survey. Historically register data has proven unreliable in many colleges, however it is acknowledged that generally the quality and implementation of such systems are improving rapidly. Register data could be used in place of a headcount where:

- The management team of the college has high confidence in the register data (remember that this analysis is for the college's use/benefit).
- The data can be easily adapted to identify attendance on an hour-by-hour basis.
- The data is sufficiently comprehensive, so as to substitute all the information collected by the headcount survey method (described below).

Instructions for the execution of a room-by-room a headcount survey are in Annex 2. In summary the Observed method employs a headcount survey across a typical one-week period; if needed this can be repeated for a second week to establish consistent patterns. The college counts the number of students occupying each teaching space during every hour of the week from 9:00 am to 5:00 pm (a total of 40 counts per room). Note that College mangers may wish to use the spreadsheet noted in Annex 3. This sheet can be used to assemble the data and will perform some of the calculations described on the next pages.

This method provides an Observed Average Attendance (OAA) and therefore an Observed Workplace Utilisation Factor (UF) for the whole college. In addition, rather than looking at all types of teaching environment en masse, it can provide a reasonably reliable and detailed assessment of activity in different types of teaching space (from small-scale classrooms to large-scale workshops); this is discussed later.

There are two criticisms of a headcount survey that are consistently raised:

1. The survey is a 'snapshot' (a week); therefore the survey is not entirely representative of all activity during the college year. The best answer is to select a week during a period of strong demand. It is also important not to 'over-interpret' the data by digging too deeply. The whole sample will give a reasonable assessment

of activity within different use categories; however activity within each teaching space will vary from week-to-week. For example: an assumption that a one week long survey can tell us that we need ten more plastering booths, but we can halve the brickwork-shop could be erroneous!

2. Inevitably some scheduled classes will be away from time-to-time; the usual reason is a 'decant' offsite (a field trip) or onsite (often to the College's Learning Resource Centre). This is normal, and for the purposes of the overall count, has a very modest effect. It will help to reassure staff if they are advised that no judgements around course provision will be taken as a result of this survey (a field trip to France will not result in the decimation of the modern languages department). The survey is aiming to ensure that there is an appropriate provision of teaching space that will satisfy overall demand; curriculum planning is a matter for separate consideration.

The unit of currency is often referred to as 'student-hours'; one student-hour represents one student observed receiving guidance for one hour (the 'observed' equivalent of Planned GLH). The aggregate of all the counts in the survey are the 'Total Student Hours' during the week. It is appreciated that classes do not always start or finish upon the hour and therefore a surveyor, visiting a space once every hour, may miss classes that were there for at least part of the time. Of course the surveyor may also count students who are present for just a few minutes. Across a whole survey, which will typically record several thousand instances of room use, these distortions should balance out.

Some colleagues will ask if a centralised timetable could provide the data and save time and resources. Unfortunately, for the reasons stated earlier, timetables almost always overstate demand. Experience suggests that a headcount (or alternatively register data) will be more accurate than any assessment founded upon timetables.

The previous GLH method included guidance as to where and when to count Guided Learning Hours, referring to college-owned or college-controlled premises and the daytime period. The survey should attempt to **measure exactly the same activity** included in the GLH calculation (same spaces/same timescales). This then allows comparison, one assessment can be used to sense-check the other (and vice-versa); this is highly desirable as there is no one perfect method. Furthermore both methods should measure activity against the same number of workplaces; consistent application of the space-standards at Annex 1 will achieve this.

Note that comparison with the GLH method means that the survey should, wherever possible, exclude self-directed study (typically observed in Learning Resource Centres). When conducting a survey, some colleges will wish to take the opportunity to measure this activity, but it is not normally included in this calculation.

The first easy comparison is to compare demand for space identified by the two methods. The aforementioned Planned Average Attendance (PAA) can be compared to the Observed Average Attendance (OAA) identified by the head-count survey. The OAA is the sum of all counts in the survey divided 40 (the number of hourly counts per room).

<u>Total Student Hours</u> = Observed Average Attendance (OAA)
40 Hours

The Observed Average Attendance will almost always be less than the Planned. Attendance is affected by absenteeism, lesson cancellation (staff illness) and field trips. Furthermore it is possible that despite best efforts we may have surveyed a quiet week in a highly variable college year. However if the Observed Average Attendance is less than 80% of Planned Average Attendance then this would be reasonable grounds for further investigation (starting with a review of the previous Guided Learning Hours calculation).

The Observed Workplace Utilisation Factor can be calculated by dividing the Observed Average Attendance (OAA) by the number of workplaces (this is essentially the same approach described under the Planned GLH methodology).

$$\frac{\text{Demand}}{\text{Supply}} = \text{\% Utilisation Factor (UF)}$$

$$\frac{\text{OAA}}{\text{Workplaces}} = \text{\% Utilisation Factor (UF)}$$

Just as per the Planned GLH method, if we target a revised Utilisation Factor, this formula can also be adjusted to calculate the number of workplaces likely to be required in the future.

$$\frac{\text{OAA}}{\text{UF}} = \text{Workplaces}$$

However, an alternative mathematical expression of the Workplace Utilisation Factor (a 'longhand' technique) is:

% Room Use (Frequency) x % Seat Use (Occupancy) = % Utilisation Factor (UF)

Where: Room Use is the *frequency* of use expressed as a percentage for the sample room(s) over a period of time. Therefore if a room were frequented for 24 hours of a 40-hour week then:

Room Use = 24/40 = 60%

And: Seat Use is the average *occupancy* of all individual workplaces *when* the rooms are frequented (again expressed as a percentage). If the aforementioned room seated 20 persons, and when in use was, over the 40-hour period, occupied by an average of 12 persons, then:

Seat Use = 12/20 = 60%

Therefore in the Utilisation Factor is 36% since:

60% Room Use x 60% Seat Use = 36% Utilisation Factor (UF)

That is to say, at an average, 36% of workplaces (or seats) were in occupation over the week. This actually represents a well-utilised room (at the upper end of the target range for most General FE Colleges), but it is just one room.

For a range of spaces (rather than an individual space) weighted Room Use and Seat Use can be accurately calculated as follows:

Room Use = $\dfrac{\text{Average Number of Classes per hour}}{\text{Total Number of Rooms}}$

Seat Use = $\dfrac{\text{Average Observed Group Size}}{\text{Average Number of Workplaces per Room}}$

We can then use the formula (below) across a range of spaces:

Room Use x Seat Use = Utilisation Factor (UF)

The principal value of the longhand method is that it allows college managers with underutilised teaching spaces, and contemplating changes to the estate, to consider whether they can manage with fewer rooms (raising Room Use) or whether they also need to make the average room smaller (raising Seat Use).

So we have identified a longhand technique (by multiplying the percentage Seat Use by the percentage Room Use), as well as having identified the earlier shorthand technique (establishing the simple ratio of demand for workplaces over supply). Note that both the long and shorthand methods maybe used to examine utilisation across an entire college and also a specific group of rooms (for example rooms within a particular use category or at a particular site).

We consider that, within a General Further Education College, on an Observed (rather than Planned) basis, a mid-thirties per-cent Utilisation Factor (33% - 37%) represents an efficient target (with +40% being possible in Sixth Form Colleges). Whilst at first sight these rates may seem modest targets, there are factors that tend to limit space use in colleges. These include:

1. Most students are travelling much greater distances than they were when attending school. Public transport travel times can mean lower demand for courses that consistently start at 9:00 or finish at 5:00. Course planners, not wanting to disadvantage their college or specific curriculum offer, and wishing to maximise student attendance, often plan accordingly.
2. Planners are also aware of some students' part-time work or childcare responsibilities.
3. Further Education colleges are very diverse institutions offering a wide range of vocational courses and invariably from entry level up to foundation degree. Unlike schools, where the numbers on roll and the range of subjects are relatively predictable, the diverse range of courses may each typically recruit anywhere between ten and fifty students per year (in some cases a lot more). When timetabling, obtaining a consistently close match between group size and room size is challenging; inevitably some spaces are appreciably larger than the group.
4. The more 'specialist' a space, the lower the demand, as the space will only be relevant to a limited number of students within the college (and often for just part of their course).
5. Furthermore the skills nature of much College provision means that often the scale of a specialist teaching space often reflects the need to set out the array of equipment required to teach a particular course. An added complication is the year-on-year ebb

and flow of demand in some heavily equipped or specialist areas (most particularly in construction skills).

In our experience all these factors, but particularly the final two, place a significant break on levels of workplace utilisation in colleges.

As previously noted, it is generally much easier to share, and therefore achieve better levels of utilisation, in "shareable" small-scale classroom environments than it is larger-scale specialist vocational environments. Therefore with regard to the use categories, on an Observed basis, experience indicates that the following target Utilisation Factors are normally achievable.

Use Category	Description	$m^2/$ workplace	Proposed Utilisation Factors
A	Flexible Use Teaching Spaces	see college sample	38%-42%
B	Vocational (Small-Scale)	see college sample	31%-35%
C	Vocational (Medium-Scale)	4.9	31%-35%
D	Vocational (Large-Scale)	6.5	31%-35%
E	Vocational (Extra-Large)	7.5	28%-32%

Reference to Annex 1 reveals that the workplace standard (m^2/workplace) for all spaces listed under each of categories C, D and E is identical (that is 4.9, 6.5 and 7.5 m^2 respectively).

So if **Use Category D (Vocational: Large-Scale)** has 1,600 Student-Hours then the Observed Average Attendance (OAA) is:

Total Student Hours = Observed Average Attendance (OAA)
40 Hours

$\frac{1,600}{40}$ = 40

And if we target a Utilisation Rate of 33% for Use Category D (the middle of the range in the above table) then the college requires 121 workplaces:

$\frac{OAA}{(UF)}$ = Workplaces (Required)

$\frac{100}{33\%}$ = 121

As Use Category D has a workplace standard of 6.5 m^2, the overall space allowance would be:

121 x 6.5 = 788 m^2

We have now set a provisional space budget for all activity falling under Category D (121 workplaces occupying 788 m^2). Of course if a college expects a growth (or reduction) in student numbers using this type of space, fuelled by changes in demand, or alternatively due to changes brought about by an Area Review, then this needs to be factored into the

15

equation. A percentage adjustment in anticipated demand would adjust any future OAA by an equivalent percentage and likewise the number of workplaces required.

Note that, for each teaching activity, the required scale of the workplace determines which Use Category it falls under. So Use Categories each contain a variety of specialist environments from quite different curriculum areas. When reviewing less populated Use Categories there are practical considerations to take into account where, like the above example, the future overall allowance is modest (121 workplaces might result in no more than seven or eight rooms).

For example Category D contains Catering, Performance, Independent Living spaces and Beauty Salons. However if, on further analysis, an existing Independent Living Suite provided virtually none of the observed activity in the survey, then other better-populated curriculum areas might require all of the aforementioned seven or eight rooms to run their courses. As previously stated it is inappropriate to draw conclusions around course provision via this survey or attempt to set the exact number or scale of individual spaces. Sensible judgement should ensure that, for now, appropriate space budget allowances are identified (which if needed can be developed into a revised schedule of teaching spaces later on). However in this case the college may wish to give early consideration as to whether, given its future course provision and modes of delivery, the Independent Living suite is a required facility (in summary look beyond the results of the survey). If an Independent Living Suite is required then it may be appropriate to increase predicted future demand under this Use Category (and consequently increase the workplace allowance). These subtle adjustments to demand are really optional at this stage, as they do not significantly affect the big picture.

Having identified predicted changes in future demand within the Use categories, the calculation on page 15 can be repeated for each of the five Use Categories (A – E) to estimate the number of workplaces and floorspace required. The overall totals of the calculation can now be compared to the equivalent calculation under the Planned GLH Method. Given that these are two separate techniques, a degree of correlation will increase confidence in the results (the primary objective).

Note that there is no single workplace standard under **Use Categories A or B** (See Annex 1); here, for the purposes of setting an overall space budget, the average workplace standard currently available in the existing college is likely to be sufficiently accurate. For example, for Use Category B Vocational (Small-Scale), if a college's existing teaching space schedule indicates:

Sub-use Category		Space Standard (m^2)	Number of Workplaces	Floor Area (m^2)
B1	Science and Technology Labs	3.0	100	300
B2	Electronics / Computer Workshops	3.2	150	480
B3	Desk based visual arts	3.2	60	192
B4	Music / Media	3.2	20	64
	Totals		**330**	**1,036**

Then the average workplace standard for Use Category B is 3.14 m^2:

$\underline{330 \text{ (Number of Workplaces)}}$ = 3.14 m^2
1,036 (Floor Area)

Therefore if, in the survey, Use Category B returned 2,000 Student Hours then the Observed Average Attendance is 50:

$\underline{\text{Total Student Hours}}$ = Observed Average Attendance (OAA)
40 Hours

$\underline{2,000}$ = 50
40

And if we target a Utilisation Rate of 33% for Use Category B (the middle of the range in the table on the page 15) then the college requires 151 workplaces:

$\underline{\text{OAA}\qquad\quad}$ = Workplaces (Required)
(UF)

$\underline{50\qquad\quad}$ = 151
33%

As we have established an average workplace standard for Use Category B of 3.14 m^2, the overall space allowance would be:

151 x 3.14 = 476 m^2

Worked Example: Sheet Three (Observed: Estimating Teaching Space)

So if the sample college (described under the previous section) counted 44,444 Student Hours during a weeklong headcount survey then the Observed Average Attendance would be 1,111.

$$\text{OAA} = \frac{44,444}{40} = 1,111$$

The Observed Average Attendance (OAA) is 80% of the Planned Average Attendance (PAA) established under the GLH method.

$$\frac{\textbf{Observed Average Attendance (OAA)}}{\textbf{Planned Average Attendance (PAA)}} = \frac{1,111}{1,389} = 80\%$$

Using the 'shorthand method' Observed Workplace Utilisation Factor is 25%.

$$\frac{\text{OAA}}{\text{Workplaces}} = \frac{1,111}{4,444} = 25\%$$

The table below is a summary of the sample college's headcount survey (or register returns):

Current Teaching Floorspace (m^2)	13,070
Total Student Hours (aggregate of all counts)	44,444
Therefore Observed Average Attendance	44,444/40 = 1,111
Number of (hourly) Classes/Events Observed	3,920
Total Number of Workplaces/Seats	4,444
Total Number of Rooms or Spaces in Survey	196
Therefore:	
Average Number of Classes per hour	3,920/40 = 98
Average Observed Group Size	44,444/3,920 = 11.34
Average Number of Workplaces per Room	4,444/196 = 22.67

Using the aforementioned 'longhand' formula, observed room use and seat use are:

$$\textbf{Room Use} = \frac{98}{196} = 50\%$$

$$\textbf{Seat Use} = \frac{11.34}{22.67} = 50\%$$

Therefore, to confirm:

50% Room Use x 50% Seat Use = 25% Utilisation Factor (UF)

This represents modest utilisation for a whole college.

A summary of the survey results is as follows:

Description	Use Category	Existing Area (m^2)	Average Workplace standard (m^2)	Existing Number of Workplaces	Number of Student Hours	Observed Average Attendance (OAA)	Workplace Utilisation Factor (UF)
Flexible Use Teaching Space	A	7,414	2.1	3,495	36,272	907	26%
Vocational (Small-Scale)	B	551	3.1	179	1,874	47	26%
Vocational (Medium-Scale)	C	1,102	4.9	225	1,530	38	17%
Vocational (Large-Scale)	D	586	6.4	91	960	24	26%
Vocational (Extra-Large)	E	3,417	7.5	454	3,808	95	21%
Total		**13,070**	**2.94**	**4,444**	**44,444**	**1,111**	**25%**

Therefore, if there is no anticipated change in demand for space, using the 'shorthand' formula the number of workplaces required will be:

Observed Average Attendance (OAA) = Number of Workplaces Required
Proposed Utilisation Factor (UF)

Using the lower end of the Workplace Utilisation Factor ranges suggested on page 15, the proposed number of workplaces (and Floorspace) can be calculated for each Use Category:

Description	Use Category	Proposed Workplace Utilisation Factor (UF)	Number of Student Hours	Observed Average Attendance (OAA)	Proposed Number of Workplaces	Average Workplace standard (m^2)	Proposed Area (m^2)
Flexible Use Teaching Space	A	38%	36,272	907	2,386	2.1	5,062
Vocational (Small-Scale)	B	31%	1,874	47	151	3.1	466
Vocational (Medium-Scale)	C	31%	1,530	38	123	4.9	604
Vocational (Large-Scale)	D	31%	960	24	77	6.4	499
Vocational (Extra-Large)	E	28%	3,808	95	340	7.5	2,559
Total		**36%**	**44,444**	**1,111**	**3,078**	**2.99**	**9,190**

Totalling the proposed number of workplaces establishes that the overall target (proposed) Workplace Utilisation Factor (UF) is 36%.

Observed Average Attendance = % Utilisation Factor (UF)
Number of Workplaces

Therefore:

$$\frac{1,111}{3,078} = 36\%$$

The number of workplaces is 4,444 at present. The above workplaces requirement under the observed method of 3,078 compares with 3,157 Workplaces calculated under the Planned GLH Method (a variation of just -2.5%).

However the above table confirms a total teaching floorspace requirement of the observed method of 9,190 m^2 and this compares 9,792 m^2 calculated under the Planned GLH Method maximum allowance (a variation of -6.4%).

The proposed average Workplace Standard is 2.99 m^2/Workplace since:

$$\frac{\text{Proposed Area}}{\text{Proposed Number of Workplaces}} = \frac{9,190 \text{ m}^2}{3,078} = 2.99 \text{ m}^2$$

In summary this method suggests less teaching space than the previous method; this has occurred because:

- This method has suggested slightly fewer workplaces;
- This method has identified the use of a tighter average workplace standard 2.99m^2/Workplace than the previously assumed 3.10 m^2/Workplace.

The Sample College, although a General Further Education College, makes relatively light use of the larger-scale Use Categories B, C, D and E. As a result, the Observed Method suggests that the college is able to operate with less floorspace than 'maximum allowance' under the Planned GLH Method.

7) Summary of Recommendations for Further Education Colleges

a) All recommendations are subject to the proviso that floorspace reductions should only made if they have a meaningful overall benefit to the college; this is best evaluated via the development of an overall estates strategy.

Planned Average Attendance (PAA)[2] can be established via an assessment of on-site daytime annual Planned Guided Learning Hours (GLH):

PAA = GLH/1,440

This assumes 1440 daytime hours annually: 40 hours x 36 weeks = 1440 hours.

b) Total recommended maximum Gross Internal Floor Area (GIFA) allowances are:

i) General Further Education Colleges: $14.5m^2$ per PAA (plus $1650m^2$).
ii) Sixth Form Colleges: $13.0m^2$ per PAA (plus $1650m^2$).

c) An Observed Average Attendance (OAA), over a 40 hour week, established via a headcount survey (or alternatively register data) is calculated as:

OAA = Total Student Hours/40 (number of daytime hours surveyed)

d) OAA should be at least 80% of PAA.

e) The existing capacity of a college, in terms of number of workplaces, can be established via an area schedule of all teaching spaces and applying the space standards at Annex 1.

f) Workplace Utilisation Factors are calculated as follows:

$$\frac{\text{Demand}}{\text{Supply}} = \text{Workplace Utilisation Factor (UF) \%}$$

$$\frac{\text{PAA}}{\text{Number of Workplaces}} = \text{Workplace Utilisation Factor (on a Planned GLH basis) \%}$$

$$\frac{\text{OAA}}{\text{Number of Workplaces}} = \text{Workplace Utilisation Factor (on an Observed basis) \%}$$

g) It's recommended that, having adjusted Demand (PAA and OAA) to take account of any anticipated changes in on-site student numbers, colleges target overall future Workplace Utilisation Factors as follows:

On a Planned GLH basis (using PAA): 44% (+50% in Sixth Forms).
On an Observed basis (using OAA): 33% - 37% (+40% in Sixth Forms).

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[2] Also known as the **'Minimum Number of Workplaces' (MNW)** since in the event of a completely uniform attendance throughout the year, the college would need no more workplaces to accommodate all planned activity.

Worked Example: Sheet Four (Summary Analysis)

In summary, investigations into the Sample General Further College suggests the following:

	Via Planned GLH Method (maximum allowances)	Via Observed Method
Current Teaching Floorspace (m^2)	13,070	13,070
Current College GIFA (m^2)	27,000	27,000
Annual Hours (GLH method only)	2,000,000	-
Hours Per Week (36 weeks)	2,000,000/36 = 55,556	44,444
PAA/OAA (average attendance)	55,556/40 = 1,389	44,444/40 = 1,111
Planned versus Attendance	-	1,111/1,389 = 80%
Number of Rooms or Spaces	196	196
Number of Events Observed	-	3,920
Average Number Classes per hour	-	3,920/40 = 98
Number of Workplaces	4,444	4,444
Average Workplace Standard (m^2)	13,070/4,444 = 2.94	13,070/4,444 = 2.94
Number of Workplaces/Room	4,444 /196 = 22.67	4,444 /196 = 22.67
Average Group Size	-	44,444/3,920 = 11.34
Current Room Use	-	98/196 = 50.0%
Current Seat Use	-	11.34/22.67 = 50.0%
Current Utilisation Factor (UF)	1,389/4,444 = 31.3%	50.0% x 50.0% = 25.0%
Proposed Utilisation Factor (UF)	44.0%	36.1%
Proposed Number of Workplaces	1,389/44.0% = 3,157	1,111/36.1% = 3,078
Proposed Average Workplace (m^2)	3.10	2.99
Proposed Teaching Floorspace (m^2)	1,389 x 7.05 = 9,792	3,078 x 2.99 = 9,190
Other Floorspace (m^2)	1,389 x 7.45 = 10,347	from GLH method: 10,347
Additional Core Allowance (m^2)	standard: 1,650	standard: 1,650
Proposed GIFA (m^2)	21,789	21,187
Teaching Space Adjustment (m^2)	-3,278	-3,881
GIFA Adjustment (m^2)	-5,211	-5,813

Note that any apparent minor discrepancies in individual calculations are due to rounding (the above data has been prepared in a single spreadsheet).

The basic proposal for space saving is established using the recommended maximum allowances in the 'top-down' Planned Guided Learning Hours Method (the left-hand column of figures). As previously indicated this technique was originally established via benchmarking colleges within the sector. In summary, as a reasonable proportion of successful General Further Education Colleges had already achieved these (or greater) levels of space efficiency, it was reasonable to assume that the large majority of colleges could do likewise.

It is important to consider the results carefully; ultimately a General Further Education College is a complex organism. However the data in the left-hand column suggests that the college has almost 3,300 m^2 of surplus teaching space and over 5,200 m^2 of surplus floorspace as a whole (GIFA). This recommendation amounts to an overall reduction in floorspace of around 19%.

The Observed or Headcount method (in the right-hand column) is essentially designed to:

- In the first instance verify the overall demand for space as anticipated by centrally held (GLH) data, and therefore that the recommendations for overall quantities of floorspace provided by that method, are based upon sound principles.
- Secondly to investigate in greater depth the potential for efficiencies within teaching spaces. This is about being confident that those spaces most used by the College's clients are appropriately scaled. Quite rightly colleges will not wish to target savings without careful thought and thorough analysis; a headcount survey can be key part of that examination.

The sample college within the table has recorded a headcount survey that is broadly compatible with the centrally held GLH data; that is to say the Planned versus Attendance rate is 80%. At this point the college could accept the overall guidance offered in the left-hand column; however the college may wish to examine its use of space in more detail via the headcount. Whereas the headcount is only a snapshot (one week) of college activity it will go some way to allowing us to understand the distribution of activity across different use types.

Note that by a calculation based upon the student-hours observed in the headcount survey, we have established recommendations for teaching floorspace (see page 19). In the right-hand column the proposed number of workplaces (3,078), overall Utilisation Factor (36.1%) and average workplace standard (2.99 m^2), result in a recommended 9,190 m^2 of teaching space. This method suggests that the activity measured in the headcount survey could be delivered within a Teaching Floorspace around 600 m^2 less than that recommended by the Planned GLH method. Given that the headcount is a one-week snapshot of activity, the college will want to consider the viability of this additional saving carefully. Nevertheless the method certainly supports the basic assertion that a reasonably substantial saving in floorspace is possible.

The table on page 22 assumes steady-state demand; in the case of the Sample College we have assumed that changes as a result of curriculum development, or natural fluctuations in enrolments, are modest and not material to strategic consideration of future space requirements.

In reality changes may be anticipated in many colleges. At the time of writing the Area Review process asks colleges to reconsider their curriculum offer with a clear emphasis on the requirements of employers, the regional economy and Local Enterprise Partnerships. Furthermore government policy encourages Colleges to place ever-greater emphasis on apprenticeships with the prospect of less on-campus delivery of vocational skills. All this should be considered alongside opportunities for collaboration and/or merger with the potential to rationalise delivery. Clearly without considering the potential consequences of change there is a risk of under or over-estimating floor space requirements.

8) Special Allowances

A theme running throughout this paper is the need to interpret the results carefully. This will involve thinking about how the estate is currently configured, the potential future level of demand for different types of teaching space, and the individual requirements of each institution given its unique local context and mission.

In a number of cases it will also involve thinking about how, without changing the underlying principles, the calculations can be adapted to support the effective use of floorspace in specialist institutions.

Where the space needs of students consistently vary from the regular allowances, for example where a college provides for large numbers of students with special needs, space standards within the Use Categories can be revised. Looking at how space is currently used within the institution (whilst ensuring that furniture and equipment is laid out appropriately), and accepting higher workplace standards as observed on site, will best achieve this.

Where institutions are dominated by large-scale 'external' teaching facilities, for example an agricultural college, it is best often to distinguish between those Planned Guided Learning Hours usually delivered indoors (in internal enclosed/heated space) as opposed to outdoors (including barns, glass houses etc.). The GLH delivered indoors then contribute toward the calculation for internal teaching space (whereas all the Planned GLH may need to be taken into account in relation to other types space: LRC/Staff/Admin etc.). In addition a practical assessment of the scale and number of outdoor teaching environments will then be required, based upon realistic assessment of the needs of the curriculum.

9) Further Analysis and Interpretation

Putting the Mission First

A number of colleges using the above techniques will discover that they appear reasonably efficient and that potential floorspace savings appear negligible. Some may find that the methods imply a shortage of space; ultimately it is for those colleges to judge whether they are disadvantaged in any way. Other colleges may find that they appear to be relatively inefficient and maybe disappointed by this assessment. However wherever there is inefficiency in any element of an operation then there is an opportunity to improve; completing this analysis is the first step towards improvement and, potentially, lower estates costs over the long-term.

Before proceeding too far it is important to ensure that, wherever possible, all potential future changes in the demand for space have been taken into consideration and built into the calculation. As discussed this might include the changes driven by demographics or other changes in the local education marketplace or planned changes following a strategic college-centric review or a wider Area Review. If colleges are considering a merger, then combining data would permit a shared analysis.

As discussed this technique is particularly relevant in the context of an Area Reviews where one of the declared objectives is to realise efficiencies and thus ensure long-term financial sustainability. However, under financial pressure, colleges should be wary of thoughts that put space savings ahead of curriculum decisions. For example using calculation expressly to determine that the college might fit onto one site, once sufficient space hungry courses have been cancelled, is a questionable approach. If the college were to close the construction or engineering departments, then what is the plan to ensure adequacy and sufficiency of these skills in the local area? It's preferable that, via both Area Review and on-going dialogue, colleges establish and maintain a joint plan for the delivery of appropriate skills in the local area and then find efficient ways of delivering them. Of course an efficient approach might well involve apprentices learning more in the workplace and spending less time in college.

Estates strategies should, wherever possible, support the declared mission and objectives rather than shape them. It would be appropriate to use a skills needs driven approach during the Area Review process itself and at the same time identify any potential floorspace efficiencies but without rushing to develop detailed estates solutions. A detailed and more fully considered estates strategy, identifying opportunities to rationalise floorspace, can then be developed during the Area Review's implementation phase.

Checking Assumptions

Given the assumptions around Workplace Standards and Utilisation Factors, the teaching floorspace required for a quantity of taught hours in an extra-large-scale vocational environment (say a construction workshop), is almost five times greater than the floorspace requirement for the same taught hours in a regular classroom.

This demonstrates the value of identifying how current activity is distributed across the different main Use Categories of teaching space and the most reliable way to do this is using the Observed/Headcount Method. However, as this is typically only a weeklong snapshot of the college's annual activity, it is also important to proceed with care.

Before deciding upon the realistic level of savings, additional checks can be performed. This can involve consultation with staff as to how key spaces are used. Legacy issues (we use what we always have) and a lack of access to modern flexible space can mean that some spaces are not always appropriate for their current use. For example, for performance studies, a single 100m^2 well-equipped performance space (with good access to well equipped shared classrooms), might be much better than an existing isolated 250m^2 1960s ex-gymnasium.

Further surveys of those areas that appear under-utilised may also be useful. Another commonly adopted technique is to devise a new timetable worked out against a schedule of proposed future teaching spaces. This technique can be very powerful as it often demonstrates the ability of a college to fit into less space with little or no requirement to re-time lessons. Note that it is best if the rooming requirements in the timetable are suitably tempered by the results of a headcount survey (or register returns).

Early Interventions

Assuming a potential space saving has been identified, there are essentially two rudimentary (and polar-opposite) responses that may be worthy of early analysis. The first is to target floorspace savings wherever possible but only where they are available at little or even no cost; the second response is to treat this as an opportunity to renew and invest in a better estate.

Under the first response the Sample College will consider how it might adopt at least some of the proposed floorspace savings but based entirely upon reuse of the existing estate. This will involve looking to see how well the existing accommodation is able to mimic the recommended profile of space. Possessing a reasonably accurate area schedule of all existing spaces (teaching and non-teaching) and also knowing the GIFA of each building (and therefore balance space), is a vital tool in this exercise. The college must also identify those buildings that are least useful and consider which might be most easily decommissioned. It is then necessary to ask a series of questions:

- Is it physically possible to make sensible reductions in line with the recommendations?
- If so are such reductions likely to reduce estates costs (both now and in the future)?
- If a reduction in teaching space is recommended, can teaching be reorganised sensibly and easily within the envelope of the retained structures?
- Does the current use of non-teaching space fit within the recommendation? This includes staff space, social space, storage and sports etc. Note that an existing commitment to large-scale sports or community facilities could affect this answer.
- What proportion of the retained structures' floorspace is balance space and how does this compare with the theoretical allowance? Existing balance space is almost impossible to reduce to any meaningful degree.

Upon answering these questions the college may be able to make provisional recommendations for some reduction in space, some elements of which may be advanced independently of others. Note that all of the above assumes that the inherent suitability and good condition of the retained structures means that they are appropriate for long-term use.

Under the second response the college accepts the lowest floor area recommendation provided by the two methods and devises a detailed area schedule for both teaching and non-teaching space. This area schedule should be completely uninhibited by present

arrangements. This proposal can then be tested via timetabling etc. and form the basis of a brief for a new building or buildings.

However a completely new and fully equipped building for the Sample College, at 21,187 m^2, could easily have a gross project cost in excess of £50 million and in the large majority of cases this will clearly be unaffordable. Such a solution may also be unnecessary, given that at least a proportion of the existing estate may be in good condition and fit for purpose.

10) Next Steps

It may well be that neither of the above approaches is entirely satisfactory, nevertheless by carrying out these initial studies we have begun to explore opportunities for change within the existing estate.

As a result the college may now wish to explore a range of options that will, for the most part, lie between these two extremes. We are now into the realms of an estates strategy. This will involve taking into account a wide range of factors when assessing alternative strategic options. Options can be modelled, that is described in sufficient detail, so that they can be tested. Beyond the provision of the right amounts of floorspace, criteria include: suitability and condition of retained structures; preferred locations; developing coherent, attractive site masterplan(s); disruption; planning consents; the effects of the overall student experience; estates cost savings; capital costs; potential disposal receipts, funding/financing etc.

As stated at the outset: establishing current and future minimum space requirements is clearly not an end in itself; but it is an important piece of information that assists decision-making and the development of an effective long-term estates strategy.

In summary the long-term estates strategy needs to:

- Attract, retain and motivate students with well-equipped and attractive spaces.
- Be adaptable to future curriculum requirements and technologies.
- Project a positive identity to highlight the college's status in the locality/region.
- Be sustainable, both environmentally and financially.

The college would be advised to employ professional advisors to model and assess the costs and benefits of all strategic options accurately and objectively. Advisors may also help identify sources of grant funding for any identified projects thereby offsetting some or all of the capital costs. Ultimately all solutions should consider means to achieve a net reduction in estates expenditure and the creation of a better built-environment.

Annex 1: Assembling a Teaching Space Schedule

The purpose of establishing a teaching space schedule is to understand the range and scale of types of delivery spaces available to the college, make an assessment of their workplace capacity, and review current and likely future utilisation rates of such spaces as part of a wider effort to manage the estate. The basic procedure is as follows.

1. Establish a schedule of all teaching spaces, each identified by name/number and floor area (m^2).
2. Decide on the primary use of each space by relating it to the list of space types, derived from the table overleaf (drawn from previous LSC/SFA guidance).
3. Calculate the total capacity in workplaces for each space by dividing the floor area by the area standard relating to its Use Category.
4. Express the workplaces capacity for each space to the nearest whole number.

Note that the results can be recorded on a suitable downloadable spreadsheet available alongside this advice at: www.building-knowledge.info (see Annex 3). Entering a space's Use Category and Floor Area in this spreadsheet results in automatic calculation of workplace capacity (to the nearest whole number).

In the past some colleges have chosen to measure utilisation against their own seating arrangements and, whilst at first sight this makes perfect sense, colleges have been found to operate to quite different area standards. Therefore the standards within the annex represent, subject to appropriate health and safety checks within environments containing specialist equipment, a recommendation for colleges to target. Their application also allows efficiency comparisons between different college estates, as workplace utilisation will be measured against the same sector-wide standards.

However use-types should be identified flexibly, taking careful note of all current activity occurring within the space. Although twenty sub-categories of space are identified, this is barely sufficient to cover the myriad activities occurring within most colleges. An intelligent and measured approach is required and the draconian imposition of the lowest possible space standard in each space may be an inadequate response the requirements of the curriculum. Classroom spaces that include specific areas for certain activities alongside the main seated zone may be best classed as A4, rather than A2 (see table overleaf). Similarly vocational spaces that contain large-scale floor mounted equipment alongside desk/bench based activities maybe be better classed as E1/2/3 rather than C1.

The table does not provide a space standard for seating/workplaces within general open-access Libraries, Learning Resource Centres (LRCs) or other areas normally set aside for independent study. This is because:

- By their very nature many Libraries/LRCs contain large amounts of storage space for books and other learning materials (as well as staff bases); this can significantly vary the required quantity of floorspace per student workplace.
- In the event that certain 'sub-spaces' within the LRC support timetabled 'Guided Learning Hours' activity then it would be better to identify each sub-space individually, establish an appropriate use category and calculate its workplace capacity.

Note that activities within LRCs are often self-directed rather than directly supported or facilitated by a member of staff. LRCs are generally excluded from Headcount Surveys. The

purpose of a headcount survey is normally to observe levels of taught activity and ensure the amount of space provided is appropriate. The Planned GLH Method within this paper recommends an overall quantity of additional LRC (or similar) space.

Indoor areas for sports/physical activity do not normally form part of a headcount survey. In our view the decision whether (or not) to support a Sports Hall as part of the college estate is not facilitated by the measuring activity against a fixed workplace standard; the very wide range of sporting/leisure activities observed within sports spaces do not sensibly match a fixed allowance.

Use Category	Description	m^2/ workplace
A	**Flexible Use Teaching Spaces**	
A1	Lecture Theatre (for close seating arrangements)	1.0
A2	Teaching in informal groups (standard classrooms)	2.1
A3	Incorporating desk-top PCs	2.3
A4	Incorporating demonstration facilities/area	2.5
B	**Vocational (Small-Scale)**	
B1	Science and Technology Laboratories	3.0
B2	Electronics/Computer workshops	3.2
B3	Desk-based visual arts	3.2
B4	Music/Media (rehearsal/recording/edit)	3.2
C	**Vocational (Medium-Scale)**	
C1	Bench based workshops (carpentry/joinery/furniture)	4.9
C2	Large-scale visual arts (installations, TV/photo studios)	4.9
C3	Hair Salons	4.9
D	**Vocational (Large-Scale)**	
D1	Catering	6.5
D2	Performance	6.5
D3	Independent Living Skills	6.5
D4	Beauty Salons	6.5
E	**Vocational (Extra-Large)**	
E1	Installation trades (gas, plumbing and electrical)	7.5
E2	Motor vehicle	7.5
E3	Engineering (machine workshops)	7.5
E4	Brickwork/Masonry/Plaster	7.5
E5	Painting and decorating	7.5

Annex 2: Headcount Survey Methodology

By counting students once an hour in each teaching space during the sample week, an assessment of Observed activity can be made.

Surveyors should be advised that the exercise is not used to make judgements around the performance of departments or the future provision of courses. The survey will assess if present activity fills most spaces or whether the college could look to reduce the scale of its estate over the medium-term (without harming the observed activity).

This main body of this paper describes how to calculate Utilisation Factors. However entering the raw headcount data into the downloadable spreadsheet accompanying this paper (supplied at www.building-knowledge.info) will be of assistance. The values inserted in the spreadsheet will automatically calculate Workplace Utilisation.

The basic on-site survey procedure is as follows.

1. Establish a list of teaching spaces, noting the use-category, floor area and therefore number of workplaces (as per Annex 1).
2. During the sample week visit each room and count students (exclude staff) once each hour between 9:00 am and 5:00 pm (40 counts).
3. Count those students that are present at the time, do not record students who are noted by staff as absent on this occasion; the analysis of the data allows for absenteeism.
4. Record each of the 40 counts on a suitable pro-forma sheet.

Note that this will require careful preplanning; prior to the survey establish that all surveyors are familiar with their areas and are able to complete their survey route comfortably within the hour (including breaks).

Annex 3: Spreadsheet (Observed Utilisation Factor Calculation)

The spreadsheet available alongside this paper at www.building-knowledge.info is available in two forms: the first spreadsheet is blank and ready for use; the second is completed as a working example using data from the aforementioned Sample College. The spreadsheet has the following functionality:

- Entering a list of teaching spaces, use categories and floor areas into a 'site' worksheet will result in an automatic summary of that data at the top of the worksheet (up to ten different worksheets can be used for different sites or buildings and each sheet can accommodate 150 teaching spaces).
- Upon entering the use category and floor area note the automatic calculation of the capacity (to the nearest whole workplace) for each teaching space.
- On the same worksheet entering the 40 Observed headcounts for each teaching space on the relevant row results in the automatic calculation of Room Use, Seat Use and the overall Workplace Utilisation Factor. Again, the utilisation calculations for all listed spaces are summarised (by Sub-Category) at the top of the worksheet.
- The **Observed Data Results** worksheet then provides a summary of all data and results by Sub-Categories, the five Major Categories and as a whole for the entire college.
- The '**Activity Chart'** worksheet then displays the overall level of Observed activity within the entire college, throughout the 40-hour week, in chart form (with a comparison to the total workplace capacity).