# Room for Thought: a study of office use in Australia

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## *Introduction*

The office workplace is evolving with new technology and innovative management techniques designed to increase efficiency by optimising costs and adding value to the organisation. The ways in which we utilise office space to conduct business and how that use is changing has received much attention in recent times. In an Australian context, however, there is little empirical evidence to illustrate these changing practices or to measure how effective new practices have been.

The need to develop an ongoing, time series measure of workplace occupation and the effect of new working practices was recognised in the UK in the RICS / Gerald Eve Research paper, 'Overcrowded, Under-utilised or Just Right' (2001). This research sought to identify the density of office occupation as an indication of office use efficiency and, at the same time, to identify the extent to which new office use techniques had been adopted. Evaluating the density of office use and the use of modern office techniques over a series of similar surveys provides a measure of the changing nature of office use. The UK series has been undertaken on three occasions 1997, 1999 and 2001, providing a valuable benchmark against which to evaluate not just UK office occupancy density but also to provide a basis against which other regions can be compared.

Recognising the value of the UK office density study as a benchmark for corporate real estate asset planning, the RICS Facilities Management Faculty supported the University of New South Wales in conducting a similar survey of office density in the Australian Market. The research methodology adopted for the survey data collection and much of the data analysis deliberately mirrors the methodology utilised in the UK research in order to facilitate comparison between the two regions. It is also proposed that the survey be repeated on a regular basis in order to build a time series to reveal any changing trends in workplace utilisation.

The data set for this research was collected by postal questionnaire between November 2002 and January 2003. The survey document was distributed to a range of property and facilities managers in each of the states and territories and to a range of business sizes. In total some 2148 individual surveys were dispatched and a response rate of 13.6% was achieved from organisations asked to participate.

The results of this survey constitute one of the largest corporate real estate studies undertaken in Australia with data from 258 companies occupying over 840,000$m^2$ of office accommodation and employing excess of 47,000 employees. The size of companies participating ranged from sole proprietors occupying virtual offices to large multinationals, the largest of which occupies over 45,000$m^2$. The average office net lettable area was 3525$m^2$. In addition to collecting data relating to office size and staffing, the nature of occupation was determined along with attitudes to new working practices and methods employed to plan and monitor workplace use.

The measurement of office occupation density is important in the preparation of strategic asset management plans as it provides facilities managers with a measure of how efficiently their office environment is being utilised. It also indicates the long-term trends in office density which provides hard data to indicate future space requirements. The ability to match current and future space needs to the strategic direction of the business is essential to efficient and effective property infrastructure resourcing.

## *Definitions*

The survey questionnaire and data follow conventional Australian definitions in terms of office areas. Net lettable Area (NLA) is as defined by the Property Council of Australia, Method of Measurement (1997). This method varies to that adopted in other countries and, as such, some minor discrepancies may be introduced between the UK measurements and those in this research report. Staffing levels were measured in terms of both full and part-time employees. This is important given the recent trends towards casual and flexible working. All density calculations, however, are undertaken on the

basis of Full Time Equivalents (FTE), a methodology which takes account of all part-time employees as a fraction of a full time position.

The measurement of office density within this report follows the established convention of measuring the amount of total floor space that each full-time staff member occupies. Thus it is simply the total net lettable area, owned or leased, divided by the total Full Time Equivalents staff numbers. The number of workstations within a given area has been used in density studies overseas. This methodology has not been used as the workstation density may not accurately reflect the usage of the space by employees. Measuring density by employees per square metre, as in this study, also affords an opportunity to evaluate the level of workstation occupation by comparing FTE staff numbers with the number of workstations provided in the workplace.

The research focuses on quantitative measures of office occupation. While there is an obvious relationship between the quantity of office space occupied and the operating costs of providing and servicing those workspaces, the survey does not directly measure or comment on the relative costs of office provision. Understandably the size of the workplace and the relative costs of office provision have an affect on the quality of the work environment and consequently contribute to staff satisfaction and possibly to the productivity of the organisation.

## *Methodology*

In order to collect space use data from the widest possible range of Australian businesses a mail-out questionnaire was developed for distribution. The questionnaire was based on the original RICS-Gerald Eve document used in the UK studies and is designed to collect information on space utilisation, the nature of office use and the number of employees within a single property. The questions were altered in some circumstances to reflect local terminology and some additional items were included in order to extend the range of information collected. The survey design is such that a property or facilities manager should be able to complete the entire questionnaire using data readily to hand and within a minimum of time. To assist in the process, a

copy of the questionnaire was also provided on the RICS Oceania website to allow participants to lodge their responses online.

A total of 2148 individuals were identified for receipt of the questionnaire from a range of sources. Each recipient was identified as a senior corporate real estate executive within the organisation and thus should be in a position to provide the detailed space use information being sought. The survey was mailed in November and December 2003. From the total mail-out, 8% were either returned incomplete or were duplicates from the same organisation and were excluded from the survey results. A total of 258 valid surveys were received representing a 13.6% return rate.

The data has been analysed to determine the average and median office densities across a number of subcategories of office type. The average density within each category is the mean of the individual office densities within each group and has been chosen as the most appropriate measure of comparison. There are a small number of minor subcategories in which the number of surveys received were too few to provide a representative sample and these subcategory results have not been reported in the research findings.

## *Results*

The data collected from the broad range of organisations provides a comprehensive snapshot of office use within Australia and enables a wide range of comparable metrics to be deduced for various sectors of the office market. At the highest level, the data establishes a holistic measure of office density at an average of 20.6$m^2$ per FTE. However, the real value of the results is obtained by drilling down and evaluating the densities by industry sector, function or size of organisation. This closer look at the data provides some interesting insight into the Australian market and allows facilities managers to more accurately compare their business sector or location with the research results presented.

## Australia Wide Benchmark

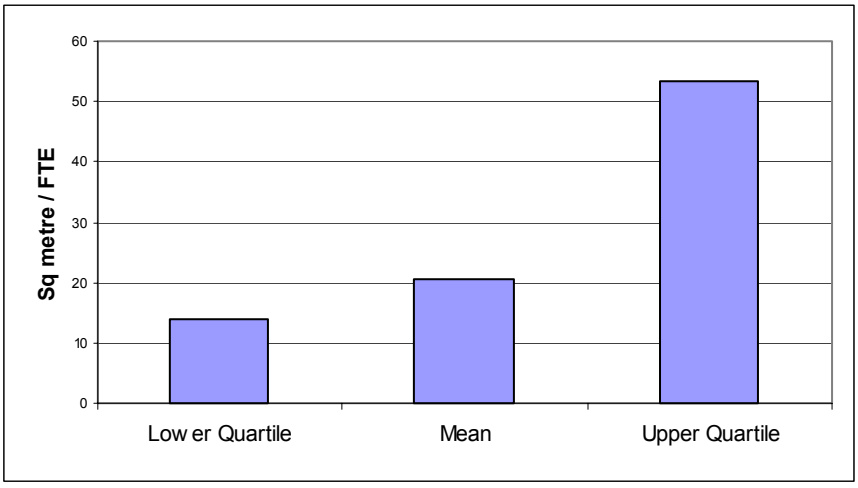
The survey reveals that, across all respondents, the national average or mean office density benchmark is 20.6m$^2$ per fulltime equivalent employee. This figure is somewhat higher than the results from the UK equivalent survey data which revealed an average office density of 16.6m$^2$ in 1997 and 16.3m$^2$ in 2001. The UK data also compares office density on a median basis, reporting a figure of 15.2m$^2$ in 1999 and14.9m$^2$ in 2001. This compares with the Australian median figure of 19.5m$^2$ per person. This difference between the UK and Australia will be the subject of further comparison later.

**Table 1 Survey Base Data**

| | |
|---|---|
| **Data Collection date** | Nov-Dec 2002 |
| **Total Valid Responses** | 258 |
| **Total Floor Area** | 840,000 m$^2$ |
| **Total Employees** | 47,268 |
| **Average Net Floor Area** | 3612m$^2$ |

The range of responses received shows some considerable spread as the distribution of results indicates in Figure 1 below.

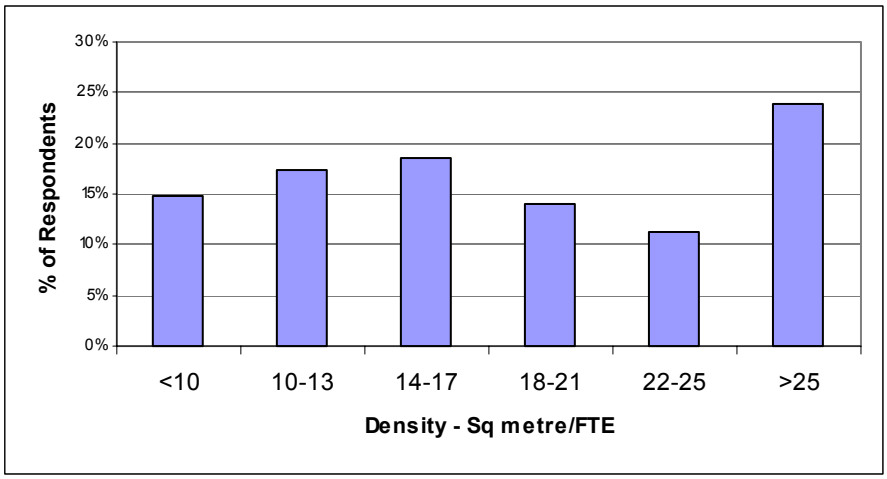
**Figure 1 Density Range**




The distribution of median densities is supported by a reasonable number of respondents across all levels of office density. There is, however, a much

higher proportion of respondents at the upper end of the scale with lower densities as the quartile result in Figure 1 indicates. The graph at Figure 2 Distribution of Responses, shows the distribution of results across a range of densities and reveals that nearly a quarter of the respondents fall into the greater than 25m$^2$/FTE category.

**Figure 2 Distribution of Responses**

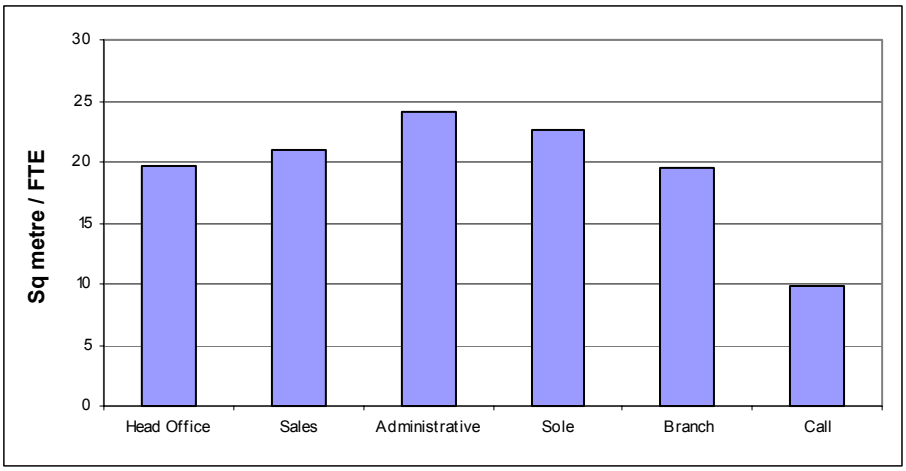



It is interesting to find such a large number of individual respondents in this upper range when the median density is at 19.5m$^2$/FTE. While nearly a quarter of offices fall into the upper range of over 25m$^2$/FTE, there are 15% of respondents with office densities which are greater than 10m$^2$ per employee and over half of all results fall below 17m$^2$/FTE. It is an indication that in Australia there exists a very diverse range of office practice with some organisations using, on average, more than three times as much space per employee than others.

## Density by Function

The respondents were divided into a series of functional areas from head office to sales and sole practitioners. The objective is to identify any differentiation between office use density and modes of use of office property. The results in Figure 3 reveal that administrative offices and sole office organisations are the least densely occupied, while call centres, not surprisingly given the nature of the business, are by far the most densely occupied at 10m$^2$ per person.

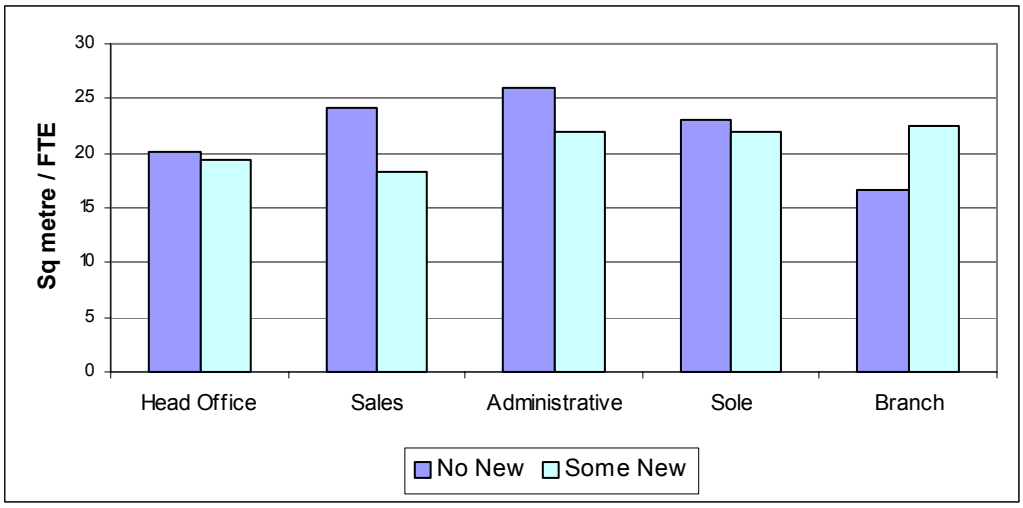
**Figure 3 Density by Function**




The head office figure at 19.7m$^2$/FTE is surprising in that it is lower than the figure for administrative functions, when the expectation might have been that, with greater levels of executive accommodation, the head office function would consume more space per employee than perhaps a more intensively utilised administrative centre. Indeed, the administrative function is the least densely occupied at 24.1m$^2$/FTE, which is 22% more space than corresponding workers in a head office location.

The density by function data can be further broken down into those participants who indicated that they have, to some degree or another, entered into what are termed new working practices. These new practices include hot-desking, hotelling, virtual offices and home-working. Organisations that participate in these new office use techniques might be expected to occupy less space per employee as a result of these initiatives.

**Figure 4 New Workplace Practices - Density by Function**




This expectation is realised in most functional areas as shown in Figure 4. The trend is reversed, however, for branch offices which show a marked increase in the space use density in organisations using new working practices. The space savings resulting from the increased office densities afforded by new office techniques are evident in functional areas that range from 0.8m$^2$/employee for head office to 5.9m$^2$ for sales offices. These results are perhaps what might be expected given the propensity for sales personnel to be highly mobile and the use of some form of shared office or drop in facility would tend to suit the job structure.

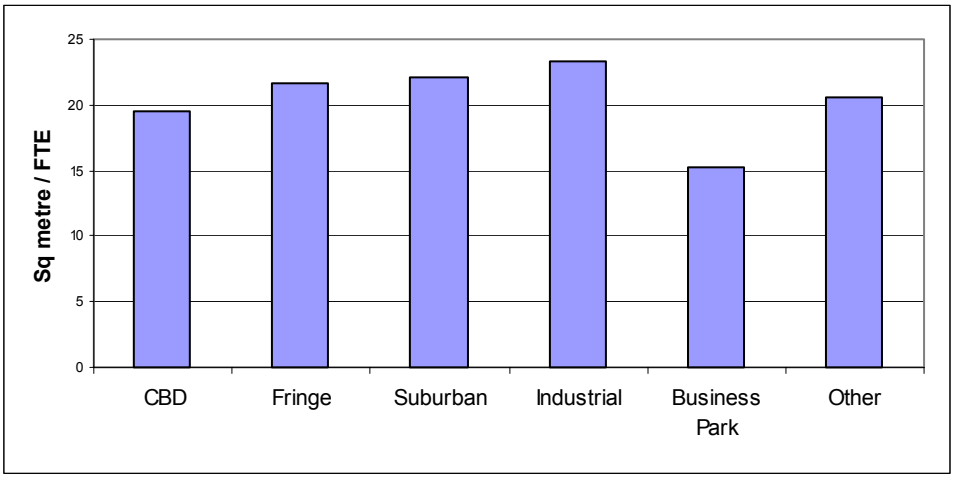
The savings revealed in the graph of new office techniques does not attempt to evaluate the extent to which these new techniques are employed. Further analysis of the data in this respect and with regard to the level of increased office density are likely to reveal that those organisations with the greater number of employees participating in new office techniques will have the greatest density of office occupation. This aspect of new office techniques is discussed later in the report at, New Working Practices on page 25.

## Density by Location

The measurement of density by location analyses the data according to a series of typical office locations. The data shows that the CBD office has a greater density than fringe and suburban areas, which would correspond with the finding that 36% of head office respondents were located within the CBD. Thus it appears that both CBD and head office property tends to be more

densely occupied than in the surrounding districts, a result that is to be expected given the higher costs typically associated with CDB locations.

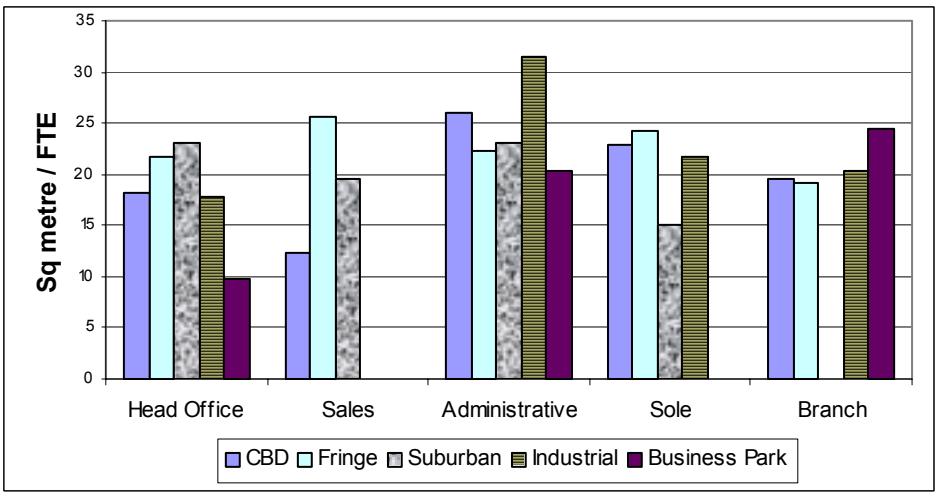
**Figure 5 Density by Location**




The lowest density is found in the industrial location. Lower premiums are placed on space in this type of office accommodation and it is usually to be found in lower cost centres, perhaps explaining the lower densities. The Business Park location, which typically has modern, purpose built premises, provided the highest density.

A comparison is possible between the location and function data and provides some insight into the way office space is used in each locality. The results in Figure 6 show that Head Office accommodation in a Business Park situation has, by far, the highest density at 9.7m$^2$/FTE.

**Figure 6 Density by Function and Location**



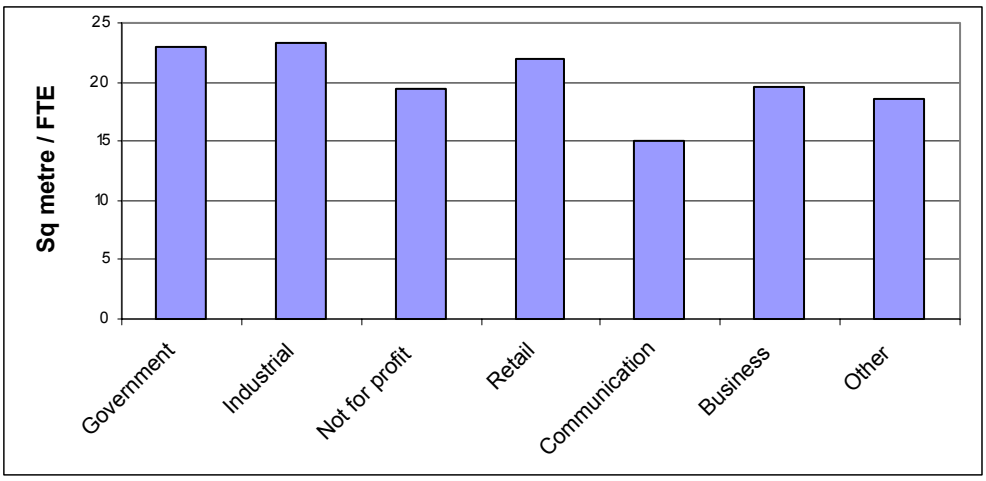
The figures for Administrative use are relatively stable across the range of locations reflecting the generic nature of administrative office work. They also show a consistently lower density for this work function across nearly all locations. The head office function is consistent with the findings in Figure 3 for Density by Function, in that higher densities are more frequently found for head office functions within each of the locations.

## Density by Sector

An examination of density by sector should reveal any particular trade or professional category that is utilising its offices in a more efficient mode than others. It is to be expected, perhaps, that certain professions lend themselves to a greater density of occupation than others. This may be a factor of the nature of the work, highly concentrated individual work requiring less space than creative team work which has larger demands on meeting and group space.

The results in Figure 7 show a reasonably consistent level of office density around the overall average for most business categories. The communications sector, however, has a higher density at 15m$^2$/FTE. This is perhaps attributable to the nature of this business with the high reliance on technology and, as will be seen later, a greater use of modern office techniques.

**Figure 7 Density by Sector**




Within the other sectors, the Government respondents showed a higher use of space than the business, communications and 'not for profit' sectors. It

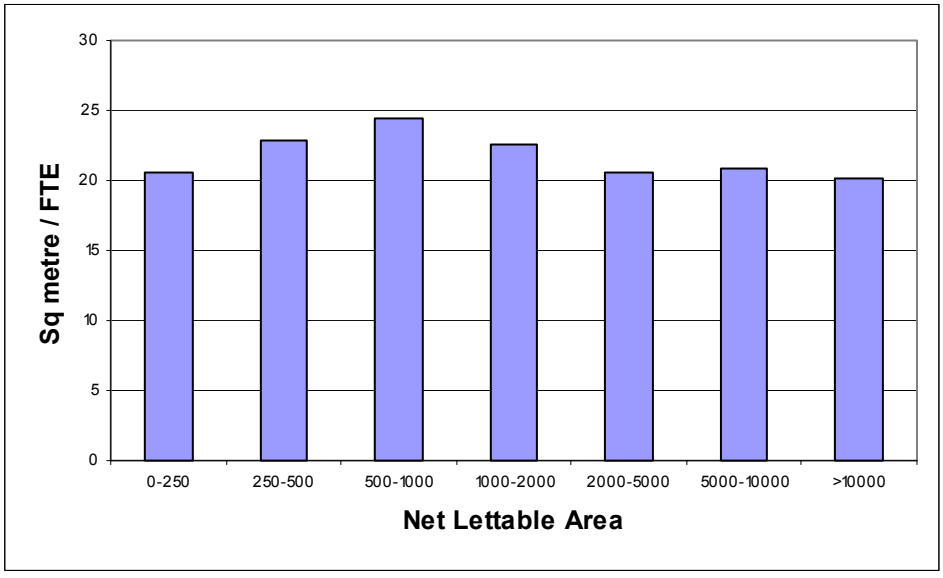
might be expected the 'not for profit' sector may be more driven to economies in its office use resulting in a more intensive use of available space and resources.

A comparison of the Government and Business sectors in Figure 7 provides a useful proxy for a comparison of public verses private sector office space use. The difference between these two sectors is some 2.3m$^2$, more in the public sector than in private business. Thus public servants utilise nearly 17% more office space per employee than the average employee within the private sector.

## Density by Size of Office

The relative size of the total office space occupied within a building can influence the ability of the organisation to economise on office accommodation or to trial new ways of working. This is one probable reason why the very large organisations, with tenancies of over 5,000m$^2$ NLA, report the highest office densities. It is also clear that small businesses, operating from less than 250m$^2$ of office, appear more efficient but this could indicate the lack of dedicated circulation, conferencing and storage type uses within the small business environment.

**Figure 8 Density by Size of Office**




The average office size within the survey was 3612m$^2$ and the total size of the office sample was 840,000m$^2$, with the largest single tenancy being 45,000m$^2$.

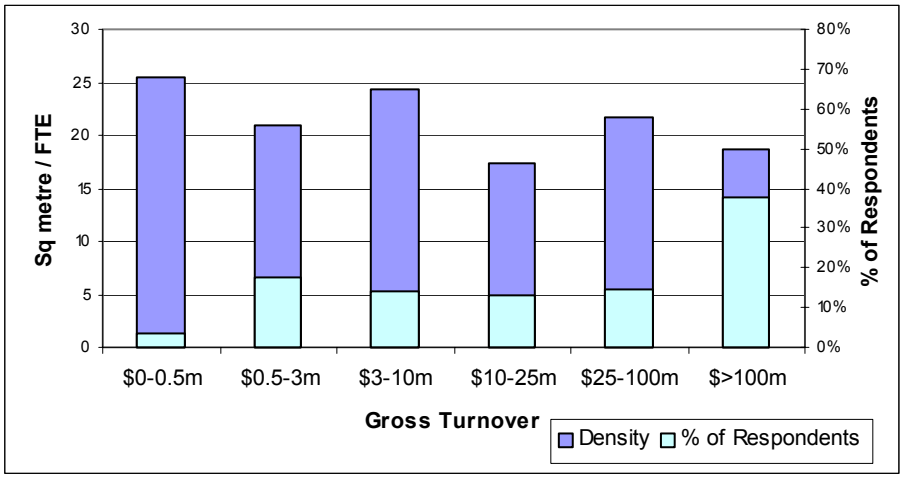
The range of office sizes surveyed showed a wide spread from the very large to virtual offices of small business enterprises. It is evident from Figure 8 that above 2000m$^2$ there is little variation in the office density of 20.5m$^2$/FTE. The lowest density occurs in the medium office size ranges, between 250m$^2$ and 2000m$^2$, with the lowest 24.4m$^2$ in the 500m$^2$ to 1000m$^2$ category.

## Density by Size of Organisation

The relative size of an organisation can be measured in a number of ways. Figure 8 measures density in relation to the total office space in terms of net lettable area held by the organisation, the size of the organisation being related to the space occupied. Alternative measures of the relative size of the organisation include the organisation's financial turnover and number of staff employed. The financial turnover may relate more to the nature and efficiency of the business sector and not necessarily result in corresponding earnings or need for office accommodation. The latter measure, number of employees, has a more direct bearing on space requirements given the need to accommodate staff within the organisation in the most efficient way in order to maximise productivity.

The respondents were categorised according to six gross annual turnover brackets. The distribution of respondents is shown in the right hand 'Y' axis in Figure 9. The greatest response rate was received from the larger organisations, with 38% reporting a turnover in excess of $100 million per annum.

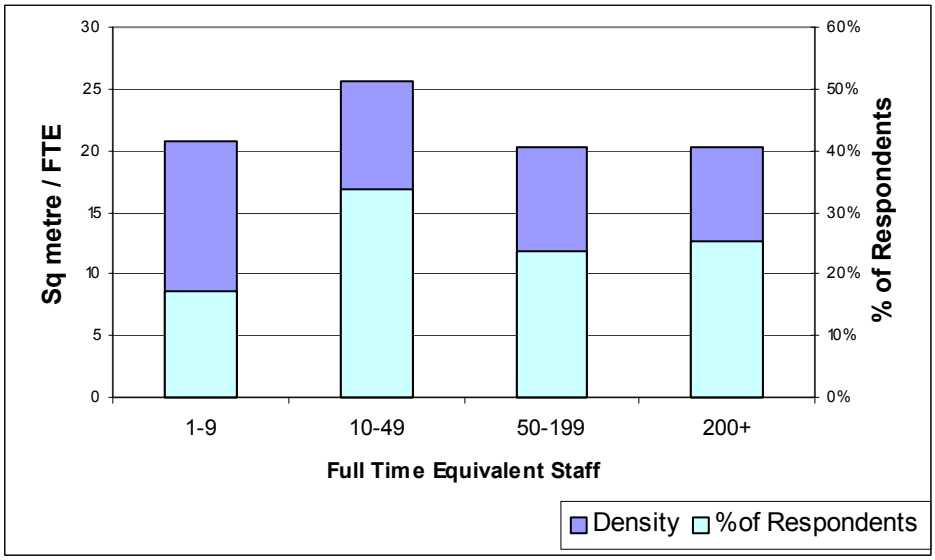
**Figure 9 Density by Gross Turnover**



The density figures show that the highest space use occurs among the organisations with turnover below $500,000. This figure, however, comes from a small sample of just 3% of respondents and is in contrast to the result for smaller NLA shown in Figure 8. The 18.7$m^2$/FTE density for the largest organisations with turnover figures in excess of $100 million matches the 20.2$m^2$ density figure for office size with 10,000$m^2$ NLA or over, both figures representing the largest organisations category. This close relationship is to be expected of large organisations which have resources and can make economies of scale in order to use office space at optimum levels. The highest density of use within this category occurred in businesses whose annual turnover falls within the $10m to $25m range. These organisations had an average density of 17.4$m^2$.

The relationship between density and size of the organisation is also evident in Figure 10 which shows the density compared to the number of full time staff. Once again, the larger organisations with over 200 FTE staff, report a density of 20.2$m^2$ for NLA and 18.7$m^2$ when determined by annual turnover. At the other end of the spectrum, the small businesses with less than ten members of staff have again indicated a similar level of space use at 20.7$m^2$, which is very close to the 20.6$m^2$ in Figure 8 for the less than 250$m^2$ office size.

**Figure 10 Density by Number of Staff**



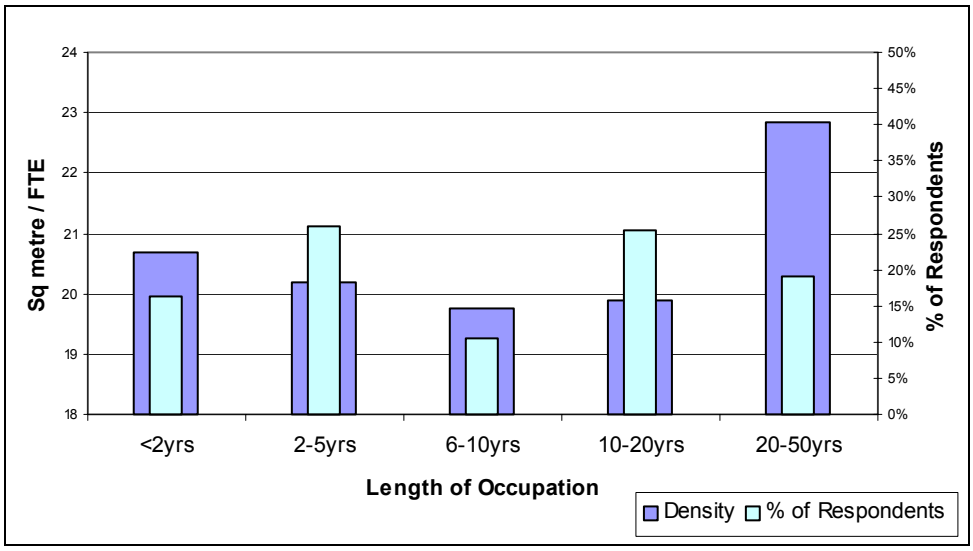
The lowest density of occupation is seen among organisations with between 10 and 50 employees. In this small to medium business sector, the density of occupation goes down to 25.6$m^2$/FTE. This greater use of office space within the category is all the more significant when considered in the context of the percentage of organisations within this grouping. The right-hand axis in Figure 10 indicates the percentage of respondents within each number of employees band. The largest number of organisations, 34%, are within the 10 to 49 employee band which has the lowest occupancy density.

The group with the lowest density at 25.6$m^2$ are those with between 10 and 49 employees. A simple multiplication shows these organisations are occupying between 256$m^2$ and 1254$m^2$ of office accommodation. A comparison with Figure 8 Density by Size of Office, shows that this corresponds with the three groups of office size between 250$m^2$ and 2000$m^2$ which also exhibit the lowest densities. Indeed, the lowest density 24.4$m^2$ was found in the category between 500$m^2$ and 1000$m^2$. This figure is approaching the 25.6$m^2$ for the employee group exhibiting the lowest occupancy density.

## Density by Length of Occupation

The measurement of density according to the period of occupation is intended to highlight any trend toward increased office densities. This presumption is based on the pretext that more recently occupied accommodation, and thus presumably more recently fitted out accommodation, will be more likely to reflect contemporary practices than older fitouts.

**Figure 11 Density by Length of Occupation**




The results for the length of occupation do not reveal any clear trend. Indeed, the most recently occupied offices have an occupancy that is less dense than any of the corresponding figures between 2 and 20 years. This could indicate that new fitouts are tending toward less dense office layouts or, it may be an indication that within these relatively new office spaces the organisation has allowed for some further recruitment, a not uncommon practice.

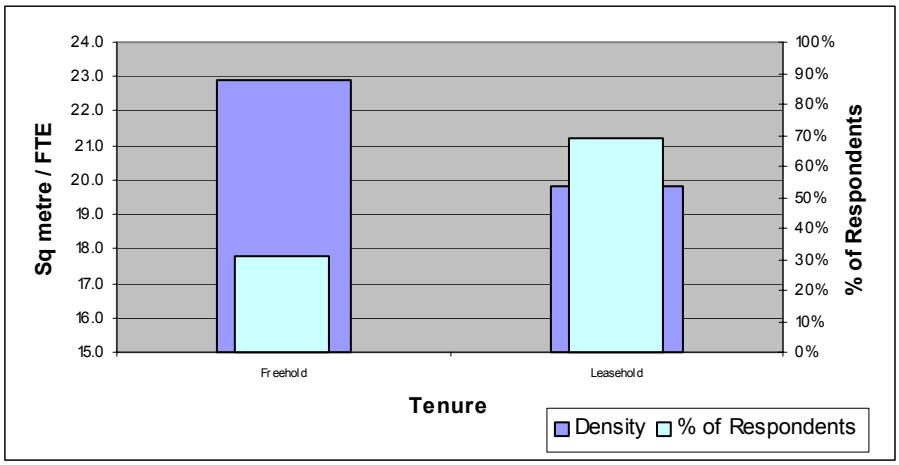
The highest density, 19.8$m^2$/FTE, is seen in those organisations who have been in occupation between 6 and 10 years. This figure would support the hypothesis above that newer fitouts may provide room for expansion while more mature occupancies are operating at or close to full capacity.

The figure for offices occupied over 20 years has an average density of 22.8$m^2$. This might be expected in this older style of accommodation. It is only possible to generalise that this older style of accommodation is occupied on the basis of an older style of fitout with lower densities. Unfortunately it is not possible from the data collected to differentiate those properties which have been occupied for many years but which have been refurbished and refitted in more recent times.

## Density by Tenure

The final category of comparison available from the density data set is to compare the tenure under which the property is held.

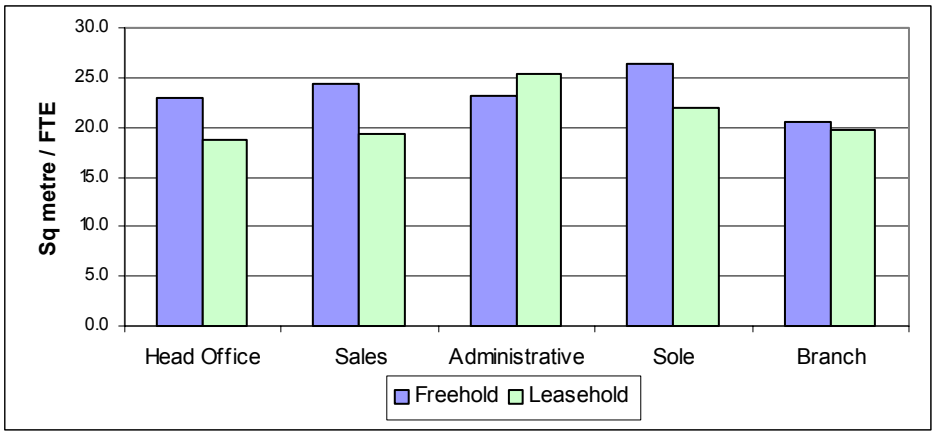
**Figure 12 Density by Tenure**




The division between leasehold and freehold tenure was approaching two thirds to one third respectively. A clear division in the space density between the tenures can be seen in Figure 12, with the leasehold occupiers having a higher density of 19.8m$^2$ which is 13% less space than that occupied per person by the corresponding owner-occupiers at 22.9m$^2$. This greater density may be attributable to a number of factors including shorter periods of occupation under a lease to greater awareness of occupancy costs in relation to rent and outgoings paid to a landlord.

Further analysis of the data in Figure 12 by function reveals that, in all cases except Administration, premises on leasehold tenure have the greater density of occupation. Head office, sales and sole office each show similar differences between the tenures of between 17% and 20% less space. Branch offices show only a marginal increase in leasehold density. The exception is administrative offices which have an increase of nearly 10% between freehold and leasehold.

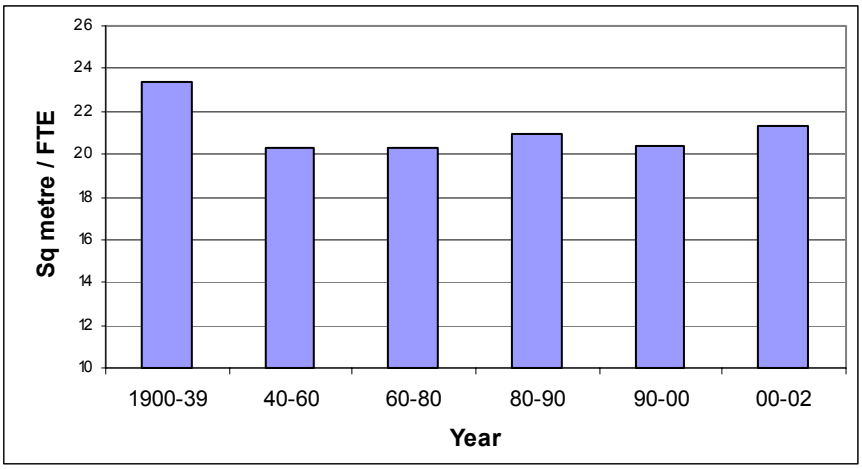
**Figure 13 Density by Tenure and Function**




This break-up of the data supports the general finding that leasehold offices are occupied at greater densities. There maybe several possible explanations for this overall difference. As mentioned above, leasehold occupiers are likely to be more acutely aware of the costs of occupation through the payment of rent and outgoings. Also, leasehold offices are held for a defined term under the lease and this term is increasingly becoming shorter and shorter. This could indicate that leasehold offices have more modern fitouts and, as such, are likely to be more cognisant of costs in use.

A comparison of density against the year the premises were first used as offices is a similar metric to the comparison of building age. The difference between comparing building age and year the property was first used as office is that the latter would take account of property which has been converted from some former use to that of office and, as such, provide a more meaningful measure. Two thirds of the offices on the survey were purpose built, the remaining third having been converted from some other purpose. Comparison between these two groups, however, only shows a very minor $0.4m^2$ differential.

**Figure 14 Density by First Year Used as Office**




The density by building age or date of conversion to office is relatively constant across all groups with the exception of the period 1900 to 1939 which has a lower density figure of only 23.4$m^2$. With the exception of the pre-war buildings, therefore, the data shows little difference in density of occupation.

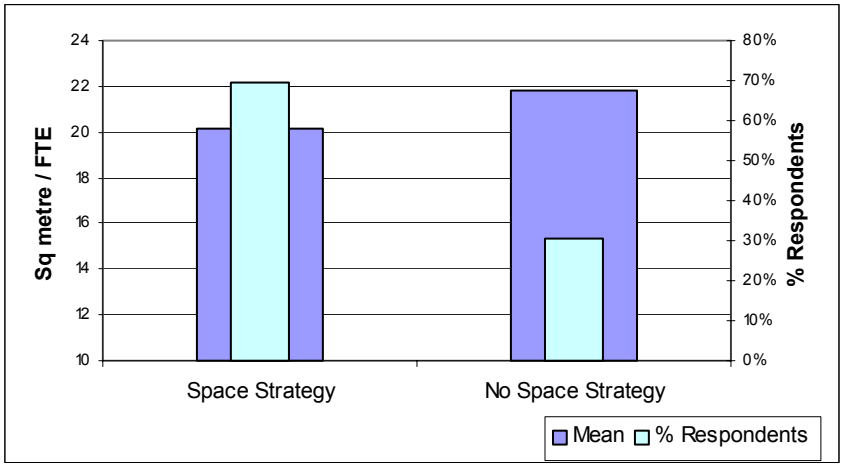
## *Space and Performance Measurement*

The affect of measurement and benchmarking on the space use of the organisation is an important facilities management measure. It is widely accepted that to be able to effectively manage any business process requires some measurement of results against which to evaluate success or failure. Furthermore, business efficiency benchmarks are a prerequisite for the setting of futures objectives within a continuous improvement framework. With this continuous improvement of the workplace environment in mind, the survey asked a number of questions relating to measurement of workplace performance and the subsequent setting of business goals or strategies to achieve business efficiency.

### Space Use Strategy

Organisations were asked if they had a written space use strategy. This fundamental planning instrument can be seen as a first step to the improvement of office efficiency. It is surprising to find that only 70% of those surveyed had some form of space standard, and it follows that 30% of organisations are managing and allocating office space on an ad hoc basis.

**Figure 15 Density by Space Use Strategy**




The benefit of an established space use strategy is illustrated in Figure 15, which shows an increased density of 7.4%, or 1.6m$^2$ less space per person

for those organisations with a space strategy. Of the 70% of respondents who do have a space strategy, 42% allocate space according to employee status while the remaining 58% utilise job function or a similar method of allocation. There is a small differential in terms of density between those who allocate by status and those by function of 0.8m$^2$, with the more fashionable allocation by function having the higher density at 20.6m$^2$.

## Operational Benchmarks

A series of common benchmarking metrics in terms of operating cost on a per metre basis and per employee were investigated along with more advanced measures of the rate of office churn or office operating costs as a percentage of the organisation's gross profit. In addition, participants were also asked if any measurement of staff workplace satisfaction was undertaken. This should give an indication as to the staff's opinion regarding the suitability of the work environment. It would, of course cover the whole gamut of work environment variables and, as such, would not necessarily provide any direct measure of satisfaction with the density of workplace occupation.

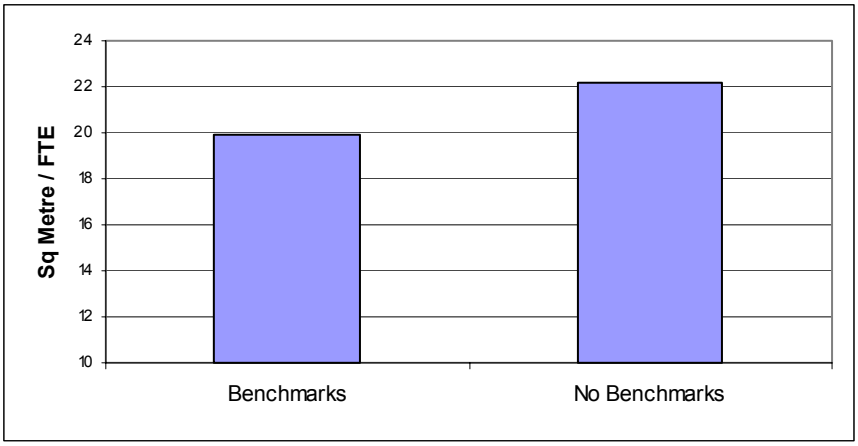
**Table 2 Benchmark Metrics**

| **Metric** | **Percentage of Respondents Benchmarking** |
|---|---|
| Operating costs / m$^2$ | 29.8% |
| Operating costs / FTE | 41.9% |
| Operating costs / Profit Earnings | 48.4% |
| Churn Rate or Costs | 14% |

The results of the benchmarking metrics show that less than half of the organisations are undertaking the most common measures of office performance. Not all organisations employ all of the suggested metrics in Table 2. Indeed, only 66% of the respondents measure any one or more of the metrics. Thus it seems that one third of organisations are not conducting

any form of office efficiency measure. A comparison of the density of occupation between those who benchmark at least one metric and those with no measures at all reveals a usage of 10.3%, or 2.3$m^2$ less space per employee.

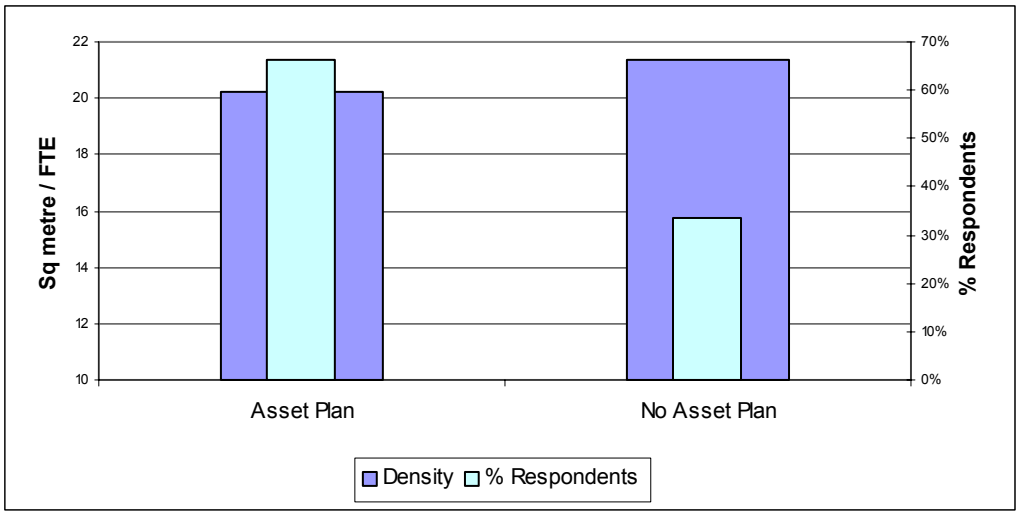
**Figure 16 Density by Benchmark**




## Strategic Property Planning

Building on the proposition above, that you cannot manage facilities performance if you do not measure the performance of the workplace, the next step in the efficient management of facilities as an enabler of the business process is to develop a strategic direction for the provision of the workplace and its support services. The use of strategic asset planning, based on property efficiency and productivity measures, will add value through the ownership or use of real property assets to the overall productivity of the organisation. The survey sought to ascertain the level of business and strategic planning that the organisations undertake. A list of typical facilities management and corporate real estate planning terms were provided and respondents were asked to indicate if they undertook any of these measures or any similar planning practices. The results are similar to those obtained for benchmarking, with 65.9% of respondents stating that they undertook at least one or more of the strategic property planning initiatives. It is again astonishing to find that a third of Australian businesses have not developed strategic management plans for their facilities.

**Figure 17 Density by Asset Planning**



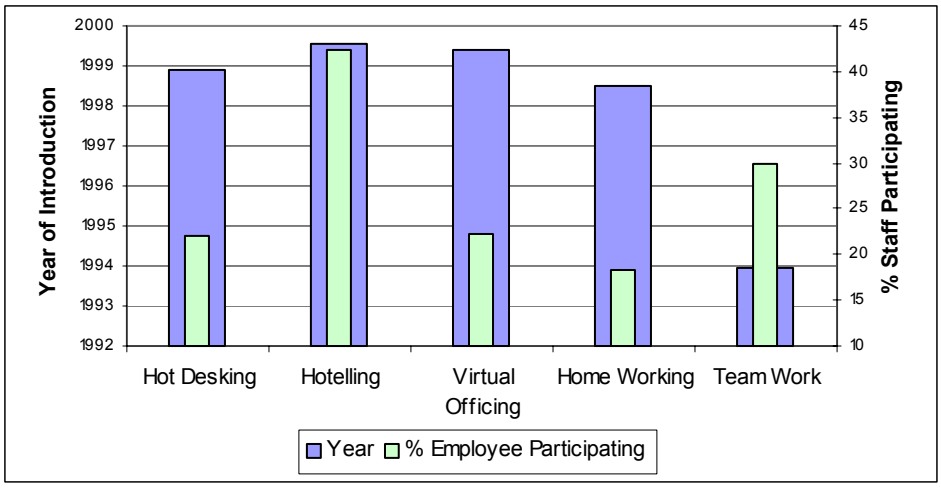

The 66% of businesses which do undertake some strategic asset planning have a mean density of occupation that is 1.1m$^2$, or 5.2% greater, than those with no reported planning.

## *New Working Practices*

New working practices are in many respects not so new. They have been with us in one form or another for several years. The types of practice identified for the purpose of the survey as new working practices were hotelling, hot-desking, virtual office and home office or teleworking. The affect of new ways of working in the office has already been briefly discussed. The impact of these new practices were considered in relation to the density of use both overall and according to the function of the office, Figure 4, page 11. The data showed that, overall, an increased density of just 0.9m$^2$ results in those organisations using some modern office techniques over those that have not introduced any of the practices.

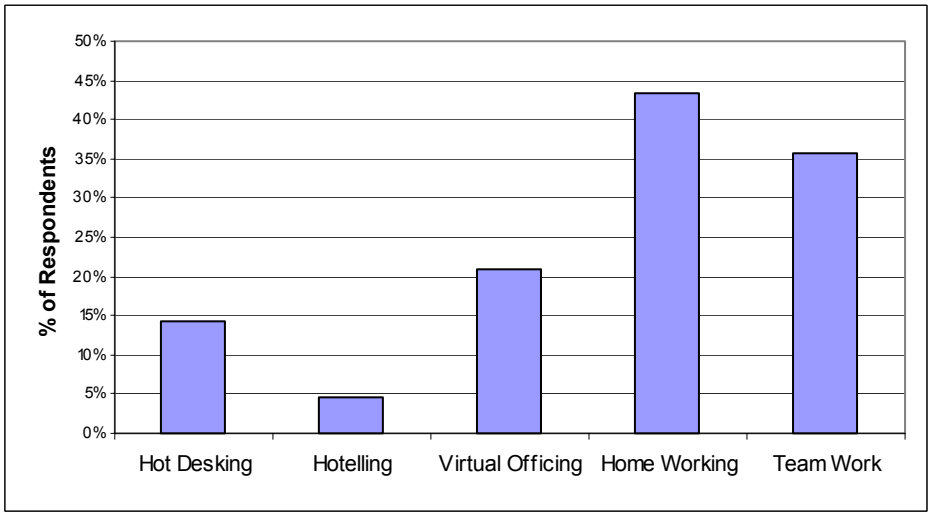
The extent to which organisations utilise these new office techniques can be seen in Figure 18. It provides the average year in which organisations adopted the practice together with the percentage of employees utilising the new office.

**Figure 18 New Working Practice Usage**




The average year of introduction of hot-desking was toward the end of 1998. Within those organisations that have adopted hot-desking techniques, an average of 22% of staff are involved in the work practice. The most widely utilised technique, however, is home working. Figure 19 shows that 43% of organisations have introduced this mode of office work. Although home working is the most widely used methodology and has an average year of introduction of mid 1998, it also exhibits the lowest level of staff utilisation of just 18% of those in participating organisations.

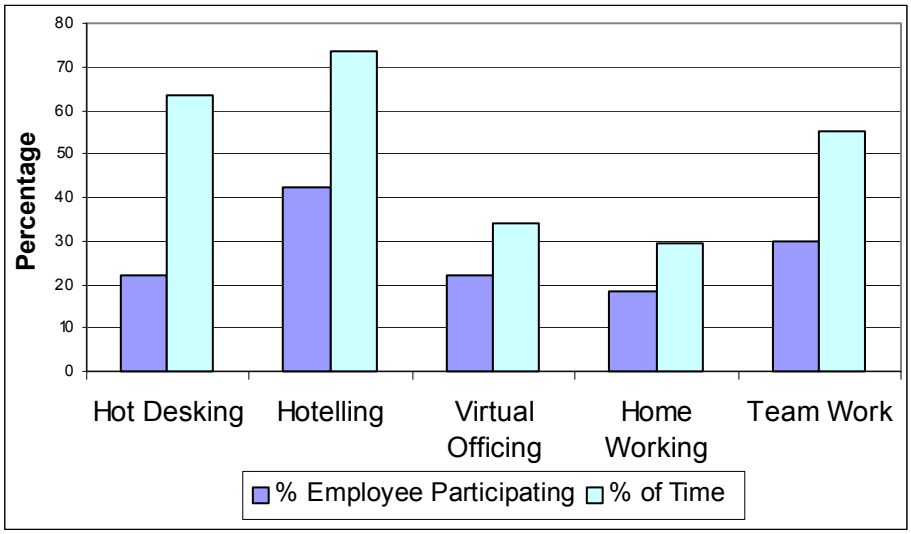
**Figure 19 Percentage of Organisations Using New Office Techniques**




According to the survey, the least utilised technique is hotelling with a mere 4.7% of organisations involved. Those organisations that have adopted hotelling have an average of 42% of staff directly involved in the office

design. This is also the most recently introduced with an average year of introduction of mid 1999.

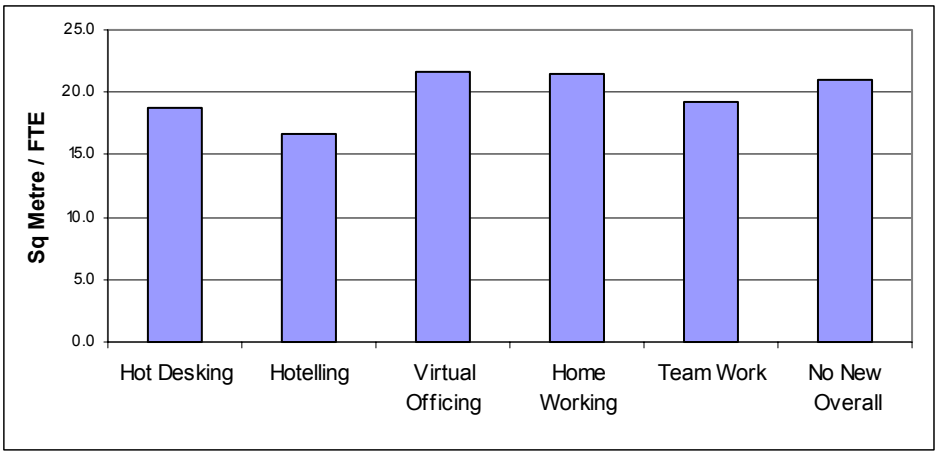
**Figure 20 Percentage of New Working Time**




The percentage of time that employees spend involved in each of the new techniques is compared with the percentage of employees participating in the work practice within each organisation that utilises the practice in Figure 20. It is interesting to note that 42% of employees are directly involved in hotelling for 73% of their time involved. It is also interesting that only 18.3% work from home and that, of those employees using this technique, they spend less than 30% of their time so working.

The final aspect of new working practices to be considered is the affect that the adoption of these practices has on the density of occupation. The overall affect of new office techniques has already been considered in Density by Function, page 9, where a small increase in density was evident among those that utilised new office techniques. A comparison of office density among those that use new office techniques is shown in Figure 21. The graph also includes the density of all other organisations not involved in new practices.

**Figure 21 Density by New Work Practice**




It can be seen that many of the new office techniques do not appear to have an effect on the organisation's average office density. Those organisations utilising hot-desking and hotelling do, however, exhibit a greater density than those organisations not employing any new methods. The higher density in those using hotelling is 16.7m$^2$ and with hot-desking 18.7m$^2$. This compares with the average density of 21.1m$^2$ for those not using any new techniques. The growing popularity of what are recently introduced office techniques are likely to see a gradual increase in office densities if the trend identified in the survey is translated across the industry.

## *Workstation Use*

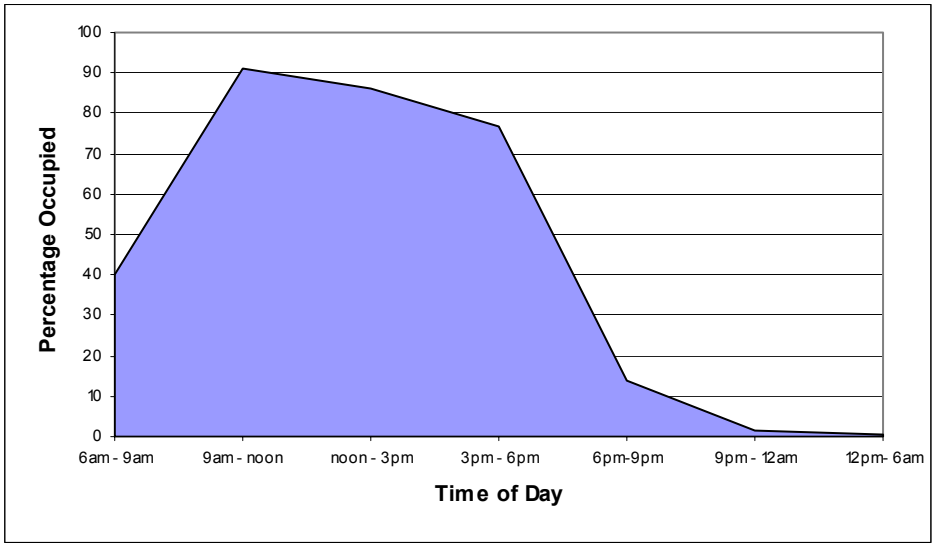
The density calculations in this research have been calculated using the number of full-time equivalent employees per metre squared of office space. An alternative density measure based on the number of workstations per square metre could have been used. This, however, would not have necessarily identified those businesses that employ modern office techniques to increase the number of employees using a single work station or those who are working in some alternative way which does not require a dedicated full time allocation of workspace.

The survey did seek to identify the number of workstations within an organisation so that this could be evaluated against the number of full-time equivalent employees. This measure provides some indication as to the intensity of workstation use, particularly in those organisations utilising techniques such as hot-desking where more than one individual will regularly

use any given workstation. From the survey data a total of 37,927 individual workstations were reported. Evaluating this against the total office workforce reveals a ratio of 1.29 FTE per workstation. The ratio increases to 1.32 FTE per workstation for those organisations utilising some new working practices compared to 1.24 for those who do not use any of the new office techniques.

The utilisation of workstations was estimated by surveying the amount of time that staff were working in the office facility. The survey asked respondents to estimate the percentage of staff working during a series of three hour time slots throughout the working day. The results are presented in Figure 22. They clearly show the build-up of employees to a peak early in the morning and a slow decline in numbers toward 6pm, with minimal usage outside of these times.

**Figure 22 Time in Office**

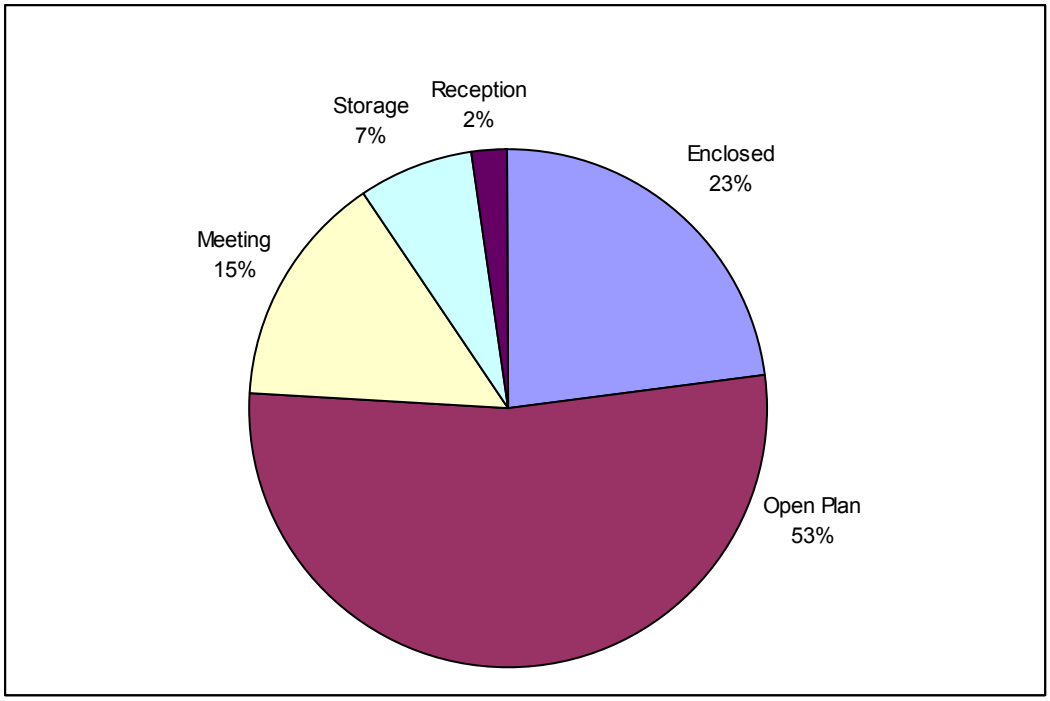



The data for office usage time reveals that, at its peak, only 90.9% of staff, on average, are in the office. Looking at the total use within any 24-hour period, the office is only occupied 38.7% of the available time and, even based on the normal working day occupation, only averages 73% of the available time. It therefore follows from these figures that at peak times nearly 10% of employees are not in the workplace and during an average working day, 27% of the time, staff are absent from the workplace. This provides an opportunity for greater space efficiency by optimising the workplace to only provide workstations for the staff that are present. This is the aim of hot-desking and hotelling to increase space use and avoid costly oversupply of workstations.

## *Workstation Design*

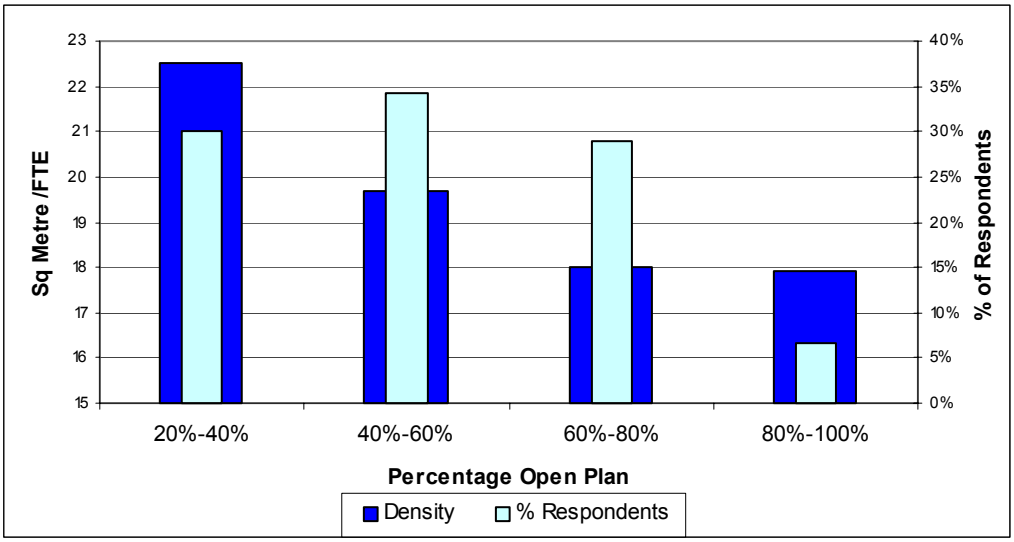
The adoption of open plan office design is often said to be a major contributor to more efficient space utilisation. The total distribution of office space among the major layout designs of open-plan, cellular and other space is shown in Figure 23. The graph indicates that just over half of all the office space within the survey was in an open plan configuration, while nearly a quarter of the space is still dedicated to enclosed office accommodation. Future trends in this data might be expected to show a shift from enclosed space to open plan following anecdotal evidence.

**Figure 23 Space Use Type**




The density of office space, not surprisingly, increases as the percentage of open plan office space rises in relation to the total floor space. The graph at Figure 24 illustrates the margin between those using below 40% open plan with 22.5$m^2$/FTE compared to 17.9 $m^2$/FTE for the 7% of respondents who have greater than 80% of their accommodation in open plan format.

**Figure 24 Density by Workspace Type**




It would appear from the data that if the use of open plan office design continues to grow then there is likely to be a corresponding increase in the density of office occupation.

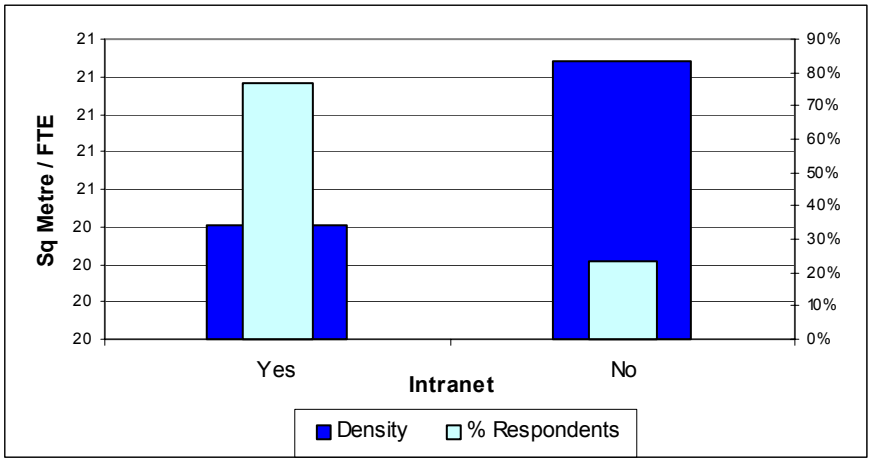
## *Workplace Technology*

The impact of technology on the workplace is undeniable. It has driven a rapid increase in the office as a place of work as the industrial age has given way to the knowledge age. Technology now influences every aspect of our working lives. The rapid growth of the internet has had a very marked affect on the way many of us work over a relatively short time. The use of technology as a workplace tool can have an affect on the amount of space individual employees utilise. It can also provide an indication as to the take-up by organisations of technological advances in order to make their business more efficient, such technologies perhaps reducing the number employees or office space required.

The use of the internet was found to be very widespread among respondents with many organisations having constant broadband access. On average, 85% of staff have constant web access and, of these, 55% of organisations provide all of their staff with full-time access. The number of organisations

that have developed their own private web based information systems or Intranet is 23%. A comparison of space use densities between organisations with an intranet against those without shows an increased office density. This is shown in Figure 25, where the 77% of organisations with an intranet utilise on average 20.4m$^2$/FTE versus the 21.34m$^2$/FTE occupied by the 23% without an intranet.

**Figure 25 Intranet Usage**




The office of the future will undoubtedly be more technologically advanced than it is today. The role of the facilities management professional will be to utilise the best of the new technologies to provide a more efficient workplace to support the needs of the business. The use of new office techniques, including virtual office practices and the power of the internet to provide round the clock access to knowledge, is already affecting the office environment with higher densities apparent in those organisations embracing this future. How these new technologies integrate into a more efficient office design with greater flexibility of use is an area that is in need of an increased level of research in order to assist facilities managers to understand and utilise these technologies.

## *Conclusion*

The workplace environment of the office is evolving as new technologies and management techniques combine with the developing facilities management profession to serve businesses with the most cost effective solution to their real property needs. Many office work environments are changing from the

highly structured cellular office, allocated under a hierarchical management pyramid, to one of open plan design, flexible work-hours and a focus on the office as a support tool to be used and constantly moulded to fit the ever changing modern business enterprise. The office of the future will undoubtedly be very different from that of today. The objective of facilities managers is to be able to steer our organisations through the change process whilst keeping the organisation competitive.

The measurement of office density provides a very useful indication of office efficiency against which to benchmark and to monitor the evolution of new office use techniques. This study of office density within Australia has revealed a wide range of densities across a range of sub-categories, each of which can form the basis for benchmark comparison by facilities managers practicing within those areas of the market. While no two properties are alike and, as such all property benchmarks must be evaluated against the specific use and nature of the property under investigation, it is also imperative that metrics are developed and data collated to enable evaluation of management decisions and development of future strategic direction.

The increasing globalisation of business will mean that more and more facilities managers will be looking to provide property solutions around the world. It is therefore important that global property metrics, such as those developed in this research and directly comparable with data reported for the UK, are developed to enable a better understanding of the market and workplace use in diverse regions. Only through understanding the variations between markets and the economic and social drivers that create those differences will we be able to establish efficient strategic asset management plans which add value to the organisation through the most effective use of property solutions for the enterprise.

The office density data collected in this survey shows that practices in Australia do vary from those in the UK where similar studies have shown a higher density of occupation. There are a number of explanations for the difference between the two regions which cannot readily be derived from the data but warrant further research. What can be said is that Australian workers enjoy a greater per capita allocation of office space. Among the plausible

reasons for this difference is the fact that building construction and occupancy costs are typically much lower and thus the financial pressures to reduce space use are less. It is also true that a larger proportion of buildings in Australia are of modern construction and follow the general open, airy nature of building design within the region.

The research has shown that the use of new office occupancy techniques have been adopted by a considerable number of organisations. What is further evident is that those organisations involved in innovative office techniques occupy, on average, less office space than those who have not taken up the new methodologies. What it is not possible to derive from the data collected is whether similar savings in space use would be available to the remaining organisations. Perhaps some organisations are more suited to the new practices enabling them to use these new techniques to save on office space requirements.

One further area which should be of particular concern to the facilities management profession is the large number of organisations which do not undertake any form of office efficiency measurement on a regular basis and, as such, are still unable to evaluate the efficiency of their property resources as an enabler of the business process. Similarly, a great many organisations are failing to plan their real property resourcing strategies in any recognised format. These organisations are managing large property portfolios which represent a considerable investment of business capital yet they are failing to manage the assets optimally to add shareholder value. The differential in office density between those who measure and plan their office resources and those who fail to do so is but one indication of improved efficiency which could result from effective facilities management practices.

The next step to be taken in the study of office density will be to repeat the study on a regular basis in order to develop a time series which will provide a clear indication of how our use of the office workplace is developing and, perhaps, how new techniques and technologies are driving the efficient use of real property. In addition, some further research is needed to link the study of space use densities and new office techniques with the productivity of the organisation. There is little gain to the organisation if ever increasing office

densities or innovative methods of space sharing result in a lower level of business productivity or employee dissatisfaction. This leads to a reduction in efficiency.

What is evident from this research is that the design, allocation and use of office accommodation is evolving as corporations strive to deliver stakeholder value. At the same time, the facilities management profession has emerged as a management discipline to resource the growing demand for office accommodation. In the future the art of good facilities management will be to provide the most cost efficient workplace solution at the right time, in the right place, to support the competitive advantages of the business.

In Australia the facilities management profession and the wider business organisations that employ their services still have a long way to go before we can confidently say that we are obtaining optimum use of our real estate assets. This survey has clearly shown that the is indeed ‘room for thought’, not only in the way we arrange our office space designs to attain the most efficient density, but also in the opportunities new office techniques provide to some businesses to more effectively utilise staff and property resources. The most fundamental finding, and one which is of greatest concern, is that some organisations still give little or no thought to the management of their corporate property resources.

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