Health, Wellbeing & Productivity in Offices

The next chapter for green building

Key Findings

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Introduction

It has long been considered the ultimate yet seemingly out of reach test of the business case for green building: if the human benefits could be reliably quantified this would prove beyond all doubt the ROI for investing in building green.

This report does not claim to put this argument completely to rest, but it does put forward the best and latest information on the building design features that are known to have positive impacts on the health, wellbeing and productivity of office occupants and points to financial implications where possible.

Further – and what distinguishes this report from others – it provides a high-level framework for building owners, occupiers and their advisors to start tracking the impacts of buildings on employee health, wellbeing and productivity in order to use that information in financial decision-making.

In other words, it sets the groundwork for businesses to begin to answer this tantalising question as to the true payback for building green.

This has been made possible by our sponsors, and an extensive team of experts from the around the Green Building Council global network, who have given up their time to review evidence, debate recommendations and produce this report.

Key Findings:
Health, Wellbeing, Productivity and the Business Case

A healthy, happy workforce is a vital component of a productive, successful business in the long-term.

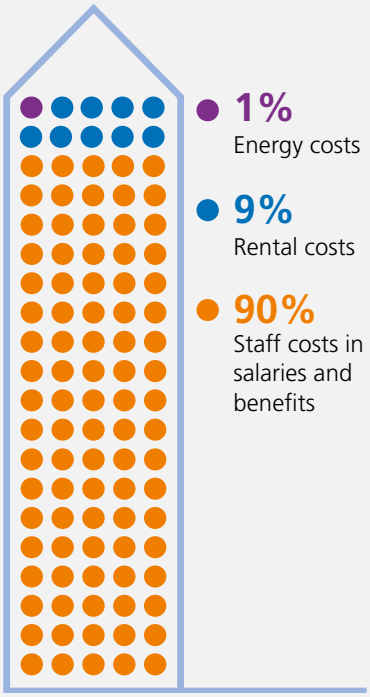
The significance of health, wellbeing and productivity for businesses

There can hardly be anything more important than our own health and wellbeing, and that of our loved ones. For most employers meanwhile, a healthy, happy workforce is a vital component of a productive, successful business in the long-term.

Staff costs, including salaries and benefits, typically account for about 90% of a business' operating costs (as the diagram shows). It follows that the productivity of staff, or anything that impacts their ability to be productive, should be a major concern for any organisation.

Furthermore, it should be self-evident that small differences can have a large effect. What may appear a modest improvement in employee health or productivity, can have a significant financial implication for employers. This equation is at the heart of the business case for healthy, productive offices, to which we return later.

Typical business operating costs[1]



- **1%** Energy costs
- **9%** Rental costs
- **90%** Staff costs in salaries and benefits

10% Variation

A 10% variation applied equally to each cost has a far from equal impact

+/– 0.1%
Energy costs

+/– 0.9%
Rental costs

+/– 9.0%
Staff costs

Santos Headquarters, Adelaide, GBC Australia

Costs of ill-health vary by sector and country, and are rarely comparable, but the impact is clear:

- The annual absenteeism rate in the US is 3% per employee in the private sector, and 4% in the public sector, costing employers $2,074 and $2,502 per employee per year respectively[2]
- Poor mental health specifically costs UK employers £30 billion a year through lost production, recruitment and absence[3]
- The aggregate cost to business of ill-health and absenteeism in Australia is estimated at $7 billion per year, while the cost of 'presenteeism' (not fully functioning at work because of medical conditions) is estimated to be A$26 billion[4].

Relationship between the office building and its users

It is the impact of the workplace – the office building – on the workforce, which is at the heart of this report.

There is overwhelming evidence which demonstrates that the design of an office impacts the health, wellbeing and productivity of its occupants. For many readers, that will sound so obvious it almost goes without saying. But it does need saying, loud and clear, because this evidence has not yet had a major influence on the mainstream real estate sector, and is not yet translating at scale into design, finance and leasing decisions, certainly not in all parts of the globe.

Furthermore, our understanding of the health, wellbeing and productivity implications of office design is deepening, aided by advances in technology and a growing awareness amongst a small number of enlightened developers, owners and tenants. For instance, it is increasingly clear that there is a difference between office environments that are simply not harmful – i.e. the absence of 'bad' – and environments that positively encourage health and wellbeing, and stimulate productivity.

Evidence is summarised on the following two pages, although care has to be taken to apply this in local geographical contexts. What has been clear throughout is the importance of climatic and cultural differences to design and the working environment.

There is overwhelming evidence which demonstrates that the design of an office impacts the health, wellbeing and productivity of its occupants.

Key Findings: Health, Wellbeing, Productivity and the Business Case

Summary of evidence

Indoor Air Quality: The health and productivity benefits of good indoor air quality (IAQ) are well established. This can be indicated by low concentrations of CO_2 and pollutants, and high ventilation rates. It would be unwise to suggest that the results of individual studies, even meta-analyses, are automatically replicable for any organisation. However, with this important caveat, a comprehensive body of research can be drawn on to suggest that productivity improvements of 8-11% are not uncommon as a result of better air quality.

Thermal comfort: This is very closely related to IAQ, and indeed separating out the benefits is difficult. However, the relationship is clear, with research demonstrating that thermal comfort has a significant impact on workplace satisfaction. Suggesting a general rule about the size of productivity gains is not a robust exercise because of the importance of specific circumstances and the lack of comparability between studies. However, studies consistently show that even modest degrees of personal control over thermal comfort can return single digit improvements in productivity. The importance of personal control applies to other factors too, including lighting.

Daylighting & lighting: Good lighting is crucial for occupant satisfaction, and our understanding of the health and wellbeing benefits of light is growing all the time. It can be difficult to separate out the benefits of daylight – greater nearer a window, of course – from the benefits of views out of the window. Several studies in the last decade have estimated productivity gains as a result of proximity to windows, with experts now thinking that the views out are probably the more significant factor, particularly where the view offers a connection to nature.

Biophilia: The rise of biophilia, the suggestion that we have an instinctive bond to nature, is a growing theme in the research. A growing scientific understanding of biophilic design, and the positive impact of green space and nature on (particularly) mental health, has implications for those involved in office design and fit-out, developers and urban planners alike.

Darling Quarter, Sydney, Lend Lease

Noise: Being productive in the modern knowledge-based office is practically impossible when noise provides an unwanted distraction. This can be a major cause of dissatisfaction amongst occupants.

Interior layout: Noise distraction relates closely (although by no means solely) to interior layout. There are a whole range of fit-out issues that can have an effect on wellbeing and productivity, including workstation density and configuration of work space, breakout space and social space. These factors influence not just noise but concentration, collaboration, confidentiality and creativity. Many companies instinctively know this and regularly engage in exercises to optimise layout. However, the research that informs this remains less quantifiable and needs to be further developed.

Look & feel: The same could be said about research around office 'look and feel', which is seen as superficial by some, and yet should be taken seriously as having a potential impact on wellbeing and mindset – both for occupier and visiting clients. Look and feel (and interior layout), being highly subjective, is something which is likely to be experienced differently by people of different age, gender and culture.

Active design & exercise: A guaranteed route to improved health is exercise. This can be encouraged by active design within the building, and access to services and amenities such as gyms, bicycle storage and green space, some of which may be inside the office building or office grounds, or in the local vicinity. There is not a huge amount of research on the link between exercise and office-based productivity, although that which does exist suggests a lower number of sick days for those who cycle to work.

Amenities & location: The local availability of amenities and services are increasingly recognised in research as being important for occupiers. Childcare in particular can be the difference between working and not working on a given day, and in the relatively few studies that have tried to quantify it, the financial impact for employers has been significant.

Key Findings: Health, Wellbeing, Productivity and the Business Case

We may need to move beyond green, to sustainable buildings.

Healthy, productive…green?

The evidence summarised above (covered in more detail in the full report), spans a large range of factors associated with an office's physical environment. It has suggested a strong causal relationship between design and occupant health, wellbeing and productivity, without so far mentioning 'green building'.

There are reputable, robust studies that suggest the green design features of buildings lead to healthier, more productive occupants. Often, 'green' equates to a feature which enables low carbon or energy efficient operation of the building such as daylighting or natural ventilation. Indeed, in many cases there does seem to be a virtuous circle of good design that works for both people and planet.

However, it is far too simplistic – and potentially damaging – to suggest that low carbon and resource efficient buildings are automatically healthier and more productive for occupants, and we need to be honest about that. There are plenty of win-wins (for people and planet) and there are some tensions. A few of both are highlighted below.

Users in control: Putting trust in the occupier and putting them at the centre of design, including personal control over their indoor environment, can reap rewards in terms of satisfaction, productivity and energy performance. This encourages users to work with the grain of their building and vice versa. There is also evidence that occupants are more forgiving and willing to work in a greater range of temperatures in a 'green building'.

Maximising daylight: This is not without challenges (solar gain, glare etc) but daylight has the potential to provide the necessary light levels for a productive, stimulating environment, while reducing reliance on electric lighting. This just cannot be done in offices with a very deep floor plate, which is a challenge to the status quo in many markets. However, electricity use for some lighting is inevitable, and further innovations in low carbon lighting design will be crucial.

Passive design…up to a point: Where the benefits of fresh air and good thermal comfort can be provided by natural ventilation and passive design (or mixed mode systems), there is a clear win-win for occupier and energy use. In many regions of the world, there is probably scope for passive techniques to be used more frequently than at present. However, we have to recognise that in some climates, high outside temperature (both in the day and at night) and humidity simply make some conditioning of air inevitable.

1 Silo, Cape Town, Arup/Michael Groenewald & Allan Gray

There are insights to be gained from this analysis, particularly in respect of lighting, air quality and thermal comfort:

1. Ongoing product and systems innovation is crucial to both increasing energy efficiency and improving the experience for occupiers. This appears to be happening apace but could be further driven by clients.
2. The real estate sector needs to better engage in the process of grid decarbonisation and community-scale low and zero carbon solutions. This includes the need to embrace appropriate on and near-site renewables, which are becoming more efficient and more cost-effective and yet are still viewed by some in the industry as undesirable or a diversion.

What drives green building – conducive to healthy, productive occupiers – is quite simple:

1. Good design (such as passive solutions, shading, and natural ventilation where possible).
2. Good construction (new technologies, innovation, smart controls).
3. Good behaviour (appropriate clothing, adaptability and engagement with systems).
4. Good location (enabling low carbon commuting and easy access to services and amenities).

Green building is now a truly global movement, and, partly through the use of green building rating tools, is helping to drive change in markets all around the world, increasing demand for low carbon, resource-efficient building products and services. However, it could be argued that green building professionals and advocates – i.e. we, ourselves – have not been as attentive to the needs of building occupants as we should have. Symptomatic is the development of most green building rating tools, which started with environmental impacts (energy, water, waste etc) and have incorporated more socio-economic measures in due course – but perhaps not quickly enough.

This complex relationship between health, wellbeing, productivity and 'green building' points to a need to reinterpret – some might say rescue – the term 'green' from an association purely with the environmental movement; or we may need to move 'beyond green' to talk much more about sustainable buildings. Either way, the goal should be buildings that maximise benefits for people, and leave the planet better off as well. Low carbon, resource efficient, healthy and productive - really what we are talking about is higher quality buildings.

Zappos Head Office, Las Vegas, Arup/Bruce Damonte

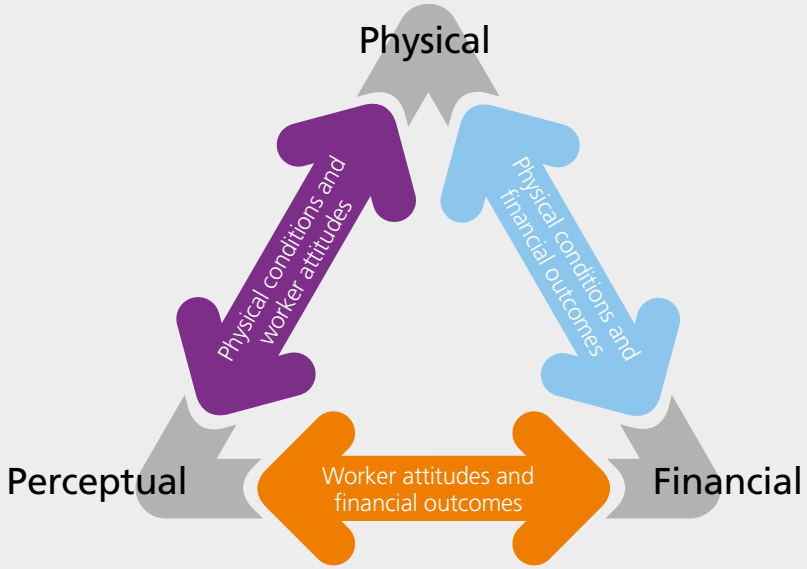
Measuring impact: a framework for assessing health, wellbeing and productivity

There is an important difference between showing how things are related and showing how things are relevant. The question that really matters to most executives is this: How does *my* building impact *my* people?

We have proposed a way for office owners and occupiers to directly engage with this agenda, using a simple framework for measuring organisational or financial 'outcomes', perceptions of the workforce and the physical features of the office itself. As the diagram suggests, it is the relationship between these three elements that is of most interest.

A key objective in developing the framework is to set in place a process which encourages more data collection by more businesses in more common ways.

Summary of metrics framework and key relationships



Bournville Place, Birmingham, Cundall

Financial (or organisational)

1. Absenteeism: Number of days (or hours) of absence due to illness annually.
2. Staff turnover/retention: Percentage of regular, full time employees leaving employment in a given year.
3. Revenue breakdown: Revenue per division/department/team, per building/building zone, and/or per employee.
4. Medical costs: Expenses associated with providing medical insurance or medical care to employees annually.
5. Medical complaints: Incidents of reported/documented medical complaints resulting from the physical work environment or work activity.
6. Physical complaints: Number and type of complaints of physical discomfort associated with the work environment (e.g. temperature, glare, noise).

Perceptual

The financial or organisational metrics above are concerned with measuring objective indicators. What they can miss are important underlying attitudes about the workplace that can be harder to quantify but can have significant impacts on human performance.

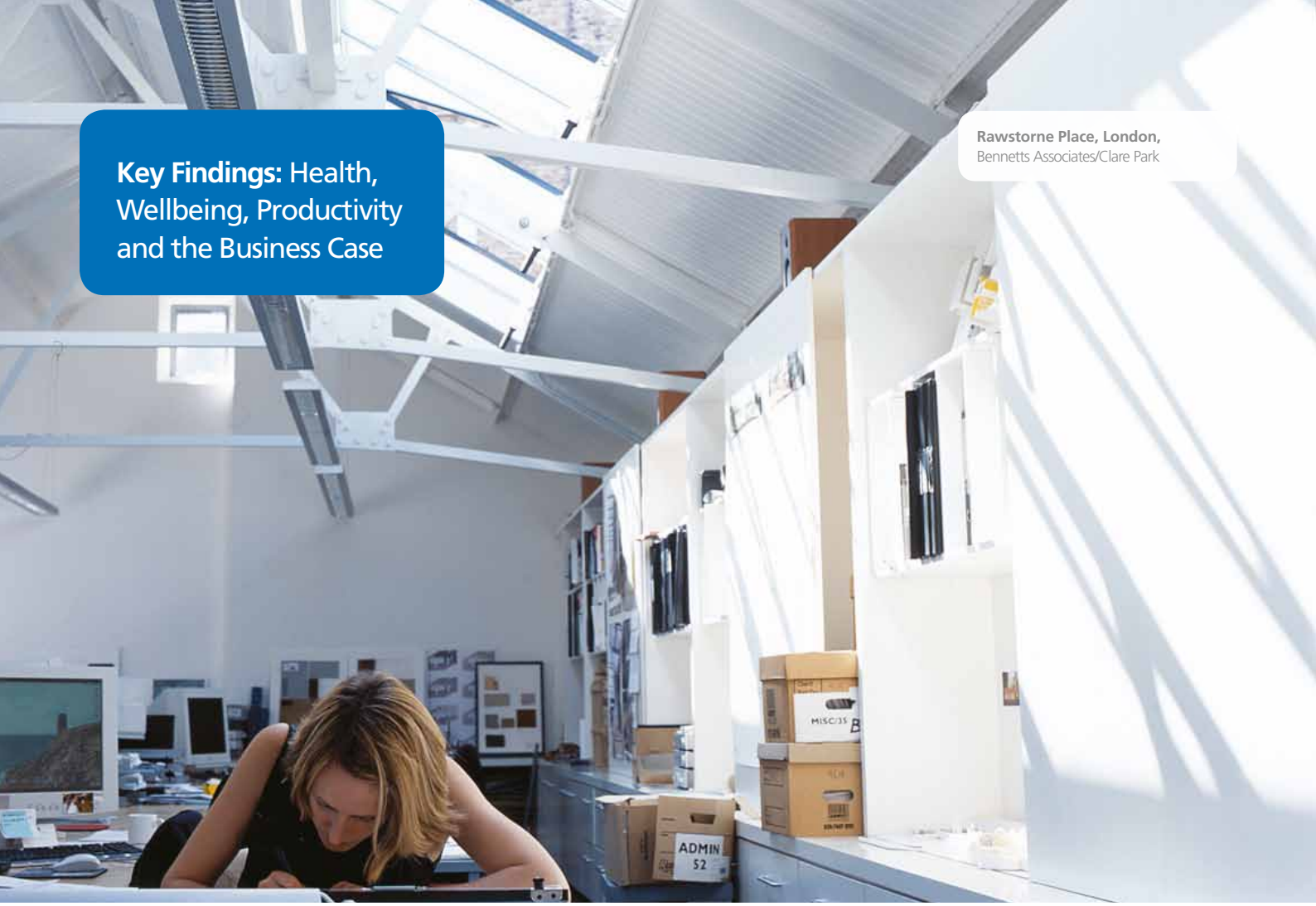
An effective perception study tests a range of self-reported attitudes to gain insight into health, wellbeing and productivity in the workplace. The answers that workers provide can contain a wealth of information for improving office performance.

Physical

To test the premise that the physical design and operation of your office affects the health, wellbeing and productivity of office workers, you need to gather information about the physical office environment itself.

Some of this can be done with very direct measures (illuminance, pollutants or temperature for example), others are more a case of evaluation (views outside or quality of amenities, perhaps). The extent to which this can be done 'in-house' or requires external expert support varies and is changing as new tools come to the market.

One of the most exciting developments in this area is portable and wearable technology. This has the power to measure physical conditions and human impacts in real time. At the time of this study they are just beginning to go mainstream. It looks likely that these devices will substantially expand our understanding.



Rawstorne Place, London,
Bennetts Associates/Clare Park

In the next few years will we start to see the rise of the Chief Wellbeing Officer?

Practical applications and the business case

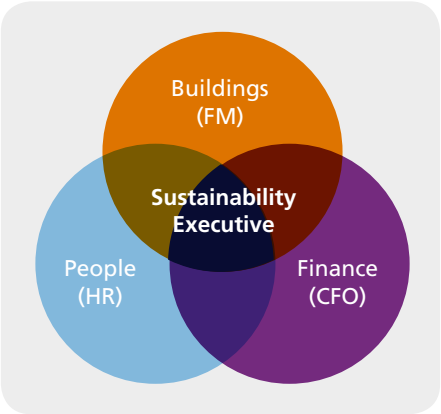
We believe that plenty of relevant data already exists, but organisations need to implement more systematic collection for that data to be useful. In particular, the data tends not to be thought about in terms of place – i.e. it is often not gathered on an office-by-office basis.

In fact, many organisations are sitting on a treasure trove of information that, with a little sifting, could yield important immediate improvement strategies for their two biggest expenses – people and places, and the relationship between the two.

This is less difficult than it seems. It requires a different way of thinking and working rather than a great deal of extra, expensive data capture. Facilities managers, for example, are likely to have a wealth of data about the building itself, its physical features and even some outcome metrics – such as physical complaints. Likewise, HR departments are already in possession, in many cases, of data about worker attitudes as well as performance data – absenteeism, medical costs, retention, etc. And, of course, the CFO or finance director will be well aware of revenue and related financial metrics.

The sweet spot in this agenda is where the circles on buildings (FM), people (HR) and finance (CFO) overlap, and yet so few businesses take advantage of this rich space. This represents a huge missed opportunity.

If we better understand the relationship between the office, people and organisational performance, the potential for practical application is significant. This includes due diligence on new space, rent review on existing space, fit-out guidance on refurbished space, and so on. A better understanding of how buildings impact people should drive improvements in the workspace, which may be one of the most important business decisions to be made.



At the start of this key findings report, we highlighted the importance of staff costs for a typical business. Through our research process, it became clear that there was no 'magic formula' for 'proving' the business case. What we have done is demonstrate quite clearly the physical office environment (and indeed its location) has an impact on the health, wellbeing and productivity of staff. We have also shown that there are tools available to help make this as relevant as possible for individual organisations.

It is down to those individual organisations, and their advisors, to apply these findings to their own circumstances. That means considering your own operating costs, and the impact that small improvements in productivity would have across the organisation as a whole. Think again about the diagram on page 2. What is the financial value of even a single-digit improvement in productivity, or a small reduction in absences in your organisation, compared to savings on energy costs or even rent?

There is clearly an opportunity for organisations to begin to think differently and use their physical premises for competitive gain. This is true from investors right through to occupiers, whether companies are trying to command a higher price for a high-performing building or looking to take the kind of space needed to help drive business success. The method we suggest could be used, in part or in whole, by all kinds of actors in the industry who want to understand the issue better and get the best from their buildings.

Finally, what role for the sustainability executive? They should perhaps have the keenest interest of all. The forward-thinking sustainability professional could be viewed as having a role in helping to get all three sets of actors above to start thinking and working together. There is even an argument for suggesting health, wellbeing and productivity should be synonymous with sustainability. In the next few years will we start to see the rise of the Chief Wellbeing Officer?

Surely, in the long-term, those who do not engage with this agenda will suffer as a result. Those companies who take seriously their employee health, wellbeing and productivity, will prosper.

More information

Footnotes

1. Cited in Browning B. (2012) The Economics of Biophilia: Why designing with nature in mind makes sense. Available: **http://www.interfacereconnect.com/wp-content/uploads/2012/11/The-Economics-of-Biophilia_Terrapin-Bright-Green-2012e_1.pdf** Last accessed 12 August 2014

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Editor's note

Towards the end of this project we heard the very sad news of the sudden death of Paul Hinkin, MD of Black Architecture, whose 'viewpoint' piece is included in the report. Paul was a passionate advocate for sustainable design and the wellbeing agenda, and will be missed tremendously by those who knew him. This report is dedicated to him.

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