Health and wellbeing consultancy
Wellness/wellbeing

... is an active process through which people become aware of, and make choices toward, a more successful existence.

... includes the presence of positive emotions and moods, the absence of negative emotions, satisfaction with life, fulfillment and positive functioning. In simple terms, wellbeing can be described as judging life positively and feeling good.

Sources: World Health Organisation / Centre for Disease Control
Introduction

With our modern lifestyles and professional careers meaning that the majority of us spend most of our time indoors, architects and engineers have a large opportunity to positively impact people’s health and wellbeing. Pushing this idea further, to what extent do architects and engineers have a duty to ensure that building occupants are healthy and happy?

A premise for this question is recognition of the value of people-focused design. The topic of the relationships between health, wellbeing, and the built environment is growing both in research and practice. Designing for health and wellbeing is not about a “quick fix” solution or a set of products, similar to how there is no magic pill that guarantees a healthy lifestyle. Wellbeing is a comprehensive term that encapsulates a hierarchy of needs, spanning physiological, psychological, social and personal aspects.¹

For built environment professionals, this requires an integrated, interdisciplinary approach that is sensitive to the impacts of design and operations on occupant behaviour.

Health

...is a state of complete physical, mental and social wellbeing and not merely the absence of disease or infirmity.
Health and wellbeing

Who we are

As a practice that has always promoted people-centred design and social sustainability within our core values, Arup Associates offers an innovative new design and consultancy service centred around human health and wellbeing.

We understand that organisations are now facing the challenge of how to do more for their people. Mandated by changing demographics, tough economic climates, health imperatives, and technological advancements, the built environment is under increasing pressure to support and facilitate individuals, organisations and communities to thrive.

Our experienced interdisciplinary team can advise you on design and management practices enhanced for positive outcomes in human health and wellbeing.

Key questions

- How can built environment professionals play a role in enhancing the health and wellbeing of occupants?
- What are ways in which health and wellness go beyond building design and performance?
- What is the business case?
- How do we measure impact?
Expertise

Sustainability  
Foresight, Research + Innovation  
Acoustics  
Mechanical  
Public Health  
Building Physics

Landscape Architecture  
Urbanism  
Interior Design  
Accessibility  
ICT / Smart Cities  
Human Resources

Architecture  
Ergonomics  
Occupational Psychology  
Building Systems + Performance  
Lighting  
Materials
The shift towards putting people first comes at a time when statistics show the rising cost to the UK economy of sick leave and long-term illness, estimated recently at £14 billion a year. A study of over seven hundred American construction professionals found that architects, owners, human resources executives, architects, and contractors are willing to pay more for buildings with demonstrated positive impacts on health, and cited many financial benefits to such buildings including lower healthcare costs, higher levels of employee satisfaction and engagement, lower absenteeism, and higher productivity.

For an organisation to be successful and to meet the necessary targets, the performance expressed by the productivity of its employees is of vital importance. From both financial and social points of view, it follows that personal wellbeing could be and should be identified in briefs for future building design.
## Global trends

### Impact of an ageing population

The percentage of people over 55 in the labour force is greater than it has ever been in the past. The percentage of older workers in the labour force is on track to double from 1980 to 2030. 2010 was the first time there were fewer new entrants to the European labour market than retiring workers.

This trend reveals the importance of designing spaces and built environments that support an ageing population and can adapt to changing needs over time.

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Declining health

In addition to environmental pressures and the impacts of climate change, the world is facing unprecedented challenges in health. Population demographics are shifting, with people living and working much longer. Antibiotic consumption – both active and passive through water supplies and food chains – is increasing drug resistance. Many parts of the world, industrialised and industrialising alike, are also seeing lifestyle-related health epidemics burgeoning: global epidemics of stress, obesity, and muscular-skeletal complaints. Inactivity is now one of the biggest threats to public health, directly attributable to 9.4% of all deaths worldwide, or 3.5 million people every year.\(^5\)
Global Trends

Informed occupants

Technology is advancing quickly to provide high levels of personal environmental controls, sensing, and data tracking. These innovations range from products, to apps, to wearables and are transforming how people track their health, interact with buildings, and measure building environmental performance. Apps have turned smart phones into instruments that measure light levels, sound levels, and UV air pollution. Technology is enabling a citizen science movement in which occupants are empowered with data and will start asking for healthier environments with proof in hand when buildings fail to perform.

Public data disclosure

As sensing technologies advance and become smaller, faster, and smarter, there is simultaneously a trend for increasing public demand for open data. Some sensor devices can disclose real-time readings in a public, online database. Netatmo and the Smart Citizen Kit are two examples with web portals allowing public access to data from environmental sensors that people have activated globally.

As more data points for more indicators emerge, these public databases will be a useful tool for due diligence as properties will be able to be compared to similar types of property. This could have a similar impact as Trip Advisor and powerfully influence future users and prospective tenants.
Staff costs, including salaries and benefits, typically account for about 90% of business operating costs. With a growing body of research reporting strong correlations between individual workplace engagement and overall company performance, organisations have an imperative to do what they can to boost human performance and enhance individual wellbeing. By setting the scene for people to thrive, individuals can deliver their best, drive innovation, and move businesses forward in the right direction.
Building opportunities

The role of built environment professionals is expanding to include designing full occupant experiences. Both physical and non-physical elements of a building impact occupant experience. Designers are moving into new, interdisciplinary realms that include developing workplace strategies to help clients spatialise and materialise current and future goals for their workplace and employees. Within this remit, there is an opportunity to influence behaviour change by encouraging healthy habits.
People centred design

Focusing on the end-user

With the overarching mission statement to shape a better world, we are passionate advocates of a people-first approach to the built environment, and are sensitive to the need to balance social, environmental and economic impacts for truly sustainable, world-class outcomes.

Philosophically and ethically, we have always been powerful advocates for a human-centred design approach and environments that support occupants to thrive. Building from this strong position with the human experience as an integral part of our practice offering, our breadth of expertise in the built environment means we are confident in our ability to deliver excellent strategic advice and optimum solutions to promote health and wellbeing.

Overview of opportunities

The following pages consider opportunities to promote health and wellbeing in buildings by considering strategies relating to air, water, nourishment, light, fitness, comfort, and mind. These seven categories are consistent with those of the WELL Building Standard.

We advocate for going beyond the typical role of building professionals and challenge us to consider a more holistic approach focusing on design, performance, and behaviour.
Improving indoor air quality takes a proactive approach to minimising airborne viruses and germs, particulate matter, material off-gassing, and mould.

Strategies to consider:
- Ultra-low VOCs for materials including insulation and furniture
- Monitoring of air quality and real-time display
- Activated carbon filters and UV irradiation for recirculated air
- Mold prevention through plumbing leak detection or auto shut-off
- Relative humidity controlled between 30-50%
- Cleaning protocol designating high-touch and low-touch surfaces
- No permanent wall to wall carpeting.

Source: Occupational Safety and Health Administration, 1999.
Engineering and design can minimise exposure to factors that negatively impact health and hydration such as chlorine, dissolved minerals, sediment, bacteria, and water hardness.

Strategies to consider:
- Regular testing of water for contaminants
- Advanced filtration methods to provide the highest quality drinking water
- Promotion of hydration by distributing water dispensers throughout the floor plate
- Consideration of how water features can improve micro-climate and/or create calming spaces
- Treatment of blackwater through on-site ecological processes such as the Living Machine.

More than 23 million people receive drinking water from municipal systems that violated a health-based standard.

United States Environmental Protection Agency
Nourishment

Developing a healthy approach to food served on-site can help address unhealthy food habits, risk of allergen exposure, and ensure sanitary and hygienic conditions for food preparation.

Strategies to consider:
- Adequate dedicated space for eating
- Hydroponic on-site food production
- Sink design and placement to foster regular handwashing
- Proper food storage temperatures
- Labelling of food for nutritional content, artificial ingredients, and allergens
- No partially hydrogenated oil, limited sugar
- Good availability of fruits and vegetables.
Focusing on light quality can help avoid disruption to the body’s circadian rhythm and visual discomfort.

Strategies to consider:

- Dynamic lighting that enhances circadian health and greater awareness of the role of the lighting spectrum in circadian health
- Shielding of electric lamps to minimise glare
- Interior blinds or external shading on all glazing
- Spatial daylight autonomy
- Design for light and darkness
- Lighting zoning to address adaptability to changing tasks and greater user controllability.
Valuing design for active occupants early on in the design process can lead to spaces and programs that promote regular physical activity thereby reducing the negative impacts of sedentary lifestyles.

Strategies to consider:
- Prominent and welcoming stair near entrance
- Rewards and benefits for tracked activity
- On-site dedicated exercise space, fitness equipment, and fitness programs
- Availability of active furnishings: adjustable height desks, treadmill desks, and bicycle desks
- Subsidies for gym or bicycle share memberships
- Pedestrian and bicycle-friendly site design
- Linkage to existing neighbourhood infrastructure for wider community benefits.

If all non-cyclists in Denmark became cyclists, about 12,000 deaths linked to too little physical activity would be prevented every year as a result of cycling activity.

The Lancet, Volume 380
21st July 2012
Improving thermal, acoustic, ergonomic, and olfactory comfort can help occupants avoid musculoskeletal disorders, factors inhibiting ability to focus, and chronic stress.

Strategies to consider:
- Greater occupant control over local environment
- Consideration of acoustic effects of slab partitions and facade design
- Incorporation of sound absorbing finishes and sound masking
- Easily adjustable chairs, monitors, and desk heights
- Exemplary accessible and inclusive design
- Inclusion of quiet focus areas
- Free address so people can sit in areas that suit individual needs and preference.

In a database of 34,000 post occupancy surveys about indoor environmental quality in 215 buildings, people were most dissatisfied with acoustics.

The Centre for the Built Environment, University of California Berkeley
Both the design of the physical environment and policies are key to supporting opportunities for better relaxation, connection to nature and community, and stress management.

Strategies to consider:
- Post-occupancy surveys
- Thoughtful design and detailing that inspires and uplifts
- Subsidising health trackers for employees
- Meaningful integration of art
- Interior and exterior biophilic design
- On-site stress management programs
- Policies fostering social equity and altruism
- Policies addressing late night work and travel.
Health and wellbeing strategies can be developed for a range of building typologies. This section presents a few broad ideas for opportunities to improve health and wellbeing in five common building typologies.

**Healthcare**
- Design to improve sleep quality
- Provide better spaces for visitors
- Mitigate stress through design
- Enhance privacy
- Improve feedback loops
- Focus on aesthetics that feel less clinical
- Include healing gardens
- Consider people as customers, not patients.

**Education**
- Provide creative places to foster learning
- Encourage community use of facilities
- Blur indoor and outdoor boundaries
- Advocate for healthy food and daily exercise
- Allow for more occupant control and interaction
- Learn from improving existing buildings
- Aggregate benefits at the campus level
- Address the commuter journey.
### Residential
- Access to more common areas and amenities
- Mitigate stress by improving safety by design
- Zone spaces smaller for more occupant control
- Consider ways to design dark spaces for rest
- Design spaces that can adapt as people age
- Promote designs with natural ventilation
- Provide occupants with real-time health data
- Consider colour, materiality, and ceiling height.

### Hospitality
- Include public amenities to promote interaction
- Design common areas that are work friendly
- Make healthy foods available
- Include fitness spaces and programs
- Value guest experience when designing
- Go above and beyond accessibility standards
- Provide “technology free” areas to disconnect
- Incorporate more staff-only amenity spaces.

### Commercial
- Improve acoustic and ergonomic comfort
- Allow personal control of lights and temperature
- Promote prominent and welcoming stairs
- Encourage flexible and adaptable buildings
- Incentivise going beyond industry standards
- Make better use of terraces and outdoor spaces
- Balance amenities with community resources
- Encourage policies that mitigate employee stress.
Applying metrics and measuring results will be an important part of moving the health and wellness movement forward. Successful implementation of health and wellness strategies will require both a better understanding of related medical science research and a deeper collaboration between owners, architects, engineers, contractors, and facility management to identify design criteria that go beyond comfort and the building and additionally incorporate personalization and user experience design.

Building rating systems are one tool a project team can engage for setting and validating goals related to building performance. Currently, there is one building rating system that focuses entirely on creating spaces that nurture and promote human health and wellbeing. The recently released WELL Building Standard is a voluntary, market-driven building rating system that places health and wellness at the centre of design and construction decisions. The scheme was founded by Delos and is managed and administered by the International Well Building Institute (IWBI).

Arup Associates has a team of provisional WELL Accredited Professionals (APs) ready to help you from a pre-assessment, to a gap analysis, and/or all the way through to full certification. Our team can also leverage our deep understanding of the research behind WELL to help you develop a more bespoke health and wellness framework for your project.
WELL Building Standard

Medical and building science research form the basis of the WELL Building Standard.

The WELL Building Standard is the product of seven years of medical research and technical steering committees drawing together the collective expertise of thought leaders in the health and wellbeing arena. The supporting research spans a range of topics including water, air, ergonomics, fitness, nourishment, light, non-ionizing radiation, surfaces, thermal comfort, acoustic comfort, mind, and materials. The advisory board includes leaders of the Mayo Clinic and the Cleveland Clinic, two of the best medical practices in the United States.

The WELL Building Standard was launched in November 2014. It includes details of all WELL features optimised for commercial buildings, and which are required and optional for new construction, tenant improvement, and core and shell compliance.
The WELL Building Standard is intended to complement environmentally focused rating systems by providing criteria focused on human sustainability.

LEED, BREEAM, and the Living Building Challenge are three building rating systems that have gained traction in the industry during the growth of the sustainability movement. While all three rating systems seek to take a holistic approach to building and site assessment, there is a large proportion of points that focus on the project’s environmental impact though targets for energy and water consumption.

To streamline the review process, the Green Building Certification Institute (GBCI) is the third party reviewer for both WELL and LEED certification.
Building rating systems

WELL is the first rating system that focuses solely on health and wellbeing.

The founding philosophy is that the role of designers is not to design buildings and cities, but to create habitat for life. The criteria for achieving WELL certification therefore offer a structured framework against which to appraise and enhance the experience of individual users and employees.

Features of the WELL Building Standard from established medical research that attribute the Standard’s requirements to associated health benefits across a number of human body systems, including cardiovascular, digestive, endocrine and immune systems. In addition to focusing on aspects of the physical environment, WELL encompasses several non-building related aspects that impact occupant wellness by considering opportunities to enhance nutrition, promote fitness, and mitigate stress.
How it works

The WELL features are classified as design, performance, and protocol to emphasize the importance of all three for ensuring wellness.

Features include a range of Preconditions (mandatory criteria) and Optimisations (optional scoring credits), from which an overall score and rating is determined. WELL Certification is available for New Construction and Tenant Improvement, while WELL Compliance is available for Core and Shell.

Verification of actual project performance is required through a WELL Commissioning audit, after which final certification review is administered by GBCI.

WELL Certification is valid for a period of 3 years, after which projects have the option of repeating Commissioning and Certification Review to maintain the certificate and demonstrate maintained, ongoing performance.

Source: IWBI
Scaling up

There is an emerging movement of advocacy for and implementation of health and wellbeing strategies in the built environment. The sustainability movement has focused on environmental performance, which is a separate and important aspect of building design. Through bringing health and wellbeing to the forefront of design, the goal is to create better built environments for people.

Building specific strategies can complement district and city scale initiatives to broaden the overall opportunity to address health and wellbeing. For example, biophilia on the building level can be upscaled to the level of green infrastructure, which has been linked to improving social cohesion, improving mental and physical health, lower crime, economic vitality, increased property prices, better urban microclimates, and reduced pollution. While this is just one example, it demonstrates a broader perspective of the impacts of design decisions and ways in which the built environment at various scales can be a means for directly and indirectly influencing health.
Multiple buildings

There are substantive ways in which positive health and wellness impacts can be augmented at the campus scale and across building portfolios.

Similar to how sustainability strategies can be developed for both campuses and building portfolios, health and wellbeing strategies can often lead to enlarged impact when expanded to larger scales. For campuses, site design and community context become even greater opportunities. For building portfolios, strategies can focus on improving standard specifications and operational policies.
Collaborating with planners and urban designers offers opportunities to aggregate health and wellness benefits at the urban scale.

Cities are one of four prioritised strategic directions of Arup, in which teams are focusing delivering interdisciplinary projects to help cities flourish and become more resilient in today’s urbanising world. Arup Associates works closely with Arup to draw upon deep, collective knowledge of urban level strategies for improving health.
Applications and implications

There is an emerging movement of advocacy for and implementation of health and wellbeing strategies in the built environment. Especially when paired with organisational strategies fostering a culture valuing health and wellness, the potential to positively impact building occupants is large.

With growing awareness and demand, we anticipate that health and wellbeing strategies will be part of company branding and an important part of attracting and retaining talent.

We envision this being an occupant driven movement as increased awareness of health and wellbeing issues will lead to changing expectations for tenants. Building specifications and management practices will improve and owners will get a premium on spaces proven to maximise health benefits.
A different kind of business case

Collaborative approach

How does my building impact my people?

Answering this question relies on the collaboration of groups typically in silos: people (HR), finance (CFO), buildings (FM).

Frameworks for measuring impact should take into account perceptual, physical, and financial outcomes.

Examples of indicators of impact:
- Absenteeism
- Medical complaints
- Turnover
- Medical costs
- Revenue
- Physical complaints.

The totality of evidence is greater proof than any one particular aspect.

Source: World Green Building Council
How do we know a building is healthy?

Focus on performance

Pros of rating systems
- Rating tools can represent industry best practice thinking, collating and distilling large bodies of research and technical information to tangible, verifiable and quantifiable strategies
- Third party verification adds rigour and accountability to reported achievements and facilitates wider benchmarking
- The WELL Building Standard focuses on measurement and performance, which holds projects to a higher level of accountability compared to other rating systems.

Cons of rating systems
- Inflexibility and an overemphasis on onerous documentation has led to certification fatigue, with the process degraded from a collaborative design exercise to a compliance check
- There are growing examples of top certifications yielding poor operational outcomes; the performance gap has not been resolved.

Approach to measurement
- A bespoke framework of wellbeing strategies can integrate desired strategies and accountable performance requirements tailored to specific scope or targeted area
- There should be public access to a real-time display of sensor measurements of health and wellness criteria (thermal comfort, air quality, water quality, sound levels, etc)
- We should consider developing building-specific and client-specific measurement goals, especially ones that can not be captured by smart technologies
- We can help clients track and analyse performance data throughout tenancy.
Designing for health and wellness

Stage 1. Preventing sources of ailment
- Toxin-free building products
- Smoking and combustion free
- Design to limit sun, glare and noise discomfort
- Healthy food preparation areas and storage

Stage 2. Active detection systems
- Pre-occupancy air and water quality testing
- Intelligent building monitoring for air, water, light, thermal and acoustic quality
- Proactive maintenance regimes and public documentation of operational performance

Stage 3. Removing sources of ailment
- Regular flushing of indoor air
- Increased ventilation
- Advanced air filtration and water purification
- Optimal entryway systems, controlled infiltration
- Green cleaning protocols

Stage 4. Promoting occupant empowerment
- Flexible floor plans with frequent hydration station
- Exercise space and cues for regular movement
- Ample showers, lockers and bicycle storage
- Thermal and lighting controls to suit individual preferences. Operable windows where possible.

Stage 5. Healthy habits and nourishment
- Easy access to nutrient-rich food
- Maximum daylighting
- Ample outside views and connection to nature (biophilia)
- Attractive, visible staircases

Stage 6. Highest quality of life
- Health and wellbeing education and awareness
- Open space, recreation area and community connections
- Interactive floor space
- Designated rest/disconnect areas to support effective stress management
Why clients should care

Actionable goals

- Lead by example
- Adopt lifestyle and systems thinking to achieve true user-centred design
- Improve air, water, light and acoustic quality
- Encourage personal influence and control over environment
- Support enhanced social networks and helping behaviour to boost both mental wellbeing and collaborative working
- Promote better sleep, comfort, mental acuity, nutrition and overall health
- Increase productivity and reduce both absenteeism and presenteeism
- Help recruit and retain talent
- Inspire long-term healthy habits
- Plan for operational excellence
References

The following is a bibliography of sources referenced in this document, as well as additional suggestions we recommend to you as a reading list in this emerging movement. There have recently been many publicly available books, reports, and articles on the topic of the role of the built environment in enhancing health and wellbeing. From city councils, to design firms, to think tanks, to academia, the field has embraced the topic and we anticipate rapid growth in interest in the coming years.
References

Sources

4 Allianz Demographic Pulse, March 2010.

Books


Design guidelines


Scholarly articles


Images

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Reports


RIBA.


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