

Thriving *Workplaces*





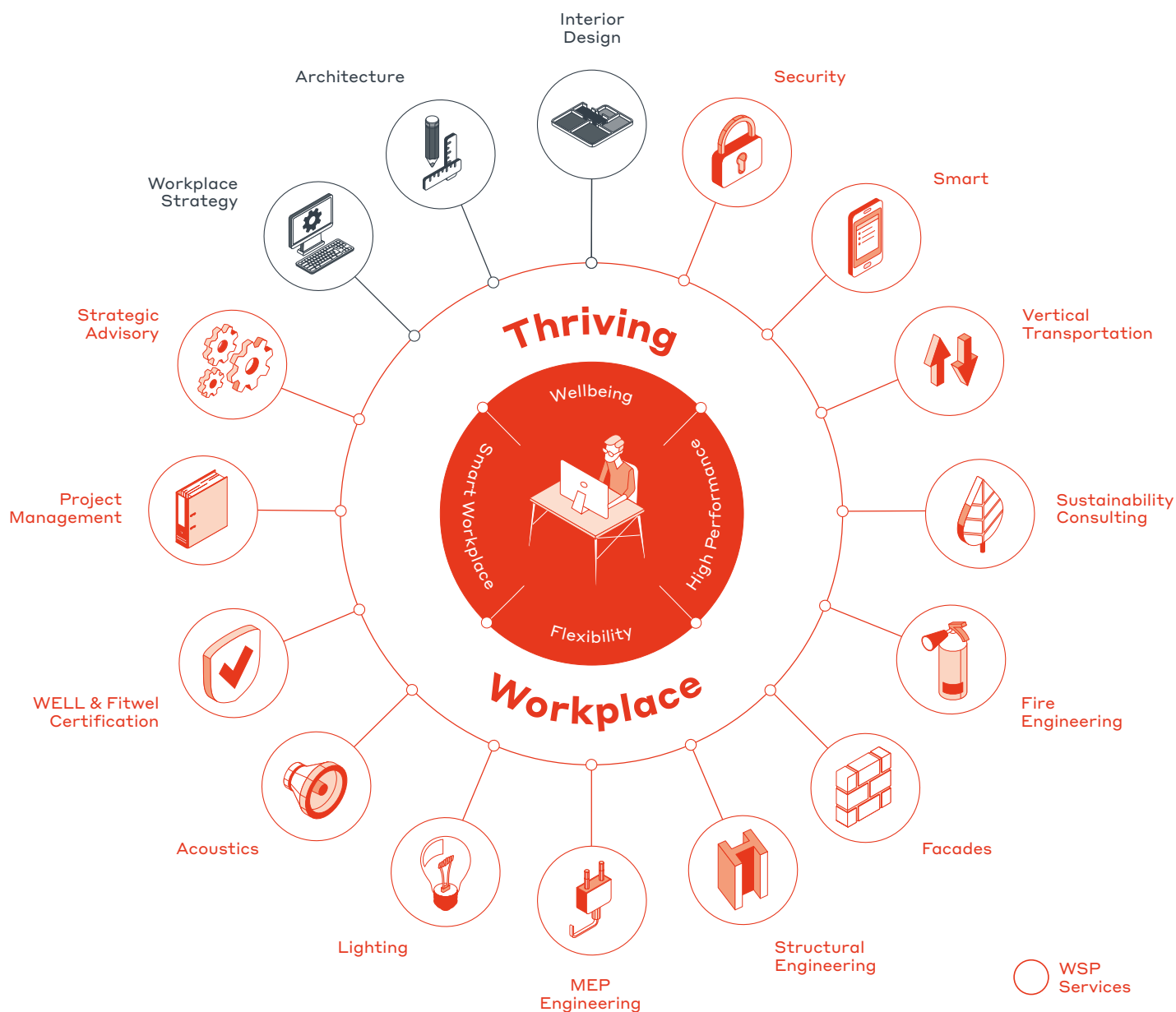


WSP's South Africa Headquarters. Image by Boogertman + Partners

Thriving Workplaces	04
Wellbeing in the Workplace	08
Workplace of the Future Is Smart	30
High Performance Workplace	48
Flexible Workplace and Culture of Sharing	70
About Us	88

Thriving Workplaces

Companies across all industries are looking for innovative ways to attract and retain the best talent and foster creativity, innovation and employee satisfaction through creating thriving workplaces. Changes in employee behaviour and work style are creating a tectonic shift in company structures, ways of working and office design. Nowadays successful workplaces are so much more than just a nice place to work.



Corporate Culture and Work Environment

There are several key elements that help organisations create attractive workplace experiences for their employees such as an empowering work philosophy and company culture. This usually involves a management style and an entrepreneurial spirit that encourage proactiveness, innovation, flexibility and creativity, while promoting

personal development and providing opportunities for career advancement.

But one of the crucial ingredients in creating a positive experience for employees is the physical space that they work in, as offices increasingly reflect the company's brand and culture. Research has found that employees thrive in a work environment that encompasses spaces that optimise collaboration through technology and collaborative interior setting,

but also offer areas to focus, socialise and conduct different types of work. Another important factor is flexibility – a possibility for employees to choose when, where and how they work to achieve their best performance. A report shows that 74% of UK businesses believe flexible working makes their employees more productive, while a study by JLL demonstrates that 91% of workers desire more control in their workspace.



Wellbeing

At WSP, we work with clients to create productive work environments and deliver a higher return on investment throughout the lifetime of the building. Working in collaboration with strategic planners, architects and interior designers, we seek to maximise the occupant wellbeing by considering noise and acoustics, air and water quality, lighting and daylight, and biophilic design, complying with the WELL and Fitwel certifications. For example, WSP assisted in the pursuit of the WELL Building Standard for the Colorado Health Foundation Headquarters building by designing features to support the certification principles. A unique trait was the use of tuneable LED lighting systems controlled to change colour temperature in select spaces to mimic daylight and help regulate the circadian rhythm of the occupants. Aspects of nature were integrated in the design and the materials together with air quality monitors to ensure a good indoor environment.

Smart Workplace

The spaces we work in need to get smarter to meet the demands of tech-savvy employees, attract the best talent, improve productivity, optimise space utilisation and reduce real-estate and energy cost. Smart workplaces blur the lines between the physical and digital environments by using technology to make the most of space. They learn

what is required of them, and feedback actionable data to continuously improve their performance, further boosting the competitive edge they provide.

High Performance

Creating green buildings is highly important to our clients to decrease energy cost and meet regulatory requirements for reducing carbon emissions, while providing an attractive environment to their workforce. We design the most efficient systems and help building managers and owners monitor building performance and achieve efficiency and long-term savings. We also help them attain the highest level of sustainability through design that is in line with certifications such as LEED, BREEAM and Green Star.

However, the wellbeing of employees is increasingly the main priority for companies as it contributes to enhanced productivity, decreased absenteeism and improved staff retention, thereby positively impacting business performance. Although both energy-efficiency and employee wellbeing can be achieved simultaneously, sometimes their design requirements can be conflicting. We use our multidisciplinary pool of experts that includes MEP engineers, acousticians, environmental scientists, lighting designers, facade engineers, energy modelling experts, WELL, Fitwel and RESET accredited professionals - to find the optimal solution respecting both sets of requirements.

For the Eminent building in Malmö, Sweden we are acting as WELL certification coordinator as well as sustainability consultant managing the conflicting requirements while helping the project become the first building in the Nordic countries to register for WELL and, at the same time, to achieve the Swedish environmental standard Miljöbyggnad at a Gold level.

Flexibility

Activity-Based Working (ABW) is the reorganisation of the workplace to enable staff to be more productive and collaborative using shared workspaces in the office and external locations like home offices. It allows businesses to adapt to changing markets and new ways of working.

Flexibility in the way people work and in office layouts, is becoming the optimal way for companies to make the most of their workforces and real estate portfolio. Multi-tenant workplaces foster collaboration and the exchange of ideas between different groups of people. Organising the work environment to provide break-out rooms and foster networking results in new opportunities for businesses, as we successfully demonstrated with WSP's new office fit-out in Adelaide, Australia.

Our holistic approach in designing thriving workplaces has allowed us to work on many different commercial schemes, while making them responsive and future-proofed.

Wellbeing in the Workplace

People are any business' greatest asset. It follows that a healthy, happy workforce is a vital component of long-term commercial success. Employers increasingly realise that offering a good salary or pension is no longer enough. The brightest and very best talent wants to work in attractive environments that provide support and inspiration.





The link between employee attitudes and business performance has been understood for decades, but it is only in more recent years that the impact of workplace on wellbeing has become evident.

A growing body of research, including an evidence-based report published by the World Green Building Council, suggests that the physical work environment directly influences the health, wellbeing and productivity of workers. Furthermore, a great workplace influences staff attraction, satisfaction, efficiency and retention.

With staff costs, including salaries and benefits, typically making up about 90% of a business' operating costs, it makes sense that even marginal improvements to worker productivity can turn into significant overall commercial gains.

WELL and Fitwel Certifications

Wellbeing oriented buildings promote, or provide, a wealth of elements relating to welfare; from clean air, adequate natural light and thermal comfort, to ergonomically designed interiors that stimulate physical activity, healthy material selection, and access to clean water, wholesome food and exercise. Other important factors for creating a healthy working environment include the physical location of the building and easy access to amenities that could either be part of the workplace or located in the surrounding area.

When part of client's objective, our accredited professionals and design teams help the workplace design achieve the highest possible levels of WELL, Fitwel, RESET and other wellbeing-related certifications. We advise multidisciplinary teams on what the certification means, what every individual credit requires and who is responsible for it. We manage the entire process and provide design recommendations.

Thermal Comfort and Indoor Air Quality

Thermal comfort and indoor air quality are vital to wellbeing. The concentration of some pollution indicators can be two to five times higher indoors than outdoors. By maximising the use of fresh air, taking into consideration humidity and air motion, and designing effective airflow, our engineers ensure high indoor air quality. Thermal, acoustic and ergonomic comfort as well as water quality are other priority areas for optimising the work environment. Studies indicate a 10% reduction in performance at both 30°C and 15°C.

Noise and Acoustics

Acoustics are a key component of worker wellbeing. Noise and lack of acoustic privacy are some of the most common complaints made by office workers, especially those based in open spaces. Research suggests that well designed acoustic environments can boost performance of demanding office tasks by as much as 50%.

WSP's specialist acoustics teams have



WD Von Gonten Offices, USA © 2016 Peter Molick Photography

the ability to design and engineer effective acoustic solutions to exacting client briefs. Our experts use bespoke 3D acoustic modelling systems to analyse specific interior design layouts and minimise background noise, while ensuring acoustic privacy for workers.

Lighting and Daylight

The exposure to daylight, the quality and quantity of electric lighting, glare control, and task-appropriate illumination levels are thought to help improve energy, mood and productivity. High natural light levels and quality illumination help to minimise disruption to the body's natural circadian system. Some reports suggest that those in offices with better daylight and views take 6.5% fewer sick days. WSP's specialist lighting design teams provide the optimal lighting for different areas of the workplace to best fit the intended need while making people feel comfortable and giving them a sense of wellbeing.

Biophilic Design

Incorporating nature into the work environment through biophilic design is a growing priority for companies in light of recent research. There is a rising recognition that green space and nature have a positive impact, particularly on mental health. Our designs facilitate, wherever possible, inclusion of green space into the workplace, whether this is exploiting views of the surrounding area, creating mechanical and ventilation systems so they support the biophilic design, or orientating structures to make the best use of nearby open space.

Occupant Surveys

Integrating wellbeing elements into an existing office building is a concern for many of our clients. Our experts conduct occupant surveys in the existing offices to get direct feedback on the building's performance from the users' perspective. We use this information to identify the areas for improvement and inform the design to enhance the occupant's experience. Occupant surveys could also be

necessary as part of a refurbishment programme or to support building certification process.

At WSP, all our workplace projects, from large-scale new build projects to small refurbishment schemes, capitalise on the relationship between workplace, wellbeing and commercial success. WSP adds value to businesses by putting people at the very heart of our designs, creating workplaces that inspire and enable workers to be the very best they can be.

Delos Headquarters

A Beacon of Office Design Centred Around People

LOCATION

New York, USA

CLIENT

Delos

ARCHITECT

Gensler

SIZE

19,318 sq. ft.

STATUS

Completed September 2017

SERVICES

- LEED Certification Coordination
- Sustainability Consulting
- Biophilia Strategy
- Design Analysis – Energy and Water Analysis
- Commissioning

As the pioneer of Wellness Real Estate, Delos wanted its new headquarters in New York City to serve as a model workplace designed to actively nurture people's well-being and health as well as address environmental sustainability goals.

Located in the prestigious new 860 Washington Street building, in the heart of the city's trendy Meatpacking District, the pioneering organization has created a workplace that inspires staff and visitors with its healthy, flexible, and environmentally responsible design.

The project has achieved WELL Platinum Certification and Living Building Challenge Petal Certification and is on track to achieve LEED v4 Certification, embodying Delos' high standards across multiple areas to create a healthy, sustainable, and adaptable work environment.

Delos needed a strategic consultant that would bring a holistic approach to realising its vision. WSP was the clear choice. Our sustainability consultants have a long relationship with Delos having worked with the organization since its inception.

Our first step was to facilitate an integrative design workshop with

the client and project team to clarify and prioritize the project health and sustainability goals. The workshop outcomes were used to create an enhanced Owner's Project Requirements (OPR) document. This defined the fit-out project's goals; formulated metrics to measure success; clarified additional deliverables; and set out the scheme's intended outcomes.

A key element of the OPR was the creation of a Biophilia Plan, based on the latest research available, to ensure the two-level workspace covering 19,318 sq. ft. would provide a sensory-rich, daylight-filled environment that provides real connections to nature and the outdoors.

WSP was also instrumental in defining and validating design concepts for the project. The open plan offices include ergonomic workstations, that are adjustable and 'active' allowing people to stand and walk around if desired. Private 'cubby holes' provide space for concentration and phone calls, while the conference rooms, café, and terrace help foster interaction and collaboration.

Another key space is a multi-functional laboratory that showcases environmental and health data, and aids in applied research. Delos' new headquarters is equipped to provide data to aid the organisation's research into healthy workplaces, for example, with sensors and controls that measure the quality of light and air throughout the day and year.

A building that performs against environmental measures with minimal waste was fundamental to the scheme. So WSP completed a detailed analysis of plug loads and water use, recommending controls and occupant-based strategies for achieving energy savings where possible.

In September 2017, Delos opened its doors to an office that positively impacts the health and wellbeing of its staff and also serves as a beacon of inspiration to workplace designers and employers across the world.



*Achieved WELL
Platinum, Living
Building Challenge
Petal Certification
and are on track for
LEED v4 Certification*

*Holistic approach
to creating healthy
and sustainable
workplace*

*Guidance on goals,
measures of success,
and design concept*

Eminent

The first building in the Nordics to seek WELL certification

Assisting design team in implementing WELL standard principles

Aligning with local regulations and sustainability standard

Ensuring high environmental comfort for occupants

LOCATION

Malmö, Sweden

CLIENT

Castellum Real Estate

ARCHITECT

Kanozi Arkitekter

CONTRACTOR

Skanska

STATUS

Due for completion in 2018, opening in 2019

SERVICES

- WELL Certification Coordination
- Sustainability Consulting

Eminent is a new office building in the Hyllie district of Malmö, one of the most sustainable neighbourhoods of Sweden. Due for completion at the end of 2018, the building will comprise more than 9,600 m² of lettable space.

It is the first building in the Nordic countries to register for WELL Building Standard Certification, and we were commissioned to coordinate the certification process, assisting the design team in integrating principles of the WELL Building Standard right from the outset, at concept design stage. From coordinating eco-charrettes and creating the certification plan, to quality control, we have been ensuring a thorough process that will be in line with WELL Gold level requirements.

Our key challenge has been to understand how to implement WELL principles in a Scandinavian context while respecting local regulations and achieving the high level of sustainability required by the Swedish environmental standard, Miljöbyggnad. We have been also assisting in the design of the core and shell to ensure tenants can apply the WELL principles in their own fit-out.

Many features have been integrated in the building to respond to the nutrition, fitness and wellbeing concepts evaluated by the certification. The restaurants and

cafes will offer a healthy variety of food; occupants will be able to participate in gardening activities; while additional group activities such as yoga classes on the roof and running in the park will also be organised. A bicycle garage with storage, repair facilities and showers, has been designed to encourage people to cycle to work.

Eminent is designed around flexibility so that tenants can rent an individual space or several office floors and there are co-working facilities on the ground floor, available for autonomous workers who share office space, kitchenette, technology facilities and meeting rooms. Staircases were designed to serve as an informal meeting place, as well as encourage physical activity in the workplace, so together with the project team, we integrated art and biophilia in the staircase design to encourage occupants to use them. The building mechanical systems ensure a high-quality indoor environment including thermal comfort, air quality and access to natural light.

WSP was also the sustainability consultant during the conceptual and schematic design on the project helping the building achieve the Swedish environmental standard Miljöbyggnad at Gold level.



Colorado Health Foundation Headquarters

A 'Health-Positive' Office

LOCATION

Denver, USA

CLIENT

Colorado Health Foundation

ARCHITECT

Davis Partnership

SIZE

35,000 sq. ft. (3,250 m²)

STATUS

Design completed in 2015,
Construction completed in 2017

SERVICES

- Energy Modelling
- Daylight Modelling
- Enhanced and Fundamental Commissioning
- Solar PV LCCA Analysis
- Sustainability and Health Design Assistance
- Certification and Coordination of LEED-NC and WELL Building Standard
- MEP Engineering
- Fire Engineering

Designing building features to support WELL certification principles

One of the first buildings in the world to receive LEED v4 Gold and WELL Gold certifications

Tuneable lighting system helps regulate occupant circadian rhythm

System design contributed to a 70% reduction in the energy consumption

The new Colorado Health Foundation headquarters in Denver, Colorado, is one of the healthiest buildings of the region. The objective of this new 35,000 sq. ft. office building was to reflect the organisation's principle of promoting health and healthcare.

The design brief placed significant emphasis on creating a workplace that promoted wellness in a modern, healthy and sustainable work environment. The whole building was designed around the principle of 'replicability' – the idea that any company could use the same principles that were used to create this 'health-positive' office. This project met highly-demanding LEED v4 Gold and WELL Gold standards under a modest budget, proving that efficiency doesn't have to be directly linked to runaway costs.

Biophilia was at the core of the concept for this high-performance building by integrating aspects of nature in the materials and in the design of the building. At the entrance, visitors are welcomed by a large green wall, and



© Frank Ooms

there are a variety of plants located throughout the office. On the ground floor, a large water feature, which uses rainwater collected on the roof of the building, creates a tranquil and peaceful environment. The three-story building also provides access to outdoor spaces on the 1st and 3rd floors, providing a more enjoyable work environment for the employees.

We assisted in the pursuit of the WELL Building Standard by designing features to support the certification principles. A unique feature was the use of tuneable LED lighting systems controlled to change colour temperature in select spaces to mimic daylight and help regulate the circadian rhythm of the occupants. Air quality monitors have also been installed to ensure a good indoor environment.

We provided a number of health-related design features to help our client reach their goal. The diversity of workspaces is remarkable in this project. Examples include a great kitchen space, cubes, breakout rooms, lounge spaces and

conference areas.

The café in the building provides a selection of healthy food, to reinforce the central concept of wellbeing. Art is displayed throughout the building, reinforcing the 'mind' aspect of the certification. Physical movement is encouraged through the installation of an active staircase, a fitness area, outdoor exercise spaces and bicycle facilities to support an active lifestyle. The location is ideal for walking, cycling and access to transport facilities. The interior layout is designed to support human interaction and collaboration yet also to provide quiet areas for focused work. Lights turn off at a specific time every night, not only to prevent light pollution but also to act as a reminder for the employees to go home.

We delivered sustainability consultant services, LEED certification coordination and Fundamental and Enhanced Commissioning, integrating many features to create an energy-efficient building. These included a Variable Refrigerant Flow system,

moving heat from hot area to cold spaces without the use of compressors, providing an energy-efficient solution for the mechanical systems. A unique feature is the integration of exhaust fans to supplement condenser air movement, using the garage exhaust to pre-condition the condenser ambient air. Occupants can control natural ventilation in their workspace with operable windows to be opened or closed as desired. It provides them with thermal comfort, and reduces the overall carbon emission.

We designed the MEP systems to be highly efficient to reduce the building's impact on the electrical grid. Through energy and daylight modelling and the integration of a large solar array we contributed to a 70% reduction in the energy consumption. The U shape of the building ensures all spaces have daylight and the lighting control allows for nearly all lights to be turned off during sunny days. The energy efficient features contributed to the LEED Gold certification of the building.

81 Bay Street

A grand-scale development that connects people and nature

LOCATION

Toronto, Canada

CLIENT

Hines (on behalf of Ivanhoe Cambridge)

ARCHITECT

Wilkinson Eyre Architects

EXECUTIVE ARCHITECT

Adamson Associates Architects

SIZE

1.5 million sq. ft.

STATUS

2014 - ongoing

SERVICES

- LEED and WELL Coordination
- Sustainability Consulting and Project Management

Located in the heart of Toronto, the tower at 81 Bay Street is the first phase of a grand-scale, mixed-use development that is dedicated to enhancing the wellbeing of not just its own occupants, but people in the surrounding area. It forms part of CIBC Square, formerly known as Bay Park Centre, will constitute two high-rise towers, including 81 Bay Street, and a seven-storey podium with a Metrolinx GO Bus terminal integrated into its lower floor. The development's many amenities dedicated to promoting a healthy, active lifestyle include secure cycle storage, showers and changing facilities.

And CIBC Square's overriding distinguishing feature is the new public realm it will create for the people of Toronto in the form of a one-acre elevated Sky Park. This fresh, green space will link the centre's two towers and offer pedestrian access to Union Station, a key transport hub.

Importantly, it will contribute to improving the city's air quality and be a place for people to connect with nature.

With commanding views of Lake Ontario and the city, 81 Bay Street will be a prominent addition to Toronto's skyline, offering 1.5m sq. ft. of state-of-the-art office, collaborative and retail space over its 49 floors.

CIBC Square's Sky Park epitomises a design concept that is focused on people's wellbeing and sustainability and it is one of the ways in which our client is determined to meet exceptionally high standards in these areas, including LEED Core & Shell Platinum certification and WELL Core & Shell compliance, in addition to the Toronto Green Standard - the city's local environmental performance standard.

We were asked to join the project team for 81 Bay Street at an early stage to provide strategic guidance to interpret and implement these standards, setting the tone for the rest of the development. This was no easy challenge. When design work on the scheme started, the WELL Building Standard was still at pilot stage and our team needed to respond rapidly as the standard took shape.

Every aspect of the tower's structure places wellbeing at the fore, from material selection to the provision of superior indoor air quality and abundant natural light. In addition, our goal has been to put in place the groundwork necessary to allow future tenants to fit-out their spaces with a focus on creating healthy workplaces, and ensure the building is future-ready, too. For example, the air filtration system has been designed with the capacity to accommodate carbon filters should they become required in the future.

By working in close collaboration with the project team including the client, architect, landscape architect and building engineers, WSP's interdisciplinary team is helping to ensure that 81 Bay Street will be a model healthy workplace that also contributes to society and the environment.

*Strategic guidance
on implementing
WELL and LEED
standards*

*Creating conditions
for future healthy
workplace fitouts*

*Ensuring building
systems can
respond to future
requirements*



720 Bourke Street

Making Wellbeing and Biophilia Central to the Design

Health Based Working with focus on the employee mental and physical health

First existing building in Australia to be awarded WELL Gold Core & Shell certification

WSP's multidisciplinary services support wellbeing, flexibility and sustainability

LOCATION

Melbourne, Australia

CLIENT

Cbus Property

ARCHITECT

Hassell

STATUS

Completed in 2014

SERVICES

- Mechanical Engineering
- Electrical Engineering
- Civil Engineering
- Hydraulics
- Environmentally Sustainable Design
- Audio-Visual
- Structural Engineering
- Lighting Design
- Fire Engineering
- Fire Protection
- Vertical Transportation
- Acoustics

The prestigious 16-level commercial tower at 720 Bourke Street, Melbourne, was part of a major cultural change programme for Australia's largest health insurer, Medibank. The firm wanted to align the building with its core purpose and create better health outcomes for its members, employees and the community. Its flagship commercial tower in Melbourne Docklands incorporates Health Based Working (HBW), an enhancement of Activity Based Working (ABW) which makes the promotion of mental and physical health an important facet of the design.

The tower was developed by and is owned by Cbus Property, and it is located in the South-East Stadium Precinct of the Docklands area of Melbourne. The main tower sits atop a four-level podium which incorporates retail spaces and a park, providing activation at multiple levels along the stadium concourse and at Bourke Street level.

Completed in 2014, the building features A-Grade office facilities including a gymnasium, multipurpose court, extensive landscaping, relaxation areas and easy access to and from local transport hubs and entertainment precincts. It has one of the city's fastest vertical transportation systems and boasts community gardens.

720 Bourke Street, is the first existing building in Australia to be awarded the coveted WELL Gold certification for core and shell. It has also earned a 6 Star Green Star – Office As Built V3 rating from the Green Building Council of Australia and 5 Star NABERS Energy rating.

WSP provided design and construction services and fit-out review services, including mechanical, electrical, communications, fire protection, hydraulics, environmentally sustainable design (ESD), acoustics and fire, civil and structural engineering. We also

provided comprehensive base-building acoustic advice, with key achievements including control of noise through a central open atrium and mitigation of impact noise from a basketball court above a medical tenancy.

We developed an innovative trigeneration energy system that enables the production of electricity and heat with a single power source. The system uses natural gas to produce low carbon electricity, chilled water and hot water.

The integrated fit-out for the tenant (recommended as part of the base building design) was an important element of this project to ensure functionality for current and future needs. Spaces can be adjusted to a tenant's requirements easily thanks to features such as the Raised Access Floor systems with underfloor distribution of data, communications and electrical services, that enable easy customisation of the office space, a key advantage for possible leasing. Floor tiles can also be easily moved around to fit different needs; and each floor can be split into different zones, temporarily or permanently.

At the heart of the design brief was the wellbeing of employees and the concept of 'biophilia' was adopted leading to the inclusion of green facades and gardens to provide clear links with nature. The full height atrium brings natural daylight to every floor and the central inter-floor staircase promotes communication amongst employees. Workers can tailor their individual spaces through having some control over airflow and lighting. Wellbeing is further enhanced by an air-conditioning system that provides increased amounts of fresh air, and a CO₂ sensor that monitors the air quality.

Working in different areas of the office is encouraged and employees can choose between many types of work settings including standing workstations, quiet spaces, balconies and collaborative hubs, all Wi-Fi-enabled. As a result, 79% of employees reported they worked more collaboratively in their new office and 66% felt they were being more effective.



WSP's South Africa Headquarters

*A workplace that connects
people, performance and nature*

LOCATION

Johannesburg, South Africa

CLIENT

Emira

ARCHITECT

Boogertman and Partners
Architects

SIZE

316,000 sq. ft. (phase 1)

STATUS

Completed in September 2017
(phase 1)

SERVICES

- Strategic Masterplanning
- Concept Development
- Civil Engineering
- MEP Engineering
- Structural Engineering
- Fire Engineering
- Sustainability Consulting
- Construction Monitoring



WSP in Africa's new headquarters offices in Johannesburg are the very embodiment of our company's culture of collaboration, innovation and putting people first. Every element of the space we occupy at Knightsbridge Office Park in Bryanston is centred around worker wellbeing, from its biophilic design principles to its active workspace floorplans.

The space perfectly expresses our people-centric strategy for workplace design because, in addition to being an anchor tenant for the office block, we were also professional engineering design services provider to the developer, Emira. This dual role gave us a valuable opportunity to directly showcase WSP's innovative approach to workplace design and our new base represents the first phase of Emira's scheme to transform the Knightsbridge site into a prime office complex.

We relocated to Knightsbridge because our former offices in Johannesburg, split over three buildings in two locations, were no longer fit-for-purpose. Relocation brought our team together into a single coherent space designed to inspire people and set them at ease, enabling talent to flourish. We occupy



Image by Boogertman + Partners

People-centric design with a focus on active workplace

WSP services underpin the employee wellbeing

High-performance design minimises energy consumption

62,400 sq. ft. over three floors of Building C, which has a beautiful roof top garden, symbolic of the biophilic principles that inform the development's design concept.

The garden serves to connect people with nature, while also contributing to the building's insulation and helping to manage storm water: accessible to all building users, it is a place for tenants to mingle and relax.

The floorplans are based on facilitating an active workplace that provides the spaces that best support our people's needs, whether that means interacting with others, or accessing quiet spaces suitable for reflection. The building is designed to invoke a sense of wellbeing, maximising natural daylight and fresh air, while minimising consumption of scarce resources. Outside, there is a running track; outdoor relaxation spaces; showers, lockers and cycle storage; and a green-roofed café, all serving to enhance wellbeing, support a better work/life balance and protect the environment. The building is designed to invoke a sense of wellbeing, maximising natural daylight and fresh air, while minimising consumption of scarce resources. It boasts 4-Star Green Star SA

Design rating certification thanks to the efforts of our sustainability team, whose aim was to reduce the building's reliance and on water and impact on energy resources while increasing functional resilience.

Lighting is controlled by occupancy sensors; rain water is harvested for irrigation of green spaces; and the taps have low-flow fittings to reduce water consumption. As well as minimising the building's impact on the environment, these features will also result in substantial savings on operational and maintenance costs. The building was constructed using timber sourced from sustainable sources and reinforcing was manufactured using over 90% recycled steel. In combination, the sustainable features result in is an estimated greenhouse gas emission of 137.1 kgCO₂/m²/year – that's a 40% saving compared to a standard office building.

WSP played a pivotal role in the design and fit-out of our own new building. The project involved every discipline in our Property business with high level of coordination required to deliver the project successfully and on time.

Not only did this project call on the wide

range of engineering disciplines across our business, including civil, structural, mechanical, electrical, electronic, plumbing, fire and sustainability, but it was the first fully modelled project in which all the different disciplines took part. This enabled seamless collaboration with the architect, project manager, quantity surveyor and full construction team to achieve a better coordinated outcome.

In the early design phase, we used our 3D assets to design an immersive, gamified, virtual reality rendering of the planned redevelopment for the precinct and a detailed rendering for our new HQ. Once we had completed the detailed rendering, we were able to host 3D coordination sessions from our previous offices. This not only ensured that the design process was thorough, but also enabled us to identify any potential problems early in the design phases, so we could correct them in the 3D environment. This provided a holistic and integrated design that allowed the whole project team to be truly proactive and collaborative in developing solutions. It also led to far more coordinated and streamlined construction phases.

ONE Deutsche Telekom

*Consolidating Multiple Offices
into a New Modern Workplace*

LOCATION

Bremen, Germany

CLIENT

Deutsche Telekom AG

ARCHITECT

IDEA Architekten

SIZE

35,000 sq. ft. (3,250 m²)

STATUS

Completed in November 2017

SERVICES

- Project Management
- Construction Controlling
- MEP Design Review

Deutsche Telekom wanted to bring together its staff located in multiple offices across the Bremen metropolitan area into a single office space designed in line with the most up-to-date workplace concept. The 'ONE' building comprises two sections with a total of 7,000 m² of office space, and is designed to achieve high sustainability targets.

Located along the Weser River, close to many amenities, including shops, restaurants and other office buildings, the attractive and distinctive design of the 'ONE' building fits perfectly into its environment. The building aims to achieve Silver level certification of the German Sustainable Building Association (DGNB), which stands for quality, energy and cost efficiency as well as a holistic, future-oriented development.

In addition to the traditional tasks of project management, one of WSP's roles was to safeguard the interests of the tenant, ensuring that their

requirements were taken into account by the developer during design and construction. Thanks to the tenant's early involvement, the project goals and quality standards were fixed at an early stage and then successfully integrated into the design. It was also important to reconcile the corporate guidelines for the new workplace concept with the occupant needs.

Our multidisciplinary expertise enabled us to provide the client with comprehensive advisory services. For example, we undertook a review of the MEP design to ensure compliance with the high demands regarding the indoor environmental quality. As a construction controller, we ensured the implementation of tenant requirements during the construction process.

The result is a modern office building with very high standards regarding environmental comfort, which also considered the latest developments in office building design.

Ensuring the tenant requirements are considered during design and construction

Reconciling corporate guidelines and the occupant needs

Reviewing MEP designs to ensure environmental comfort



Citibank One Bay East

*Raising the Bar for Energy
Performance Standards and
Worker Wellbeing*

***MEP engineering
support for a LEED
and WELL compliant
building***

***Reviewed the
base building
infrastructure to
meet Citi's needs***

***Implemented the
bank's international
fit-out standards***

LOCATION

Kowloon East, Hong Kong

CLIENT

Citibank

ARCHITECT

M Moser Associates

SIZE

330,000 sq. ft.

STATUS

Due for completion in 2018,
opening in 2019

SERVICES

- MEP Consultancy
- LEED and WELL Certification Support

As a leading global bank, with more than 200 million customer accounts in more than 160 countries, Citibank wanted its new offices in Kowloon East, Hong Kong, to be an exemplary workspace across multiple performance measures.

WSP was called on for support at an early stage following the bank's decision to take 18 floors at One Bay East, a new-build Grade A office development in the new and rapidly growing Central Business District of Kowloon East. Our role as MEP consultant was to ensure the client achieved high standards of energy efficiency, environmental and wellbeing standards in excess of the requirements of LEED Platinum. Furthermore, WSP would need to implement the bank's own stringent, international fit-out standards, whilst also meeting local codes and regulations.

Covering around 330,000 sq. ft., Citibank's tenancy was confirmed before



building work on One Bay East had been completed. Importantly, this meant our designers were able to review the base building infrastructure. Working together with the developer, client, and consultant teams, we ensured the base building MEP provisions were tailored to the needs of Citi's office fit-out. Upgrades to the building base would contribute to creating high performance space with a focus on worker wellbeing and energy efficiency. Reporting how the standards were maintained would be a consistent and key part of the project.

In addition to contributing to the building base, our design team provided MEP engineering support aiming at high performance energy-efficient design for the offices' final fit-out, including client meeting rooms, boardrooms, call centre, work stations, dining area and breakout spaces. We also provided support in designing main server room and floor server rooms for general office and call centre. We

made sure that our design followed the bank's Global Workplace Design Guide with customisation to meet the specific project needs.

A notable challenge was creating a suitable space for a gym - an essential component of Citibank's new workplace because access to fitness facilities is required for WELL certification. The original building structure didn't allow adequate fresh air for its proposed gym so WSP suggested relocating the facility to a floor above a sky garden (situated on the second floor). This allowed fresh air to be drawn up from the elevated green space into the fitness centre.

Supplying Citibank's meeting rooms with fresh air was another concern due to limitations with the original base building MEP provisions. To meet WELL requirements for reduced CO₂ content and superior air ventilation, we installed CO₂ sensors to a regular air handling unit fresh air dampener.

LEED environmental achievements for the project were wide ranging and spanned its whole life-cycle.

For example, occupancy sensors feature in 98% of the building's lighting, and 53% of the lighting has daylight controls. The system is managed through a Digital Addressable Lighting Interface (DALI) that enables the building's facilities managers to access, and manage, multi-directional lighting data. Motion sensors are used to manage the HVAC system, too. Wireless lighting switches and sensors were used to provide flexibility of space so that re-wiring for lighting provision will not be needed for the future reconfiguration of the office space.

WSP's support in providing energy-efficient MEP design at One Bay East contributed to the creation of a high-performance workspace that achieved LEED Platinum Certification and WELL Silver pre-certification.

HSBC Quai des Bergues

*Merging Seven Buildings into a Single
High-Performance Building*

LOCATION

Geneva, Switzerland

CLIENT

HSBC Private Bank Switzerland

ARCHITECT

MAKE Architects

SIZE

175,000 sq. ft.

STATUS

Completed in 2014

SERVICES

- Final Project Management and Quality Control
- Engineering & Construction Quality Control
- Testing & Commissioning Management
- Integrated Systems Control (Ist) Management
- Critical Facilities
- Consolidated Final Project Management (Moving & Commissioning)

This prestigious renovation project for HSBC Private Bank in Geneva aimed to create a friendly working environment for employees and a high-end client-facing front office. It involved merging seven structurally independent, historical buildings into a single office complex, featuring contemporary architectural design and spectacular views of Lake Geneva and the city's old town.

On a prime lake-front setting on Geneva's historic Quai des Bergues, the 16,300m² building unites five of the bank's Geneva offices into a spacious workplace for around 650 employees, with luxurious meeting rooms, private banking and dining facilities. The interior is divided into two complementary but distinct areas, one for staff, and the other for clients. Although a key aim of the project was to revive the historic buildings and integrate modern functions, sustainability was an essential consideration and the project had to align with Swiss energy regulations. WSP provided HSBC with quality

control and project management linked to commissioning the project and moving staff into their new offices.

Winner of the esteemed FX International Interior Design Awards 2014, this Class A office building has become one of the most efficient buildings in Switzerland, a considerable achievement in a country noted for its strict energy regulations.

The building was renovated in accordance with LEED Gold standard and the Swiss MINERGIE quality label. There was a particular focus on insulation, ventilation and optimal use of renewable energy, and an innovative cooling system design was implemented using the city's lake water. The building is triple-glazed, an unusual feature in Switzerland, and highly insulated to reduce energy consumption. A second basement was incorporated into the design in order to house a heat exchange and power plant. Natural materials used in construction, such as oak and stone, were locally sourced.

The new building consists of a two-storey basement, with the ground floor

*Designed to improve
interaction and
communication
between employees*

*Project management
and quality control to
ensure the success of
the project*

*Building renovated
in accordance with
LEED Gold and
MINERGIE standards*

and seven storeys above ground. The glazed atrium is a central element of the building. The mix of glass and timber in the building structure creates a visual identity for the office and unifies the previously separate structures. The glass façade admits an abundance of natural light on each floor and a four-metre-wide green wall on the West side of the 20-metre-high atrium brings nature into the office space.

The workspace is designed to accommodate open plan layouts to improve interaction and communication between employees, with the number of individual offices kept to a minimum. In order to maximise open space area, 40% of the building's structural elements were replaced and all but one of the cores was moved.

The building also incorporates a TIER III Data centre and a trading floor, as well as high-end client facilities.

A particularly interesting feature of this unusual development is the staircase that is designed so that it appears to be 'floating' between floors.



Workplace of the Future Is Smart

In today's competitive world, employees are increasingly expecting more from the workplace, while companies are seeking ways to attract and retain the best talent and improve productivity. Choosing a smart building approach to the workplace can help companies create differentiated experiences, improve collaboration and innovation, and optimise space and operational costs, while at the same time making best use of their real estate portfolio.





What is a Smart Workplace?

A smart workplace uses a combination of engineering systems, design approaches, and digital technologies to integrate previously disparate systems and create an intelligent building that responds to occupants' needs. It does this by providing real time information on space, people, environmental conditions and energy use. Smart workplace performance can be optimised through data collection and analytics, with its systems automated, remotely monitored and controlled.

The Business Case for Smart Workplace

It is widely-known that many 'millennials' value a healthy work environment very highly. Yet, according to statistics from the British Council for Offices, 39% of employees say their workplace does not support wellbeing.

As the line between private life and work is becoming increasingly blurred, employees of many businesses are expecting more from their workplace. They are looking for a comfortable environment equipped with technology services that match or exceed the performance of those they have at home.

With ubiquitous digitization of services, workers now expect that the workplace provides the same digital experience they are used to with services such as Airbnb, Uber and Amazon.

To attract the most talented employees, businesses have to raise their game to offer more technologically-advanced, attractive and healthy work environments that are likely to increase productivity.

Traditionally, businesses have regarded offices as a cost centre, so they have focused on optimising energy usage and minimising rental costs. But according to commercial property consultants at JLL, organisations annually spend on average \$3 per square foot per year on utilities, \$30 on rent and \$300 on payroll. This means that even a few percentage of increased productivity is more than potential savings on energy and rent.

Smart approach to workplace regards offices not as a cost centre but as a strategic driver of value. The focus is on increasing revenues through boosting productivity, innovation and collaboration, as well as attracting and retaining talent. This smart approach can also reduce absenteeism, bring down occupancy and service costs, as well as

utility and maintenance costs.

All stakeholders in a smart workplace can benefit: the business can achieve improved productivity and provide better work experience for employees; employees can be happier and more productive as they are able to interact with the building to be more efficient and create personalised environments; human resources teams can use the benefits of smart workplace to enhance employer brand, talent attraction and retention; while real estate teams can reduce operating costs, increase energy efficiency and enhance their ability to measure space performance and adapt as necessary; for developers or landlords, a smart workplace approach can secure a new revenue stream, increase the competitive advantage of their building, provide them with sustainability credentials and the positive publicity that can result from developing an innovative building.

How Are the Benefits Generated?

Smart buildings collect big data through sensors within the building, combining it with data from building systems, corporate applications and data generated by users to create analytic driven insights. This bank



of information about movement, light, temperature, carbon dioxide levels, energy usage and occupancy, combined with enterprise resource planning systems, enables businesses to optimise employee experience, facilities management, real estate and business strategies.

A good example of enhanced employee experience would be a mobile application that is integrated with the building: this could help the employee select an appropriate work setting for a task, locate people to work with who could help with the task, and adjust the heating and lighting settings to preferred comfort conditions.

By monitoring and adjusting CO₂ levels, the smart workplace can potentially enhance employee health and wellness and thereby decrease absenteeism. By analysing data about people movement and occupancy levels, the companies can gain insight into the best places in their buildings for productive collaboration to happen and identify which spaces are under-utilised.

A smart building approach can also help optimise lighting to improve comfort and reduce energy usage which results in very substantial cost savings. Heating, ventilation and air-conditioning (HVAC)

costs can be managed similarly through environmental sensors, fault detection and diagnosis analytics, and connected waste system, again improving comfort and reducing costs.

Creating a Smart Workplace

Technology has already transformed the way we work, yet in most cases the workplaces of today look very similar to early 20th century offices. To create a truly smart workplace fit for the 21st century, we should start by examining business model, strategy and culture to understand how to design an innovative workplace that can bring the most value to a particular business. This first step includes establishing the vision and experience that needs to be achieved. The next step is to develop a business case and strategy that considers the transformation and benefits the smart workplace will bring to the business, and the economic viability of the project. The next stage includes finding the best way to achieve objectives through engineering and implementing technologies. In addition, the way the business will operate its smart workplace must be fully thought through to ensure the business is equipped to optimise the desired

experience and reap the benefits.

WSP's Role in Developing the Smart Workplace

At WSP, we are passionate about integrating design, technology, and the human experience to create smart workplaces. We are pioneering in our use of innovative technologies such as Internet of Things (IoT) devices and platforms, large format interactive digital media, location-aware technologies and mobile applications, as well as our approach to business systems integration, cyber security, digital access, and advanced data analytics.

Through design-thinking, we co-design with stakeholders to deliver truly remarkable experiences. We develop smart workplaces that are not only simpler to navigate and deliver measurable safety, health and wellbeing gains, but are also operationally responsive and financially sound. The breadth and depth of our specialist knowledge mean we can provide all the services required for a truly 'end-to-end' smart workplace project – from business case modelling, through design technology advisory and core engineering, to post occupancy services.

Multinational Financial Services Company

Developing a Global Smart Workplace Strategy

LOCATION

USA

STATUS

Completed

SERVICES

- Smart Workplace Strategy

To assist a global financial services company in developing a smart building strategy, we worked closely with the company's stakeholders to identify existing workplace challenges that could be addressed through the application and integration of smart technologies.

Our scope encompassed the identification of key performance indicators (KPIs) to evaluate strategy success, financial analysis to illustrate implementation benefits, and evaluation of vendor solutions. Our smart workplace team included subject matter experts from our building technology systems, lighting design, sustainability/built ecology, advisory services, MEP, and commissioning services teams. The strategy that was developed will be applied to all new construction projects across the company's real estate portfolio.

In the early stage of the project, we worked with stakeholders that represented most aspects of the client's

business operations – from management and real estate to HR, IT and sustainability. Our goal was to explore with them and discover the potential benefits that smart solutions could offer to their business, as well as agree which internal business groups would maintain and operate which aspect of the strategy.

We gathered input on a range of topics including current business and operational practices, workplace standards, and representative real estate costs and contracts, then built a consensus, establishing a strategy they felt they could implement.

This included many sub-strategies that ranged from high-performance initiatives and healthy environments, to smart building solutions including software, data analytics, to mobile apps. The proposed smart solutions were designed to enable the company to make improvements in three primary categories – energy usage, real estate

***Defined measurable
key performance
indicators to
demonstrate
strategy success and
return on investment***

***Advised on
technology solutions
to achieve the
objectives***

***Created a financial
model for the
strategy***

portfolio, and staff productivity and happiness.

We helped define a roadmap that encompassed foundational elements that would need to be included in the client's future workplace projects on the path to the full implementation of the strategy. We also helped identify which of these foundational elements were truly transformative to our client's business and would require change management to assist with the move from the way they currently operated. These elements would involve the stakeholders, so they would need to implement appropriate changes in their own plans and strategies in order to adapt.

Next, we identified KPIs and measurement methods related to human experience, space, and energy efficiency. The goal was to use the KPIs to understand how proposed solutions were going to save energy, optimise space usage, and improve staff experience, satisfaction and ultimately productivity. The KPIs were designed to illustrate the financial benefits and to provide measurable feedback on the success of implementation.

A key facet of our involvement was developing a rigorous financial model, with assistance from our strategic advisory team, that demonstrated a clear and realistic return on investment for various aspects of the strategy.

Our strategy has demonstrated that there were numerous benefits for the company in procuring certain solutions globally. The benefits included ensuring consistency across their real estate portfolio and obtaining the better commercial value that could be provided by more standardised solutions.

Our client has seen value in establishing clear objectives around how they build space, and the roadmap to realise those objectives. The framework now established will help inform decisions on individual projects across the company so they fit with the overall strategy.



100 Adelaide St. West Office Tower

*Innovative Technology
Solutions for Improved
Automation*

LOCATION

Toronto, Canada

CLIENT

Oxford Properties

ARCHITECT

Kohn Pederson Fox
WZMH

SIZE

1,000,000 sq. ft.

STATUS

Completed in 2017

SERVICES

- Electrical Engineering
- Security
- IT
- Civil Engineering
- LEED Facilitation Consulting

100 Adelaide St. West (100 ASW) is a 1,000,000 sq. ft. (92, 903 m²) office tower on the site of a demolished historic office building. The new 42-storey tower retains the South and East sides of the original façade, together with its lighting fixtures and lobby, to maintain the important heritage of the former building, called the Concourse, which was built in 1928.

EY is the anchor tenant of the new building which is now often called the EY Tower. With occupant wellness in mind it features floor to ceiling windows, allowing daylight to flood the interior space, and as a further way to promote a healthy lifestyle amongst occupants, changing rooms, showers and bike parking have been integrated into the design.

WSP provided electrical engineering, civil engineering, IT and security consulting services for this high-rise office tower. We integrated an efficient

direct/indirect lighting system, along with daylight harvesting and occupancy based dimming control to optimise energy consumption.

100 ASW was designed and built with one integrated communication network for Building Automation System (BAS), electrical, metering, lighting, security, elevators, window controls, Wi-Fi, wayfinding and data service. We used over 91km of Power Over Ethernet (PoE) Cat6 cables for different systems such as heating valves, CCTV cameras and access control, improving reliability and safety as well as flexibility, and we integrated IP-based security and CCTV monitoring systems to reinforce security within the building. It is a complete end-to-end IP-based system directly integrated with the building's centralised automation platform. To ensure continuous energy performance within the building, electronic sub-metering has been installed to monitor usage and wastage for all systems.

***End-to-end IP-based
system integrated
with the building's
centralised
automation platform***

***Electronic
sub-metering for
better usage and
wastage monitoring***

***Helped the
building achieve
LEED Platinum
certification***

In order to support the tenants' green initiatives, the client worked through a highly integrated design and construction process to incorporate the broad range of ambitious sustainability and energy strategies that are present in the completed building. Sustainability measures include a green roof to minimise urban heat island effect, a rainwater cistern for irrigation, low flow plumbing fixtures and the use of materials that have been manufactured and extracted locally. Other examples of energy efficiency measures include a high-performance envelope, a dedicated outdoor air system with CO₂ control providing on-demand ventilation directly to interior spaces, a connection to Enwave deep lake water cooling, and LED lighting with occupancy and daylight control.

Through various initiatives we helped our client obtain LEED Platinum certification for the building.



US-based Global Technology Company

*Innovative Technology
Solutions for Improved
Automation*

LOCATION

USA

SIZE

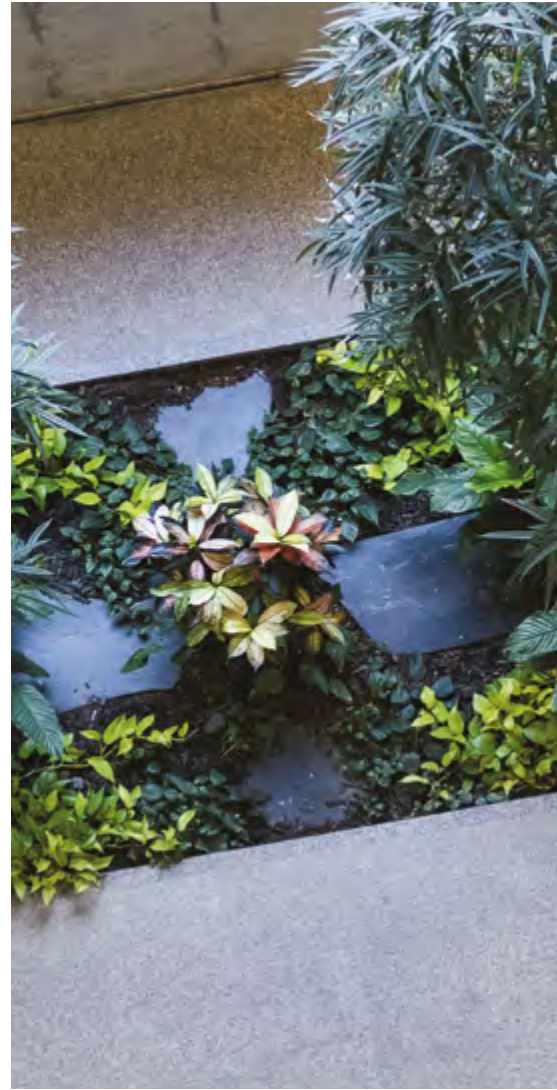
750,000 sq. ft.

STATUS

Completed

SERVICES

- Workplace Innovation Consulting
- MEP Engineering
- Lighting Design
- Acoustics



A global technology company, wanted to create a dynamic and forward-thinking office space that would help to attract top talent. WSP was selected to provide MEP engineering, lighting design, and acoustics for its 750,000 sq. ft. headquarters in the United States. In addition, we provided workplace innovation consulting services to define the vision and goals of a smart workplace, validate smart goals against existing workplace design standards, and provide technical design solutions, as well as vendor evaluation, to achieve selected smart initiatives.

In the capacity of the workplace consultant, we focused on evaluating whether the workplace design was achieving the business goals the client wanted to realise. Their focus was on using the space more efficiently, while ensuring that the offices were a great place to work for their employees. We helped them formulate and prioritise goals ranging from employee health



***Helped define
smart workplace
vision and goals***

***Built a business
case for a smart
workplace***

***Provided technical
design solutions***

***Evaluated, tested,
and recommended
vendors and
equipment***

and wellbeing, to space utilisation and user control. Our advice influenced the building system design towards a greater focus on occupant satisfaction rather than simply meeting engineering requirements for a functional workplace.

One of the features our solution included was a multi-sensor mesh installed throughout the offices that leveraged the lighting control system as a foundation for gathering information on how the building was used, including a feed on occupancy, light and temperature levels. Our main goal was to make sure that the system provided data that not only served the building's purposes, but could inform the client's decisions around improving employees' experience, optimising space usage and evaluating some of the building's architectural solutions.

An important part of our role was to evaluate different vendors to help the owner navigate the complexity and volume of technology solutions

available on the market. We ensured the chosen solutions fitted the client's actual needs, and also provided the required functionalities. Our expertise as buildings engineers was leveraged to ensure that the selected system delivered the greatest value possible to the owner and achieved the business goals we had outlined at the beginning of the process. In addition, we ensured the vendor had capacity to assist the client in getting to the data analytics phase.

Our team developed a business case that the client could present to their most senior executives. Our expertise and experience in the field meant we were able to make a case for selecting a certain type of equipment based on the business value we believed this equipment was going to bring and this approach changed the way the client procured equipment for their building. Instead of choosing the usual solution and maintaining the status quo, the

client selected equipment that will give them more usable data on how building is used.

As the project evolved, the client engaged WSP to test and validate the proposed solutions and equipment in our own Innovation Centre in Boulder, Colorado. Our ability to offer a lab environment was beneficial because it would have been much more difficult to test and validate in the client's production environment where their IT policies prevented the implementation of untested solutions on the company's network. Our innovation centre allowed us to test various vendors' solutions interoperability and evaluate performance before making a recommendation.

The application of big data for improving the workplace is evolving and this project is on the cutting edge of how evolving business needs are informing business decisions around the design and operation of workplace.

RBC Waterpark Place III

*Collaboration, Innovation
and Sustainability in a
Single Tower*

LOCATION

Toronto, Canada

CLIENT

Oxford Properties

ARCHITECT

WZMH Architects

STATUS

Completed in 2014
LEED Platinum certification
achieved in April 2016

SERVICES

- Sustainability
- Energy Modelling
- Electrical Engineering
- IT and Security
- LEED Facilitation Consulting

RBC Waterpark Place III is a new 1,200,000 square-foot office building in Toronto, located at 85 Harbour Street. This new high-rise office tower is 32 storeys above-grade with three levels of underground parking. The main tenants are the Royal Bank of Canada and Cisco Systems Canada Co.

The client had three major objectives for the design of this building; to increase collaboration in the workplace, integrate innovation in the design and create the most sustainable building possible. The building uses renewable energy from sources including an innovative water cooling system that uses water from the depths of Lake Ontario.

The thoughtful placement of glazing optimizes the amount of natural light entering the building to create a comfortable environment for the employees. The open space areas promote flexibility, collaboration and encourage creativity.

WSP work included the fibre backbone throughout the building that allows for a connected and customised use of technology. For example, when an employee enters the building and swipes their card, the elevator knows which floor to take them to. Room lighting and the temperature are adjusted to the occupant's profile and their preferences are stored. Not only does this provide an environment with optimal surrounding conditions but also helps save energy by tracking movement. A high number of connecting devices are integrated in the tower which allows for numerous building services to be computer-controlled, including blinds on the windows, for example.

WSP installed an electronic sub-metering system in the building that monitors energy and water use in the building and determines the energy efficiency levels, providing tenants with real-time consumption readings.

***Fibre backbone
allows for a
connected and
customised use of
technology***

***Room lighting and
the temperature
are adjusted to the
occupant's profile***

***High number of
connecting devices
integrated in the
tower***

The technology on Cisco's floor is so advanced that it is considered to be one of the first really 'smart buildings' in North America. Most systems used on this floor are integrated with IP technology. For example, each light has its own IP address and which means it can be controlled via an app or a computer. Lights are powered via Ethernet, not electrical wires, which safeguards the office against the risk of power failures, and the lighting fixtures can be easily moved for future needs. Occupancy and weather data is collected and is used by the air-conditioning system for optimal temperature control. The technological part of this work was carried out by Cisco.

The sustainable design solutions implemented in the design of the building enabled Waterpark Place to become the first office building in Toronto to achieve LEED Core and Shell Platinum certification.



A US Office of a Global Management Consulting Firm

Creating a Connected Workplace Experience

LOCATION

USA

STATUS

Completed

SERVICES

- Smart Solutions Consulting
- MEP Engineering
- Building Technology Design

WSP provided smart solutions consulting services to enable connected experiences, data gathering and analytics, and IoT platform integration for a 125,000 sq. ft. commercial office and customer experience centre. We also provided mechanical, electrical and plumbing engineering, and building technology design. We were selected to advise a leading global management consultancy on how to implement their vision of the workplace. By leveraging our Innovation Centre and our expertise in the latest technology solutions that are available, we translated the client requirements into clear specifications on what infrastructure, equipment and design changes needed to be made in their space to achieve their objectives.

We helped the client define their vision more clearly, and in a more holistic manner, by identifying the most suitable KPIs to enable them to measure progress in achieving their objectives more accurately. Existing KPIs were mostly concentrated around thermal comfort metrics, but we suggested taking a broader view of measurement criteria.


In addition, we recommended that equipment used for measurement, should also gather data that was usable for the client and provide easy access to live information about the space.

One of the proposed solutions the client decided to implement had a particularly tangible value for their business as it

allowed them to look into how space is utilised. They had a very high 'employee-to -desk' ratio, approximately five to one, because most of their employees were embedded in their client's offices. Therefore, it was essential for them to know how many employees were actually using their offices to better plan utilisation and capacity of space to ensure it would be sufficient for their workforce. The solution we proposed enabled the firm to understand both real-time and historical data on which space was being used, and how frequently.

We were also involved in the tenant lease agreement which included a discussion around what data the client would be given access to by the building owner, and what level of control they would have over building provided services within their leased space. It was crucial to set expectations related to the data that would be made available to the tenant, as well as what level of commitment there would be from the developer's side towards maintaining certain targets.

For example, if the tenant wanted to know the level of air quality in the space, it was important to define whether the owner would make that information available to the tenant. In addition, if the air quality was not at the appropriate level, the lease needed to outline what the developer's obligation was in terms of air quality improvement.



*Advised on
implementation of
the smart workplace
strategy*

*Recommended the
most appropriate
equipment*

*Developed a solution
that helps improve
space utilisation*

*Participated in
defining the tenant
lease agreement*

14th @ Irving

Creating an inclusive centre for the innovation economy

LOCATION

New York, USA

DEVELOPER

RAL Development Services

ARCHITECT

Davis Brody Bond

SIZE

240,000 sq. ft.

STATUS

Ongoing

SERVICES

- MEP Engineering
- Fire Protection
- Lighting Design
- Building Technology and Smart Consulting
- Commissioning
- Sustainability Consulting

WSP is designing a new tech-savvy Manhattan building that will become a smart, healthy, sustainable home for emerging and established New York City technology companies.

New York City has plans to create 100,000 new jobs in the tech/innovation sectors over the next 10 years, and 14th @ Irving represents the epicentre of that plan. Our challenge is to create a highly-flexible building that supports the City's dynamic and growing tech industry for years to come.

The new 240,000-square-foot building is being developed by RAL Development Services and designed by Davis Brody Bond, architect. It is a privately funded project, but is being developed in collaboration with the City of New York and the Economic Development Corporation. The project is currently in the land development phase, and demolition will soon begin on a former retail building currently located on the site. Ground-breaking is targeted in early 2019, with completion of the building by early 2021.

WSP is providing integrated consulting services including mechanical-electrical-plumbing (MEP) system design, fire protection, lighting design, building technology and smart building services, commissioning, and sustainability. Built Ecology is leading the integrative design process and sustainability services, which are central to WSP's mission.

WSP will also be working to help the building achieve Leadership in Energy and Environmental Design (LEED) certification from the U.S. Green Building Council (USGBC). We are

targeting LEED Gold certification at a minimum, but we have set our sights on Platinum, the highest rating by USGBC. The building is also seeking Platinum certification through Wired Score, a certification system for building's digital infrastructure.

When completed, 14th @ Irving will become a centre for inclusive training, collaboration, innovation and growth. It includes a digital skills training centre for New Yorkers seeking 21st century job skills, "step-up" office space for young companies that are not yet ready to invest in long-term leases, and traditional office space for established companies.

The intention is that 14th @ Irving is going to reflect what these innovative companies are doing in the community. While we are still in the exploration phase, that will likely include the integration of a smart sensor network throughout the building, and an app that will help occupants access the functions and programs within the building.

Those sensors will also provide building management with valuable information related to how tenants are using the building, monitoring occupants' patterns, indoor air quality, etc., and adjust to operate its systems more efficiently. They will be able to see where people are moving through the spaces to improve mobility, and see what is being over- or underutilized. It will become a dynamic building through ongoing data collection.

In the lobby, a large interactive display will help occupants and visitors present the functions and components

A smart sensor network throughout the building, and an app that will help occupants access the functions and programs within the building

Seeking Wired Score Platinum rating from a certification system for building's digital infrastructure

Computational design tools helped make smart design decisions that reduce energy use and cost



© Image Courtesy of Davis Brody Bond

of the building and ensure that they are using features to their maximum benefit, sharing details about energy consumption, water consumption, climate conditions, making each occupant an active participant in the building's success.

The design includes an accessible rooftop terrace that will feature vegetated gardens and a photovoltaic canopy, producing energy while also providing shelter.

WSP is leading the integrative design approach for the project, working closely with the architect, project team, and ownership from the concept phase through construction. Our role on projects is to enable and deliver great design solutions. On this project, aspirations to provide smart, healthy and sustainable design solutions could pull

the project team in different directions, so WSP facilitated an integrated design workshop with all key stakeholders to discuss and prioritize the design vision.

One way WSP has already helped RAL toward its goals was the evaluation and selection for the heating-ventilation-air conditioning (HVAC) system. We utilized computational design tools to help the team make smart design decisions that reduce energy use and cost. Our analysis allowed us to identify solar impacts on the building's heat and cooling loads, assess potential daylight access for occupants, and optimize mechanical systems based on predicted demand patterns.

From an energy analysis came a plan that will result in lower energy costs for the building by using an air-cooled variable refrigerant flow (VRF) system.

The result is an efficient HVAC system that does not require a cooling tower and condenser water system for heat rejection, which will free up space on the roof as well as shaft space on each floor. By evaluating the space and understanding the project goals and challenges, we were able to get a win-win, selecting a more efficient system while saving lots of roof space for building amenities.

WSP has worked with RAL as strategic sustainability advisors on previous projects, but this is the first time WSP has provided fully integrated design services for the developer. When RAL was building the design team they emphasized the benefits of hiring a single consulting firm to lead the building system design, sustainability initiatives and smart building strategy.

Salesforce Tower

*A Symbol of New Technology,
Wellness and Sustainability*



LOCATION

San Francisco, USA

CLIENT

Boston Properties and Hines

ARCHITECT

Pelli Clark Pelli

SIZE

1,800,000 sq. ft.

STATUS

Completed in 2018

SERVICES

- MEP Engineering
- Fire Protection
- Built Ecology/Sustainability Consulting
- Technology Systems

Salesforce Tower is an iconic building on the skyline of San Francisco, and the focal point of the Transbay redevelopment area. The tower is located in the SoMa (South-of-Market) district of San Francisco, above the new transit centre which is set to become a major transportation hub for West Coast USA. At a height of 1,000 ft., it will be one of the tallest buildings west of the Mississippi river.

Sustainability and wellness will be amongst the hallmarks of the design of this building. Through the services provided, WSP made sure the tenant's employees could work anywhere in the building. We used a converged network approach to include VOIP/WAN/LAN - this not only increases the building's performance and functionality, but

Convergence of the building management and metering systems

HVAC system provides high level of comfort while remaining energy-efficient

Systems installed in the raised floor making the office space flexible



also its environmental sustainability, through the convergence of the building management and metering systems. It will enable the building's operator the ability to gather and make informed decisions, based on key metrics from the building.

We also provided information technology design services for the transit facility. Located in one of the busiest areas of San Francisco, security is an important aspect in the design of this tower. We integrated a visitor information system to better manage who comes into and out of the building that incorporates a large scale schedule board and digital signage.

The HVAC system we have designed will help achieve high standards of

comfort while remaining energy-efficient. Every effort has been made to optimise the quality of the indoor environment for optimum employee satisfaction resulting in increased productivity. For example, occupants can adjust the temperature at their workstations to suit their individual needs.

With floor to ceiling windows, a high level of natural light penetrates the building. Since systems are installed in the raised floor, the office space is flexible and can change throughout time, by easily reconfiguring power, data and air systems. Their location along with the low velocity air supply, allow for this system to produce little or no noise, an important feature for occupants. To complement the beauty of this building,

a 5.4 hectare city park has been designed at the bottom of the tower for everyone to enjoy.

Our building services designs include many innovations for low environmental impact. These Class A offices, incorporate sustainable features such as LED lighting, tenant and system metering, regenerative elevators and high efficiency boilers and chillers. We designed a very low energy floor-by-floor under floor air distribution system which improved ventilation efficiency as well as air indoor quality. The free cooling and heating systems resulted in substantial energy savings. WSP assisted the client in achieving LEED Platinum certification.

High Performance Workplace

Sustainable and Commercially Viable

A high-performance workplace is one that achieves excellence across multiple measures; from energy-efficient building services, minimal whole-life building costs and a reduced carbon footprint, to elements that optimise worker wellbeing. It follows that a high-performance workplace is a firm foundation for business success.



While our priority is delivering inspiring workplaces that nurture staff performance, we also understand the need for work environments to be cost effective as across the globe commercial property costs are rising and constitute more and more of total business expenditure.

A Case for Green Buildings

Greener buildings offer a multitude of economic, social and environmental benefits. The case for lower energy costs is particularly clear; according to the World Green Building Council, green buildings achieving the LEED certification in the US and other countries consume 25% less energy and 11% less water than traditional buildings.

A green office building is also an important tool in the battle for recruiting and retaining talent. An environmentally sound building sends a clear signal to the wider world that its owner/occupier takes their wider, corporate social responsibilities seriously – an attractive prospect to environment conscious millennials.

The social benefits of green buildings are valuable for employers too. Research led by the Center for Health and the Global Environment at the Harvard T.H. Chan School of Public Health suggests that workers in green, well-ventilated offices record a 101% increase in cognitive scores (brain function).

Leaders in Sustainability

Our expert teams aim to add value at every stage of a project from conception to completion, while taking a long-term view of a building's total cost and enhancing end-user wellbeing. This approach starts at the concept stage with the design of a future-fit building that uses low embodied carbon materials where possible. A meticulous construction management programme



350 Mission Street, San Francisco © Skidmore, Owings & Merrill LLP | Cesar Rubio, 2017

minimises waste, and exploits lean construction principles, while our structural design maximises the building's lettable space and fosters its flexibility.

Whether the scheme is a large new office complex or the renovation of an existing workspace, we deliver the benefits of green design. We achieve this through a mix of passive and active design features to create energy savings, and improved building function, wherever the potential arises. For example, well insulated building envelopes and double-glazed windows reduce the need for heating, while simple grey water recycling systems reduce water demand. We take advantage of the latest green technologies too, such as using chilled beam technologies to cool and ventilate

the workspace.

WSP's commitment to sustainability and ability to produce tangible energy savings has led many of our schemes to receive prestigious environmental certifications, such as LEED, BREEAM, Miljöbyggnad and Green Star.

Future Ready Design

Our designers and engineers are careful to future-proof all features of our buildings – an important element of long-term sustainability. Fit-outs need to be easy to maintain and look good year after year; building services need to be easy to operate and adapt to changes as well as house emerging technology that will become tomorrow's standard. We create structures that can withstand the effects of climate change, with

power systems designed so they work efficiently even as energy costs continue to rise.

Sophisticated technology, such as Building Information Modelling (BIM), forms an important element of our approach to creating buildings that are sustainable in the long run.

Our intelligent building systems, for example, use sophisticated networks of sensors that can respond to, and even predict, workers' need for variables such as light and warmth. WSP is harnessing the very latest trends in Information Communication Technology (ICT), to deliver improvements in resource and energy management, ensuring the workplace performs day after day, after day.

22 Bishopsgate

London's First Vertical Village

LOCATION
London, UK

CLIENT
Lipton Rogers Developments / AXA

ARCHITECT
PLP Architecture

STATUS
To be completed in 2019

SERVICES

- Structural Engineering
- Acoustics
- Façade Access
- MEP Engineering
- Fire Engineering
- Geotechnical
- Security
- Vertical Transportation
- BIM Coordination
- Transport and Logistics
- Energy
- Sustainability
- Waste

Accommodating up to 12,000 people, working for many different companies, 22 Bishopsgate, will become the tallest building in the City of London when it is completed. The 62-storey commercial tower will provide a wide range of facilities for occupants while becoming London's first 'vertical village'.

The two-million square-foot gross internal floor space will include 100,000 sq. ft. of amenities and social spaces that will provide occupants with facilities to have a meal, relax and exercise, all within their workplace. As well as communal spaces throughout the building, on the ground floor, there will be art installations visible from the street and this is where art events and classes will be held. At the top of the building, the free public viewing gallery will offer the general public opportunities to enjoy views over London, free of charge. There will be a gym on the 25th floor providing group classes, while a retreat centre on Level 41 will offer a variety of wellness services. In the basement, approximately 1,500 bike racks will be available along

with around 100 showers and a repair shop to encourage people to cycle to work. There will also be laundry facilities

WSP is providing a wide range of consultancy services for this new landmark which is being built on the original foundations of the demolished core of a previous project which stalled in 2012. Our structural engineers are working with the architects to produce an elegant building which utilises the majority of the existing foundations, including nearly all the columns. This inventive solution will provide 20% more floor area than the original design, as well as reducing construction time.

We also employed innovative structural support solutions to overcome the challenge of installing a climbing wall on the glazed facade at a height of 125 metres, with unique views over London.

Our building services engineers aim to deliver an extremely efficient building with high targets for sustainability, comfort and occupant wellbeing. The building will require a large volume of services and systems designed with built-in flexibility to accommodate the many 'as-yet-undecided' facilities and office layouts required by future tenants. The 2.85 metre high ceiling, and the energy efficient ventilated facades with full-height windows, allow for 20% more natural light inside the building compared with the average office building.

We are providing a full scope of acoustic consultancy services including architectural acoustic design, and building services noise and vibration control, to provide occupants with an acoustically pleasing environment. One of the most challenging features of the design has been a group of emergency generators located in the upper floors of the building requiring significant noise and vibration control.

22 Bishopsgate is the largest project by floor area in the UK to be registered for WELL certification, and it has also been designed to achieve a BREEAM Excellent rating.

*Structural solutions
enable 20% more
floor area than the
original design*

*Flexible building
services design
aiming for BREEAM
Excellent rating*

*Acoustic design
to enable an
acoustically pleasing
environment*



Mashreq Bank Headquarters

A new landmark on Dubai's renowned skyline

LOCATION

Dubai, United Arab Emirates

CLIENT

Mashreq Bank

ARCHITECT

Skidmore, Owings & Merrill

STATUS

Due for completion in 2019

SERVICES

- Building Services Engineering
- Structural Engineering
- Architect of Record
- Fire & Life Safety
- Utilities
- Construction Supervision
- Environmental Planning & Management
- Traffic & Transportation

WSP was commissioned by Skidmore, Owings & Merrill to provide engineering design services, and by Mashreq Bank for construction supervision services, for Mashreq Bank's new headquarters building, located in Dubai's Downtown Burj Khalifa district. The 72,000m² development site is located opposite Dubai Mall and forms part of the Dubai Properties Group Masterplan area adjacent to Financial Centre Road.

The development comprises 39,700m² gross floor area of premium office space. At a height of 151 metres, it will be an iconic landmark in one of Dubai's key development areas. Upon completion, the bank will relocate its headquarters from Al Ghurair Centre in Deira to this new office location. A unique feature of the building is a four-storey crown structure that forms the top four floors of the building and extends up to 27 metres beyond the main building's footprint.

The lateral structural system of the tower comprises a reinforced concrete core placed at the corner of the tower along with two braced reinforced concrete frames at the end of the building's L shape. The typical framing system consists of a 200mm thick reinforced concrete flat slab with drop panels and thickened zone along the slab edge.

The top four levels of the tower

cantilever beyond the foot print of the L shape floor plan. The primary cantilever structure consists of a system of four structural steel built-up cantilever trusses located above the executive levels with only eight struts penetrating the office space.

The glass facades enable daylight harvesting, while the horizontal and vertical shading systems minimise glare. Combined with the L-shape of the building, it allows occupants to have a clear view over the city. The building also includes a 350-seat auditorium, staff dining room, and a landscape garden. The structural design allowed for the building to maximise the floorplan while providing flexibility.

WSP's services also included a traffic impact study for the development, as well as design of service accessibility, on-site car parking and drop off areas, and general vehicular circulation. The site is located within a wider complex masterplan area, with a full junction assessment exercise undertaken to ensure an acceptable level of service could be achieved at all accesses to the site. We provided extensive stakeholder engagement to co-ordinate accessibility to the site with other developments in the area undertaken by various consultants.

This tower, due for completion in 2019, will become a new landmark on Dubai's renowned skyline.

*Structural design
maximises floor
space and flexibility*



Government Building in Vancouver

Imagining a New Future for a Historic Site

LOCATION

Vancouver, Canada

CLIENT

Government of Canada

SIZE

96,600m²

STATUS

Feasibility study completed in September 2017

SERVICES

- Sustainability Consulting including:
 - Energy Modelling for Low Carbon Study
 - LEED Feasibility
 - WELL Feasibility
 - Net Zero Water Feasibility
 - Whole Building Life Cycle Assessment (LCA) Comparison
- Design Services to Support Costing Exercise including:
 - Mechanical Engineering
 - Electrical Engineering
 - Building Envelope
 - Structural Engineering

A historic building in Vancouver is in growing need of restoration and redevelopment if it is to retain its relevance for the next hundred years and beyond. The Canadian Government wants to improve the building's performance standards, for the sake of its workers and the environment, and make better use of this valuable space in Vancouver's central business district. As part of its long-term plan to consider the building's future, the Canadian Government asked WSP to undertake a feasibility study by creating four different options for the site.

A baseline option was first created showing how the building could meet the current minimum design criteria stipulated by the Government of Canada. The three additional options were prepared by combining different Greenhouse Gas (GHG) reduction measures and comparing those to the baseline option. A preferred option was chosen among the four scenarios and analysed for reduced water use, health

Creating four scenarios for a future-ready redevelopment

Considered cost, carbon impact, water reduction, use of wood and occupant wellness

Factored in emerging trends and technologies

and wellness, LEED certification and embodied carbon impacts.

Our interdisciplinary team, including sustainability and energy efficiency experts, and mechanical, electrical, building envelope and structural engineers, as well as outside services from a cost consultant and architect, needed to create a viable low carbon option for repurposing this building.

These options would be differentiated by their overall aim, with one option focusing more on cost-optimisation and another focusing on the greatest carbon reduction possible to achieve a carbon neutral rating. Though each option would have different specific focuses, each would need to meet the Canadian Government's high minimal environmental standards.

Our team carefully considered high performance design strategies for the various components of the site. The preferred scenario is predicted to achieve a 97% reduction in GHG emissions with





only a 0.3% increase in building's life cycle cost (considering a 25-year period). Some of the measures included in the preferred option comprise:

- Radiant HVAC system with displacement ventilation and heat recovery;
- Strategic use of electrochromic glass;
- Comfort mobile app enabling relaxed indoor air temperature setpoints; and
- Free cooling via an atrium 'lung' duct that blends architecture and engineering.

The preferred option included additional analysis for reduced water use, embodied carbon, and health and wellness.

WSP evaluated the ability of the project to achieve the WELL Building Standard, which assesses work space against wide-ranging criteria of elements that affect worker wellbeing. For example, WELL requires circadian lighting for worker comfort, access to healthy food, indoor

greenery and 'active' work stations.

Our experts evaluated water conservation measures that could be applied to the preferred option. WSP developed scenarios that are predicted to achieve a 76% reduction in potable water use at the site.

We considered impact of utilising a wood structure for the project in comparison to a conventional reinforced concrete structure. This would enable the Canadian Government to position itself as a leader in modern, sustainable wood construction methods and support British Columbia's forestry industry. Using a comparative whole building lifecycle assessment, the use of wood is predicted to have a 16% embodied carbon improvement over the conventional structure.

Each scenario we devised was based on intelligence gained from our client about how it wanted to create a smart, agile work space, capable of adapting to the needs of workers over the next 25 years or more. We aligned our strategies

to meet these goals. We also factored in emerging technologies, such as the use of electrochromic (smart) glass that can control the amount of light and solar radiation that penetrates the glazing.

The result is that the Government of Canada has four, in-depth options that analyse the feasibility and costs of different approaches to securing the future of this property and positioning the site as a landmark, green and future-ready workplace.

102 Rivonia Road

Sustainable Solutions for a Two-Tower Building

LOCATION

Johannesburg, South Africa

CLIENT

Redefine Properties

STATUS


Completed in 2014

SERVICES

- Electronic Engineering
- Electrical Engineering
- Sustainability Consulting

Located in the financial district of Johannesburg, South Africa, 102 Rivonia Road comprises a pair of tower blocks interconnected on a number of floors. The 40,000 m² office space in one of the towers is home to the African headquarters of global professional services firm EY, with the other tower occupied by various other tenants. 102 Rivonia Road was constructed to replace EY's former office space, so a fast-track process was put in place to meet the firm's strict 18-month completion deadline. The building is situated in a strategic location offering connectivity to major transport links, including the airport.

A plaza has been designed at street level to encourage collaboration and communication between colleagues from different parts of the office complex. In EY's tower, this collaborative environment is reinforced through the use of criss-crossing bridges above the atrium. The office space has been designed with an activity-based philosophy in mind, providing employees with a variety of amenities and choices of where and how they wish to work. The inclusion of green features such as the green wall in the reception area that reduces noise, improves air quality, and induces a general sense of wellbeing, is central to the design.



**50% more
energy-efficient
than the average
office building**

**Passive shading
system reduces
the need for air
conditioning**

**Air cooled chillers
and fire systems
recycle used water**



© Chad Henning Photography

We provided electrical design and sustainability consulting on the project.

This new development is designed to be 50% more energy-efficient than the average office building offering a reduction in carbon emissions of approximately 130kg of CO₂/m²/year compared with a similar building. The use of passive shading systems prevents excessive heat in the office and reduces the need for air conditioning. A solar control glass was used for the fully glazed façade which blocks up to 72% of solar heat by reflecting it to the outside while still admitting an abundance of natural light: this creates a comfortable

environment for the occupants. The glass façade also provides 60% of the floor area with a view on the outdoor. Additional passive design strategies allowed us to further reduce the energy consumption while achieving an optimal indoor temperature.

Water consumption was significantly reduced thanks to air cooled chillers and fire systems that recycle used water, and rain water is harvested and used for toilet flushing. The use of fly ash in the Portland cement allowed a 30% decrease in material use, further lowering the carbon footprint of the project.

Presence sensors control lighting to

avoid unnecessary usage when the open office space is unoccupied, and spaces smaller than 100 square-meters have individual switches. The objective was to achieve an electricity consumption of less than 2 watts per square meter per 100 lux.

These green building design solutions resulted in both towers achieving a 4 Star rating in the Green Star SA rating system.

Tencent Seafront Headquarters

Applying the Connectivity of a Suburban Campus to a Vertical Urban Setting

LOCATION

Shenzhen, China

CLIENT

Tencent Corporation

ARCHITECT

NBBJ, Tonji Architects Co., Ltd.
Shenzhen as LDI

SIZE

350,000 sq. m. GFA

STATUS

Completed in 2017

SERVICES

- Building Services Engineering

Tencent Corporation, one of the largest Internet and technology companies in China, has recently completed its new headquarters in Shenzhen, comprising two Grade A office towers 190m and 250m high. The design adapts the concept of a suburban campus to a vertical urban setting.

The two buildings, connected by three horizontal bridges, echo the company's networked philosophy and the interconnectivity of the web. This new development offers 354,000 m² of office space where an additional 12,000 employees can be accommodated as the company grows.

WSP was responsible for building services engineering from concept design and the review of design works, to coordination during the tender and construction phases. Our solutions led to a 40% reduction in carbon emission and energy consumption, compared with an average office building. The orientation of the towers and their height allow the prevailing winds to be caught and used as ventilation in the atria. To mitigate the high temperatures in Shenzhen, a curtain wall with a responsive modular shading systems

has been integrated in the design of the towers minimising glare and heat gain. In-room temperature is automatically controlled based on the number of people within the room for maximum efficiency. Tencent HQ is aiming to achieve both LEED Gold Rating and perform as a 2-star China Green Building.

Employee wellbeing was an important priority for Tencent when creating this new workplace.

The bridges connecting the two towers offer diverse amenities and communal spaces where employees can meet, such as an exhibition hall, a company museum, a games room, dining facilities, a library and a company university. Other facilities that help promote wellbeing include a fitness centre with a swimming pool, a high-rise running path across the towers and a rooftop garden where occupants can relax and enjoy outdoor space. Employees will be welcomed by hologram tours, a way for Tencent to integrate technology in the building.

This project was awarded Best Chinese Futura Megaproject Gold at the MIPIM Asia Awards in 2016.

*40% reduction in
carbon emission
and energy
consumption*

*Aiming to achieve
LEED Gold
sustainability
rating*



350 Mission Street

*Adaptable and
Energy-Efficient
'Urban Living Room'*

***Underfloor systems
maximise floor
space***

***HVAC systems
reduce energy
use and ensure
occupant comfort***

***Storm water
harvesting and grey
water recycling
systems enable 30%
water savings***

LOCATION

San Francisco, USA

ARCHITECT

Skidmore, Owings & Merrill, LLP
(base building)
Gensler and Mark Cavagnero
Associates (Tenant Fit-out)

SIZE

340,000 sq. ft.

STATUS

2015

SERVICES

- MEP Engineering
- Fire Protection
- Telecommunications

SERVICES (FIT-OUT)

- MEP Engineering
- Fire Protection
- LEED Consulting
- Commissioning

350 Mission Street is a commercial tower located in South of Market district of San Francisco. This 340,000 sq. ft. building includes 30 storeys of Class-A office space which is leased entirely to the technology company, Salesforce. WSP provided services for the core and shell, and the fit-out for Salesforce.

The lobby of the tower is fully transparent and opens up to the street. With a giant LED screen displaying digital art, it invites people into the building and creates a connection between Salesforce and the community. This communal area can also be used for pop-up events. Its openness refers to the idea of an 'urban living room' and reinforces the concept that informal collaboration leads to an increase in productivity and innovation.

We were commissioned for the fit-out design of the office space and the lobby. Flexibility being a key objective for our client, we needed to ensure the building could adapt to future needs. Integrating underfloor systems helped to maximise floor space and large glazed windows allow daylight into the building, as well as clear views to the outside, making this workplace as comfortable as

possible for its occupants. To improve thermal comfort, occupants can control temperature at their work stations and adjust the amount of air they receive. To encourage active participation in the sustainability program, bicycle storage and electrical car charging stations are available.

With the aim of reducing the energy consumption of HVAC systems, we installed an underfloor air delivery system, utilising less energy than a conventional one and maximising occupant comfort. Across each floor, sensors are placed to control various systems, which optimise the energy usage based on occupancy. This includes lighting systems, power outlets and HVAC, equating to a 20% reduction in energy usage. 100% fresh air is supplied within the building, further reducing energy consumption by minimising air conditioning. We designed storm water harvesting and grey water recycling systems for all non-potable uses, resulting in 30% water savings. These sustainability initiatives contributed to the building achieving a LEED Platinum rating from the U.S. Green Building Council.



Deloitte Tower

Montreal's first High-Rise Building to Achieve LEED Platinum Certification

LOCATION

Montreal, Canada

CLIENT

Cadillac Fairview Corporation Limited

ARCHITECT

Design Architect: Kohn Pedersen Fox Associates; Executive Architect: B + H Architects and Lemay

SIZE

501,203 sq. ft. of Gross leasable area

STATUS

Completed in 2015

SERVICES

- LEED Project Management
- Building Energy Simulation
- Performance Measurement & Verification (M&V)
- Green Education Program
- Civil Engineering

Deloitte Tower is the first privately funded commercial office tower to be built in Montreal's downtown district in over 20 years. Situated between the historic Windsor Station and the Bell Center, this energy-conscious mixed-used development includes retail and office space, a courtyard, as well as a seasonal reflecting pond and ice-skating rink.

The tower was designed to meet the needs of Deloitte, an anchor tenant occupying seven of the 27 floors. For Deloitte's employees, the new building offers, a variety of amenities within 800 metres of the tower which, being close to multiple transport options, also means an easy commute many for its occupants. There are 197 bicycle racks and 15 showers to promote an active lifestyle and encourage sustainable options for getting to work.

The courtyard offers pedestrian pathways, trees, a seating area and a canopied path, leading to outdoor spaces. The collaborative interior space provides employees with choices in the way they work, fostering team work and innovation. Over 18 workplace options are available, from quiet space, booths, and workstations with a treadmill, to

collaborative spaces and meeting rooms. Employees can adjust the ventilation for a comfortable temperature at their workstations. Lounges, cafes and a wellness centre are just a few of the further benefits offered in this office space.

WSP (by acquisition of Halsall) was engaged to create a sustainability strategy for the project, manage the LEED Platinum certification, provide building energy modelling and design the measurement and verification plan. One of the key project successes was iterative energy modelling to reduce energy use and optimise the systems. Compared with the Model National Energy Code for Buildings (MNECB) baseline, this project was designed to reduce the cost of total energy use by 38%, which also resulted in lower emissions. Building services at the Deloitte Tower, such as electricity, heating, cooling and gas, are metered and measured to track performance. Tenant sub-metering data is used to provide real-time feedback on energy use.

Further contributions to the Deloitte Tower's energy-efficient design included lower lighting density,

Created a sustainability strategy and managed the LEED Platinum certification

Used iterative energy modelling to reduce energy use and optimise the systems

Building designed to reduce the cost of total energy use by 38%

daylight harvesting and LED lighting technology; high-efficiency mechanical equipment; demand control ventilation; heat recovery from exhaust air; and high thermal performance of the building envelope. Other key design features include premium air filtration and enhanced climate control for improved ventilation, occupant comfort and health.

To save water, various features were integrated including a cistern harvesting rainwater from the roof, which accounts for 20% of the water needed for the restrooms in the building. Low-flow water fixtures resulted in a decrease of 47% in water consumption. The cistern also provides 100% of the water needed for irrigation.

The tower is Montreal's first high-rise office building to achieve LEED Platinum certification, putting it at the forefront of sustainable office design in Canada. In addition, the building's tenants are required to pursue LEED Gold or Platinum for Commercial Interiors (CI), a program which focuses on establishing new reduction targets every year based on water and energy consumption.



Swiss Life Headquarters

Energy and Cost-Saving Workplace

LOCATION

Garching near Munich, Germany

CLIENT

SwissLife AG

ARCHITECT

Ackermann Architekten BDA

STATUS

Completed in 2015

SERVICES

- Project Management (AHO 1-5)
- DGNB Gold Certification Support

Swiss Life Germany relocated 700 employees into their newly finished headquarters, close to the Garching University campus at the northern boundary of Munich. A key factor in Swiss Life's selection of this site was its accessibility to their employees.


Swiss Life intended their new head office to make an iconic statement in the area. Its unusual "G" shape facilitates wellbeing within the office spaces by creating a building that is both highly functional and accessible. With open space, retreat areas and silent zones, the modular building enables efficiency for every type of work. The selection of colours and the extensive use of glass contribute to an uplifting work environment.

The building's gross floor area totals 33,000m² including flexible office spaces, a courtyard and a roof terrace. Its design allows the company to accommodate future needs, whether it be changes in size or use, such as sub-letting. Meeting rooms are centrally located to encourage interaction between employees. In addition, the building provides sports facilities, a guest casino and designed cycle and walkways paths.

WSP's multidisciplinary mandate enabled our project team to provide the client with comprehensive advice, including sustainability, project management and planning services. Great importance was placed on sustainability to meet the project's green agenda in accordance with the German Sustainable Building Council's (DGNB e.V.) specifications. The building was certified 'DGNB Gold' with an overall rating of 73.9% and a particularly high score for Ecological and Economical quality. The sustainable building design was implemented throughout the construction process, and the materials used followed the ecological 'norms' for buildings.

The office's low energy consumption is mainly attributable to the triple glazing and thermal insulation. In addition, the concrete core's temperature control system provides an efficient and sustainable way to cool the building, while a LED lighting system was installed throughout the building, both indoors and outdoors.

The sustainable design initiatives resulted in a 15% savings compared to average building operating costs.



*Planning and project
management
services for wellbeing
oriented workplace*

*Supported the client
in obtaining DGNB
Gold sustainability
certification*

*Achieved a 15%
savings compared
to average building
operating costs*

South Beach Towers

Vertical 'City in a Garden'

MEP design ensures energy efficiency

Design contributed to reduced operating cost

LOCATION

Singapore

CLIENT

South Beach Consortium Pte. Ltd

ARCHITECT

Aedas and Foster + Partners

SIZE

153,060 m²

STATUS

Completed in 2016

SERVICES

- MEP Engineering
- Air Conditioning
- Mechanical Ventilation
- Sanitation
- Gas
- Fire Protection
- Extra-low Voltage (ELV) Services
- Vertical Transportation

South Beach Towers is an urban conservation project occupying an entire city block in downtown Singapore. The seven-year project combined the restoration of existing facilities and the construction of two new buildings, the 45-storey South Tower and 35-storey North Tower. Home to 700 trees and palms, 400 m² of green walls, and 10,000 m² of shrubs, it embodies the budding concept of a vertical 'city in a garden'.

The north tower is a multi-tenant office building for high-profile companies such as Facebook, Instagram, Expedia, Sanofi and Lego. With more than 62,000 m² of Grade A office space, the building is also equipped with a trading floor for tenants from the financial services industry. The space can be easily adapted to changing needs thanks to features such as knock-out panels in the floor, which allow for internal stairs to be installed for easy access between floors. At the same time, the column-free floorplate maximises space for tenants.

A key challenge was to transform this former military site, which was inaccessible to the public, into a new mixed-use development that includes a hotel, offices, residential units, shops and restaurants where people can live, work and play. The ground floor now has direct access to the street to facilitate movement of occupants and visitors, and with links to major transport hubs, including the Mass Rapid Transit (MRT) that is directly connected to the building, it is easy to get around, a feature tenants highly appreciate.

An environmental canopy bridging the two buildings protects pedestrians from the sun and rain and this green spine, also creates a microclimate to provide a comfortable outdoor environment for occupants to relax in, even during the warmest hours of the day. In a tropical climate like Singapore, this is an extremely attractive feature. With their impressive views, sky gardens on the 11th, 21st and 33rd floors, provide companies with pleasant break-out

spaces and areas for hosting events for their employees and clients.

As building services consultant on the project, WSP ensured all systems were aligned to the client's objectives in terms of sustainability and energy efficiency. Photovoltaic cells were integrated into the canopy as a reliable way of producing electricity and reducing operating costs. Rainwater harvested from the canopy and the towers is directed to an underground holding tank, and then used for the irrigation system, as well as different water features in the public spaces. These measures ensure the reduction of water wastage to support the sustainability strategy of the project and lower operating costs.

The inclined facades collect wind to naturally ventilate the ground floors, providing fresh air within the building and reducing the need for air conditioning. The multiple sky gardens in the towers further enhance air quality for the building occupants, improving the microclimate through increased natural air circulation. Energy consumption is additionally reduced through the use of heat exchange technologies for the cooling systems throughout the buildings.

Other sustainable features include charging points for electrical vehicles, and motion sensors installed throughout the towers, in the restrooms and staircases, to help reduce energy wastage.

WSP provided air conditioning, mechanical ventilation, electrical, plumbing, sanitation, gas, fire protection, and extra-low voltage (ELV) services, and lift systems. We helped achieve the client's goal within time and budget through a multi-tender strategy.

The towers' environmental design and green technology granted them several globally recognised certifications: the BCA Green Mark Platinum Award 2012 for Commercial and a BCA Green Mark Platinum Award 2012 for Residential, a testament to Singapore's 'city in a garden' vision.



Flexible Workplace and Culture of Sharing

The physical workplace is changing to become more open, collaborative, and egalitarian. This mirrors a shift towards flexible work practices that, by their very nature, also lend workers more autonomy.





Activity-Based Working

Autonomy – the power to choose how and where to work – is a determining factor for worker satisfaction. With different tasks requiring different types of workspace, the trend is towards agile or Activity-Based Working (ABW) supported by a choice of settings ranging from concentration zones and social areas to technology-enabled remote working. This means providing work environments that facilitate remote/individual working and location-specific or collaborative work.

For decades, many businesses and office designers have favoured open plan offices as the best way to foster worker collaboration and performance.

However, study after study has shown that worker productivity is actually curtailed by the lack of privacy and the high levels of noise associated with these environments.

A 2017 survey by Deloitte of almost 8,000 millennials from 30 countries, reveals that this cohort wants the choice to work in the way that suits them best. Survey respondents indicated that flexible working arrangements supported greater productivity and employee engagement while enhancing personal wellbeing, health and happiness.

Flexible Spaces

Beyond empowering workers and

enhancing their wellbeing, a workplace that offers a choice of spaces can be more conducive to changing business conditions and implementing new initiatives quickly. Agile spaces can more easily accommodate fluctuations in numbers of workers and reorganisations, flexing to meet the demands of new projects and space uses.

By approaching space use with creativity and an open mind, some organisations may find they require less office space than anticipated, for example, due to remote working. By accommodating more people in fewer square meters, agile working can lower property costs while enhancing worker wellbeing. In fact, organisations can reduce their property footprint by as much as 40



WSP Adelaide Office

percent by adopting activity-based working environments.

Our wellbeing specialists advise on facilities to be included in the workplace to follow the highest wellbeing standards. Our engineers design structures to maximise the lettable space while minimising structural elements such as columns to allow for flexibility in the office fit-outs. Our MEP engineers design the building systems so they support demanding spaces such as areas featuring extensive greenery, but also so they can be easily reconfigured to meet tenants' changing needs. Furthermore, they can implement user-controlled HVAC systems allowing them to control temperature and amount of fresh air they receive

at their work stations. Our interior fit-out teams can formulate methods for calculating occupancy levels for each type of workspace and then, working with our partners on the project, create appropriate layouts that best fit the tenant's needs. Our specialists create lighting and acoustics design concepts for dynamic, multi-use areas so they can be adapted to changes in space use.

Shared and Public Spaces

Along with the increasing focus on the workplace as a place of collaboration, comes the trend towards work environments that resemble a community. WSP is working with a number of clients to create mixed-use campuses that contain multiple,

integrated destinations. The popular concept of co-working is applied on a larger scale, allowing businesses of all sizes to benefit from one another's ideas and experiences. Multi-tenant floors share common spaces such as break rooms and conference rooms to foster both formal and informal interaction among workers, but also with the public.

WSP works with each client to understand their specific business objectives to create the most effective environment for their workforce or business community. But our aim is always the same: to leave workers more satisfied, motivated, and creative – exactly the kind of individuals needed to deliver high performance.

Amazon in the Regrade

Creating a New and Inspiring Neighbourhood

LOCATION
Seattle, USA

CLIENT
Amazon

ARCHITECT
NBBJ

STATUS
Completed autumn 2016 (Centre of Energy) and January 2018 (The Spheres)

SERVICES

- Lighting Design
- Mechanical and Plumbing Engineering
- Fire Protection
- Built Ecology / Sustainability Consultancy

Amazon's vision was to build much more than an office complex for its new headquarters in downtown Seattle. Instead, Amazon wanted to create a neighbourhood that would enhance the lives of its workers and the wider public, reflecting the company's community-focused culture.

Starting in 2012, this ambitious project initially was envisioned to incorporate three 37-storey office towers, two mid-rise office towers and a multi-purpose meeting centre with seating for 2,000 people. Two additional office towers have recently been added to the complex and are currently in design.

The centrepiece of the neighbourhood is unique – three interconnected glass biodomes, housing thousands of plants and trees from around the world. Designed to refresh and inspire Amazon workers, The Spheres represent a total

Lighting concept for the Centre of Energy can adapt to changes in space use

In the Spheres, created an environment that allows plants to flourish, while ensuring occupant comfort

Lighting fits equatorial plants needs while creating a resort like feel

departure from the standard urban workplace.

WSP's role in creating Amazon's pioneering work hub has included mechanical, plumbing, lighting and high performance sustainable design services. For example, our engineers devised an innovative heating solution for The Spheres that would meet Seattle's stringent energy code requirements. This involved piping waste heat from a nearby, third-party owned, data-centre directly to the neighbourhood's central utility plant that was designed by WSP to serve the entire development.

The Spheres

WSP provided mechanical and plumbing engineering, high performance design consulting and lighting design services for this glass-encased, mini rainforest. Our challenge was to create





©2017 NBBJ

an environment in The Spheres that would allow the plants to flourish, while being a comfortable and relaxing haven for people. We worked in close collaboration with the whole project team, including landscape architects, and horticulturalists to understand the project's complexities and resolve problems, such as the issue of condensation and how to avoid unsightly ducts. We used sophisticated software programmes to understand airflow patterns within the structures, allowing us to successfully hide services, with some air supply vents even disguised in the form of artificial tree stumps.

Lighting was another complex area. Detailed planning was essential to strike a balance between light levels that were bright enough for equatorial plants, yet low enough to create a 'resort like' feel.

The end-result is an awe-inspiring, 'cloud forest' sanctuary in the heart of Seattle's Denny Regrade area.

Centre of Energy

WSP's architectural lighting design studio's key focus was to design an illumination strategy for a dynamic, multi-use area housed within each of the three high-rise towers that would act as the unifying heart of the whole neighbourhood. Known as the Centre of Energy, these connected spaces would provide a series of spaces for retail, dining and meeting, as well as communal areas designed to encourage open, spontaneous collaboration.

Our designers understood the utmost importance of flexibility for the client and the need for the lighting concept to adapt to changes in space use. The wellbeing and comfort of building users

were also of paramount concern.

WSP used cable-mounted, LED cylinders to produce an overall level of low contrast ambient light to create a comfortable visual experience, while decorative fixtures and integrated lighting elements enhance visual interest in the space.

Our designers made full use of building information modelling (BIM), clash detection and extensive on-site reviews to ensure that the lighting would complement the architectural design concept, accommodate flexible space use and enhance the overall aesthetic.

Furthermore, the project exceeded the stringent demands of Seattle's energy code by 20%, helping the building to attain LEED Gold certification. The code permits 0.90 watts per square foot, but Amazon in the Regrade requires just 0.72 watts per square foot.

Macquarie Group Headquarters

A model example of activity-based workspace on Sydney Harbour



LOCATION

Sydney, Australia

CLIENT

Brookfield Multiplex

ARCHITECT

Clive Wilkinson Architects, Woods Bagot, Fitzpatrick and Partners

SIZE

33,000 sq. ft.

STATUS

Completed 2009

SERVICES

- MEP Engineering
- Fire Protection
- Sustainability Consulting
- Specialist Lighting Design

An award-winning building that has raised industry standards for environmental sustainability and wellbeing, One Shelley Street sets a new benchmark for commercial office space in Australia.

With the needs of a leading financial institution in mind, Brookfield Multiplex, the developer, wanted to build an innovative workplace that would prioritise health and productivity, indoor environment quality, energy efficiency and flexible work settings, while at the same time be a bold architectural addition to Sydney's 'up-and-coming' business precinct, King Street Wharf.

This vision attracted the attention of Macquarie, the global investment bank and financial services group, which

decided to relocate its headquarters offices into the development. Macquarie wanted to pioneer an activity-based work (ABW) space at One Shelley Street that would facilitate its workers' wellbeing, and support cross-collaboration and creativity.

WSP was awarded the base building works through a longstanding client relationship with Brookfield Multiplex and the fit out works through subsequent engagement with Macquarie. Our multidisciplinary team worked in close partnership with main architect Clive Wilkinson Architects, and together with fit-out designer Woods Bagot and the construction team, to design 33,000 sq. ft. of ABW over 11 floors. One of the drivers for ABW was the occupancy efficiency that could be achieved.



*Implemented
flexible
activity-based
work (ABW)
design*

*Net lettable
area increased
through
innovative HVAC
system*

*Energy-efficient
design awarded
a 6-star 'Green
Star' rating*

As Macquarie Bank had emerged as the sole tenant at an early stage, the design team was able to customise the base building to meet the bank's needs, satisfying Macquarie's requirement for flexible and productive workspace, as well as fulfilling Brookfield Multiplex's design brief.

Amongst Brookfield Multiplex's key objectives was an expansion of the net lettable area and this was achieved by constraining the services zone on a floor-by-floor basis through the use of an innovative HVAC system leading to the creation of an extra floor in the building within a strict overall height limit.

Another key objective - creating an energy efficient building, called for a host of innovative design solutions. We used passive chilled beam air

conditioning to achieve energy savings and high indoor environmental quality throughout the building. And we used a passive cooling strategy to reduce energy requirements within the 11-storey high central atrium, which connects the two parts of the building and features a west-facing glass expanse.

Other design responses included a harbour heat rejection system to minimise water usage, efficient lighting, a high-performance façade, and increased ventilation rates to 100% beyond minimum code compliance.

The building was originally conceived as a residential scheme and switched to commercial part way through construction, meaning the base building was not set up for the integration of office-use building services. We worked

in close collaboration with our client and the construction team to work around the building's unusual structure, using its features to the client's advantage. For example, we converted the underground parking area into plant space for the chilled beam technology.

Our innovative solutions effectively balanced competing client needs: industry leading energy efficiency, enhanced indoor environmental quality with elevated ventilation rates and full workplace flexibility.

One of Australia's most sustainable office buildings and the first to be designed with ABW floorplates, One Shelley Street was awarded a 6-star Green Star 'as-built' rating from the Green Building Council of Australia.

Credit Suisse

Improving Building Systems While Reducing Downtime

LOCATION

Paris, France

ARCHITECT

TP Bennett Architect, DGM Architect

SIZE

3,500 m²

STATUS

Completed in 2016

SERVICES

- Electrical Engineering
- Plumbing Engineering
- HVAC Systems
- Power Generator
- UPS System
- Critical Facilities
- Lighting Control System
- Building Management System
- Commissioning Management



Credit Suisse has relocated its headquarters to the 8th Arrondissement, a chic neighbourhood in Paris defined by the Avenue Champs Elysée. The new space combines a 19th century exterior with a modern interior.

WSP was appointed to provide building services engineering for the fit-out of the 3,500m² office. The private banking and investment banking businesses, which have both moved to the new location,



Evaluated and upgraded systems in a multi-tenant heritage building

Designed future-proof systems in a new modern interior

Provided commissioning management to facilitate new office space evaluation

have different and distinctive cultures. The modernisation of the interior needed to take into consideration these differences and create a space that would reflect them.

We were responsible for the design and works monitoring, and the technical design of multiple building services including electrical, power generator, UPS System, HVAC and smoke removal. We also provided commissioning

management to facilitate the evaluation of the new space for our client.

Since Credit Suisse occupies only part of the building, we needed to consider the existing technical installations, before implementing changes. , Installations such as HVAC were being used by other tenants so power cuts and interventions needed to be reduced to a minimum, while still providing Credit Suisse with future-proof systems.

We connected all Credit Suisse's technical systems with the building's management system, managed by the building owner.

While our team was based in Paris, our client and their technical team were in London. In collaboration with the architect and the project manager, we successfully coordinated the project and provided a high-level of technical reporting.

425 Park Avenue

Flexible Structure and Systems for New York's First WELL-certified Office Building

Column-free structural design maximises space, flexibility and usability

Structural elements designed to maximise views

MEP systems designed to provide control and flexibility

LOCATION

New York, USA

CLIENT

L & L Holding Company, LLC

ARCHITECT

Foster & Partners

SIZE

600,000 sq. ft.

STATUS

Completed in 2017

SERVICES

- MEP Engineering
- Structural Engineering

425 Park Avenue is new 687-foot tall tower in New York located between 55th and 56th Streets in Midtown. It is the first new skyscraper built on Park Avenue in the past 50 years to be dedicated solely to office space.

The tower replaces a 32-storey 1950s building while retaining 25 per cent of the existing structure at its base. The world-class office building will provide sustainable office space over three gradated tiers: a seven-storey base, a recessed central section, and a high-rise section which will house premium offices. Each of the floors is column-free thanks to cantilevered framing, thereby maximising open space, views and flexibility.





© 2016 Foster + Partners

The structural system we designed consists of long span composite steel framing to support the floors and a concrete core that provides lateral load resistance. The core has been placed at the rear of the building to maximise views to the front over Central Park.

An important focus has been on providing open and public spaces for the occupants, including a triple-height atrium at the base that will function as a public gathering space, and a large plaza with the potential to house large-scale works of art. Set back at the second level, a seasonal sky garden and amenity terrace will boast impressive views over Central Park and the city. An additional terrace and triple-height sky lobby will

be in the top section.

The tower will be New York City's first WELL-certified office building and it will include a meditation centre, green roofs, air filtration, advanced water purification, an abundance of natural sunlight, a dedicated wellness centre, and common space to encourage creativity and collaboration. The project is also pursuing LEED Gold certification.

The building uses high efficiency water cooled DX units with free cooling coils. This system enables each individual tenant to have full control over the operation and costs of their system. The system was designed with sufficient

capacity to serve the requirements of demanding tenants, such as those involved in the financial services industry.

The project was designed in BIM which enabled detailed coordination between the structure and MEP services. The cantilevers created column-free space but required very deep structural elements causing difficult coordination conditions which were resolved in BIM.

All these features combine to create a building that meets today's requirements while providing enough flexibility to allow for future adaptations.

Sthlm 01

Future-Proof Office Building for Creative Companies

*Structural design
to enable a new
landmark office
building*

*Complex design
needed to take into
consideration new
subway tunnels*

*Potential to change
the indoor layout to
meet future needs*



LOCATION

Stockholm, Sweden

CLIENT

Skanska Property

ARCHITECT

Sauerbruch Hutton

SIZE

35,000 m²

STATUS

Due for completion in 2020

SERVICES

- Structural Engineering

Sthlm 01 is a 27-storey commercial building which will form part of the Stockholm New Creative Business Spaces set in beautiful waterside surroundings to the Swedish capital. The development comprises seven distinctive buildings, of which Sthlm 01 will be the tallest, becoming a landmark in the up-and-coming neighbourhood of Hammarby Sjöstad, an attractive location for offices, close to downtown Stockholm, with good public transport.



Image courtesy of Skanska

This future-proof office building has been primarily built to attract creative companies: it has a colourful façade and unique shape, and its interior is characterised by flexibility and abundance of natural light. The building is located near supermarkets, a cinema, a gym, outdoor pools, mountain biking trails, hotels and restaurants. On the top floor, occupants can have drinks and food at the 'Sky Bar' and enjoy one of the best views of the city.

Designed around flexibility, tenants can choose between open space and closed offices and can change the indoor layout to meet future needs. The level of natural light inside the building is maximised using floor to ceiling windows.

As structural engineers, our biggest challenges were the foundation design, which needed to take into consideration new subway tunnels, and the complex concrete core which stabilises the 100 m high office building. Tension rods

were used to anchor the core foundation into the bedrock, and to some extent, these have had to be coordinated with the subway tunnels. In addition, we are designing a new subway station inside one of the buildings.

We are responsible for structural engineering of Sthlm 01 and 04 (a 12-storey office building of 24 000 m² adjacent to Sthlm 01), both of which aim to achieve LEED Platinum certification.

Neopark Campus

Commercial Campus Meets High Sustainability Rating

LOCATION

Warsaw, Poland

CLIENT

Yareal Polska Sp. z o.o.

ARCHITECT

JEMS Architekci Sp. z o.o.

SIZE

24,000 m²

STATUS

Opened in March 2017

SERVICES

- Mechanical Engineering
- Electrical Engineering
- BREEAM Certification (Interim Certificate with Excellent Rating)

Neopark Campus is an office complex comprising two modern five-storey buildings strategically located in a vibrant and accessible area in the south of Warsaw. Throughout the surrounding campus, jogging paths, cycling routes and fitness clubs have been designed, along with large green spaces, terraces and leisure areas providing employees with a pleasant environment and promoting a healthy lifestyle.


The building's interior also focuses on employee wellbeing. The glazed façades optimise daylight and thermal comfort, while the material selection for the tilting windows prevents overheating and allows for natural ventilation throughout the office, reducing the need for air conditioning. The architectural features of the campus, the modern look and high-standard finish, contribute to creating a desirable workplace.

Flexibility is an important feature of the building which was designed to be easily adaptable to the needs of each tenant. The indoor space of these Class A offices can be transformed from open-plan layout into closed offices and vice-versa. Thanks to the high ceilings and

raised floors, the building's systems can be easily reconfigured to meet tenants' changing needs.

Acting as mechanical and electrical engineers and BREEAM certification consultants on the project, we designed systems such as internal and external lighting that includes sub-metering for tenants so they have control over their own energy consumption and can rapidly implement solutions to reduce waste or improve usage, if necessary. Low-flow water fittings were installed to minimise water usage in all restrooms, while water leak detection systems were designed to prevent water wastage that could be costly for tenants. The innovative solutions used in this project led to the award of a BREEAM certificate with an 'Excellent' rating.

Through our multidisciplinary design approach, we achieved an efficient design process, with the sustainability team assessing the technical solutions developed by our mechanical and electrical teams. This enabled the building to achieve energy efficiency and reduce operating costs while providing a comfortable work environment.



*Adaptability of
building systems
improves flexibility
of space*

*Energy-efficient
systems reduce
operating costs*

*Building features
support occupant
comfort*

WSP Adelaide Office

*A Successful Activity
Based Working Office*

LOCATION

Adelaide, Australia

ARCHITECT

JPE Design Studio

SIZE

1,100 m²

STATUS

Completed in 2016

SERVICES

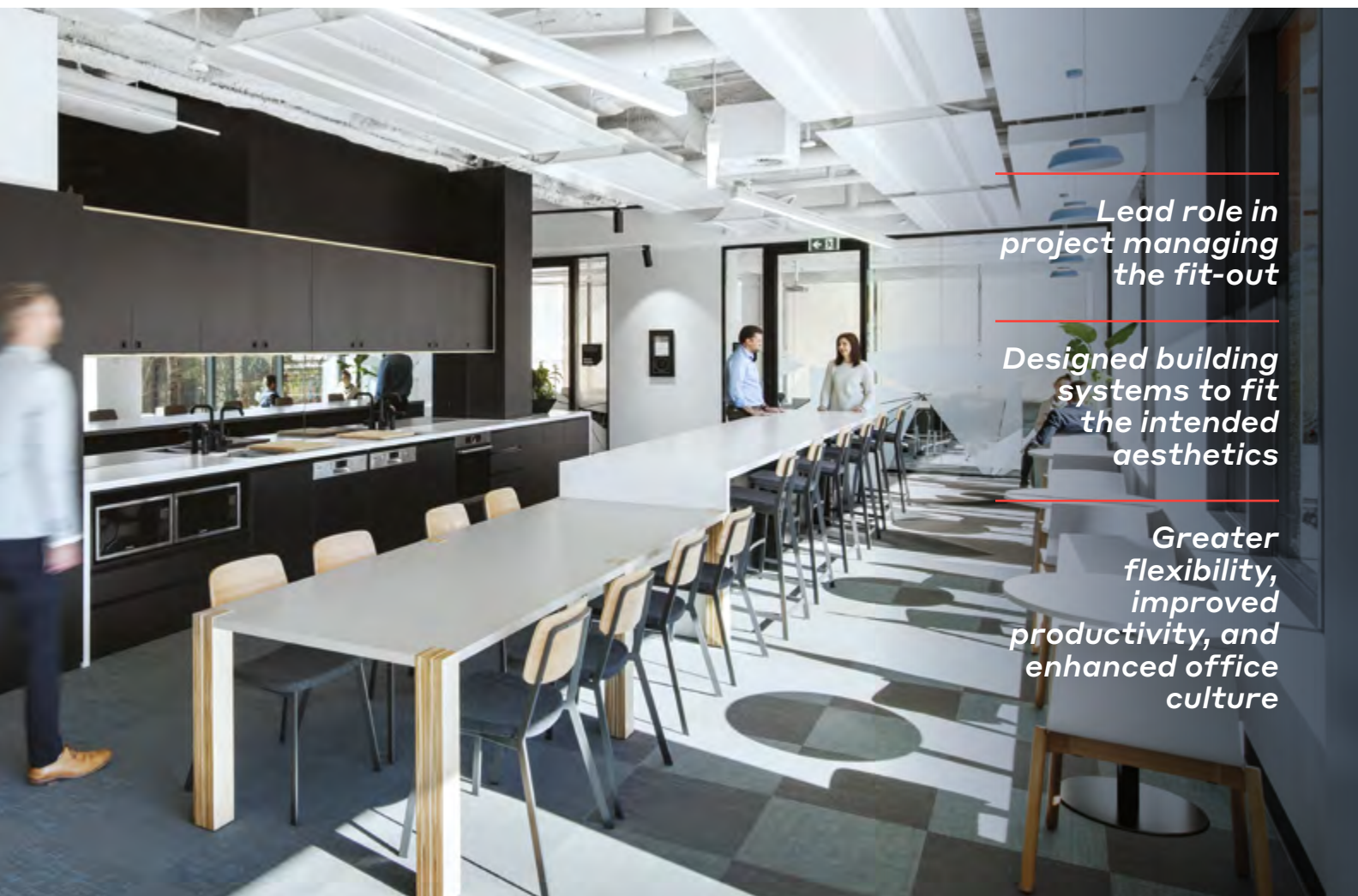
- Project Management
- MEP Engineering



After the merger of WSP and Parsons Brinckerhoff, WSP needed a new space to accommodate around 90 employees in Adelaide. The new office exemplifies Australia's reputation for agile office design.

The 1,100m² new office layout has been designed around flexibility and productivity. It features purpose-built table layouts, a large staff breakout area, collaborative working spaces, two quiet spaces and three quiet conversation points. The workstations were selected to combine both organic and linear layouts, to provide flexibility in re-shaping the configuration in the event of changes, and create a greater sense of creativity in the space. The workstations are fitted with plug and play docking stations to enable an agile environment for staff, encouraging people to work with, and around, others.

The project was delivered in a truly collaborative managing contractor delivery model. We played a lead role in project managing the fit-out with the design team, and the project included



*Lead role in
project managing
the fit-out*

*Designed building
systems to fit
the intended
aesthetics*

*Greater
flexibility,
improved
productivity, and
enhanced office
culture*

a programme of internal change management for our staff.

The design intention was to minimise the working zone around the core and perimeters to improve movement and access, and encourage informal meetings. Materials such as carpet tiles, vinyl flooring and plywood were sustainably sourced.

The original building's HVAC design which dated back to the mid 1960's was based on induction style 'skin cooling' built into window sills below what used to be a smaller glazing system, with an induction internal zone system to traditional air diffusers. Our replacement for this design was made possible thanks to modifications that were made to the building.

The building owner replaced the façade on our fit-out level to provide floor to ceiling glazing and increase light and external views. A high level of natural light, along with motion sensors and highly efficient LED lighting, contributes to low energy consumption.

To complement the new high-performance facade and replace the original perimeter, we designed an active chilled beam system (which also uses an induction process). Removing the ceiling made it possible to elevate the chilled beams and this, combined with the open ceiling, creates a greater sense of openness.

Building services were designed in BIM for clash detection and BIM also provided the mechanism to carefully co-ordinate and align services that were part of the design aesthetic. The internal areas maintain the original variable volume system with new swirl air diffusers.

To cater for the high-load areas, a number of elevated loft meeting pods are served by a Variable Refrigerant Flow System (VRF) that complements the chilled beams in our larger presentation/meeting rooms. The pod air conditioning units are under the raised floor, while the larger rooms utilise a more traditional above ceiling arrangement.

With the design completed a year ago, we have noticed that the changes have had a positive effect on our employees. The greater flexibility has improved productivity and the promotion of informal meetings has enhanced the office culture. Our large breakout area has enabled us to host successful events contributing to business development.

Our Services

At WSP, we know that workplace projects present a range of unique challenges, and that no two are ever the same. We can draw on our global network of experts to provide a bespoke team tailored to the demands of every project, from the earliest planning stages to a successful completion and faultless operation throughout the life of the building.

So, whether our clients need a fully integrated multidisciplinary service or expert consultancy in a very specialised field, we can help.

ACOUSTICS, NOISE AND VIBRATION
720 Bourke Street



COMMISSIONING
HSBC, Quai des Bergues



FIRE ENGINEERING
Colorado Health Foundation
Headquarters



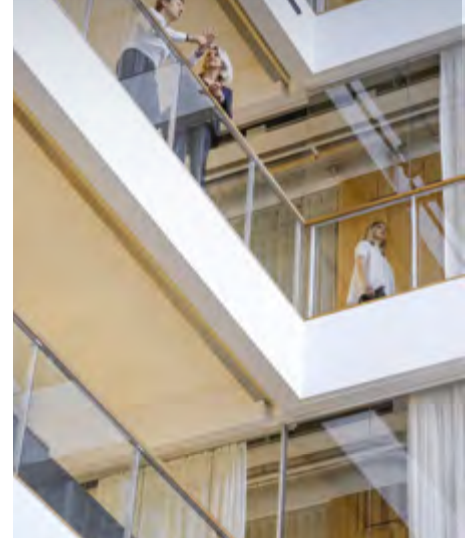
FACADE CONSULTING
22 Bishopsgate



CIVIL ENGINEERING
WSP's South Africa Headquarters



SMART
A US Office of a Global
Management Consulting Firm



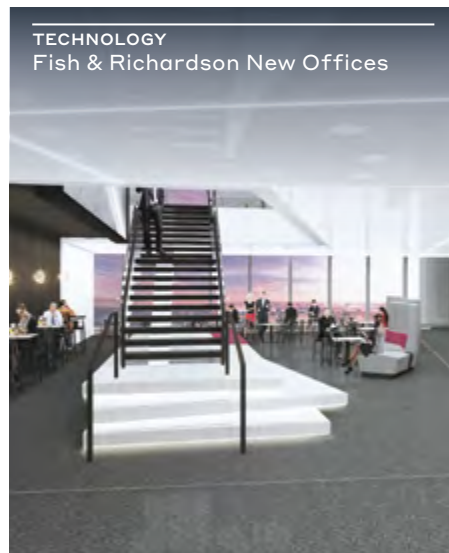
LIGHTING DESIGN
Macquarie Group Headquarters



STRATEGIC ADVISORY
Multinational Financial
Services Company



TECHNOLOGY
Fish & Richardson New Offices



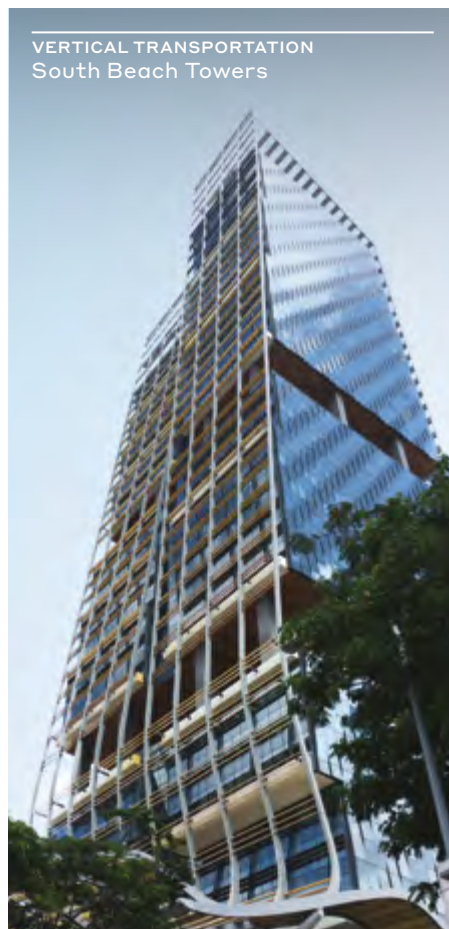
MEP ENGINEERING
WSP Adelaide Office



STRUCTURAL ENGINEERING
425 Park Avenue



VERTICAL TRANSPORTATION
South Beach Towers



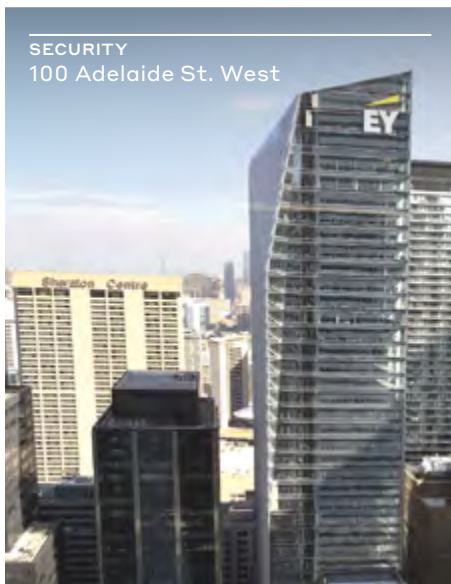
PROJECT MANAGEMENT
Swiss Life



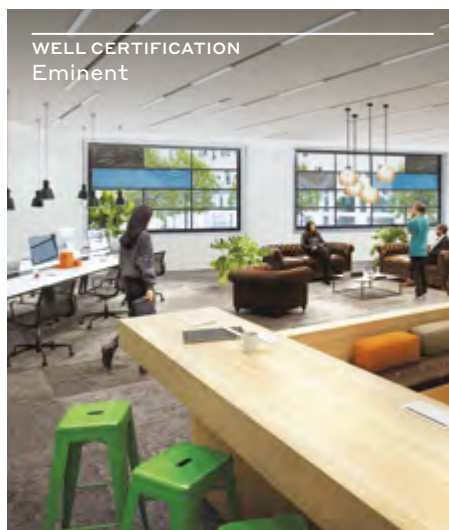
SUSTAINABILITY CONSULTING
Delos Headquarters



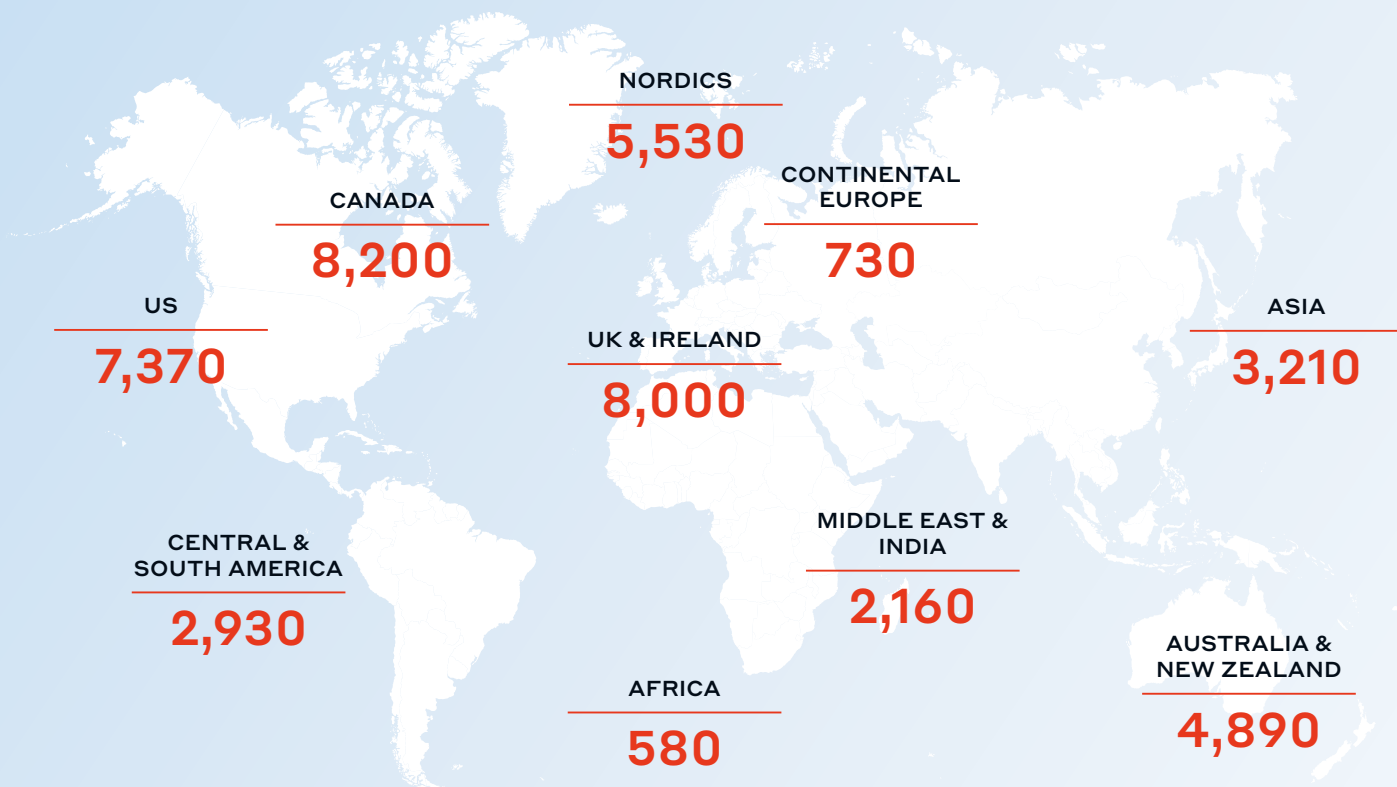
SECURITY
100 Adelaide St. West



WELL CERTIFICATION
Eminent



Employees Around the World



Figures on June 30, 2018

About WSP

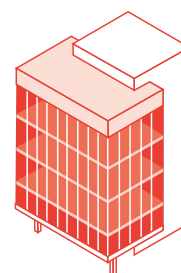
WSP is one of the world's leading engineering professional services consulting firms. We are dedicated to our local communities and propelled by international brainpower. We are technical experts and strategic advisors including engineers, technicians, scientists, architects, planners, surveyors and environmental specialists, as well as other design, program and construction management professionals.

We design lasting solutions in the Transportation & Infrastructure, Property & Buildings, Environment, Industry, Resources (including Mining and Oil & Gas) and Energy sectors, as well as offering project and program delivery and advisory services. With approximately 43,600 talented people in 550 offices across 40 countries, we engineer projects that will help societies grow for lifetimes to come.



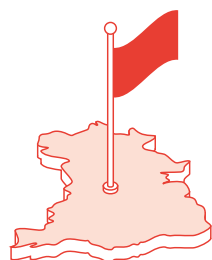
43,600

EMPLOYEES



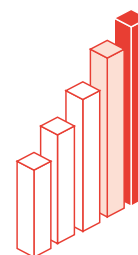
550

OFFICES



40

COUNTRIES



6.9B

2017 REVENUES (CAD)



Get in Touch

We have a network of experts available for you to talk to across the world on every facet of workplace design and engineering. Please contact one of our global leads in the first instance:

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Can we trace horizons,
hold true to our ambitions,
*and hold ourselves
accountable?*

What if we can?

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