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Riverview, Czech Republic

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Case Study 137

Riverview is a high quality commercial development in Prague that uses 50 percent less energy than the Czech building code and 35 percent less water than a typical Czech office building. The property is certified to LEED (Leadership in Energy and Environmental Design) Gold.

Aspects of Sustainability

This project highlights the following:

Green Aspects

Energy
Carbon
Materials
Water
Local Impacts

Social Aspects

Human Resources
Corporate Community Investment
Business Ethics
Health and Safety

"The Riverview office building perfectly reflects the company's commitment to a creative and collaborative working environment. Every team within the MSD IT Global Innovation Center has by now provided unique insight and input into the new facility."
- John Westby, Associate Vice President MSD

Project Sustainability Highlights

Economic

- Significant utility bill savings for building owners from energy and water savings

Green

- 50% less **energy** than Czech building code
- **Carbon** footprint conducted
- 35% less **water** than conventional Czech commercial building

Social

- Creation of healthy indoor environments
- Zero accidents reported during construction
- Extensive tenant cooperation during design process to create purpose-built premises

Energy ✓
Carbon ✓
Materials ✓
Water ✓

Project Introduction

Riverview is a commercial development located in the Prague 5 – Smichov neighborhood, which is 2 km east of central Prague on the west bank of the Vltava River. Smichov is a rapidly evolving, vibrant district where several international companies have situated their offices. The property combines Scandinavian architecture with an attractive riverside location. Riverview is dominated by a glazed atrium to the north, and large open balconies and roof terraces on the south side, which offer panoramic views of the riverside and surrounding neighborhoods of Prague.

The Building division of Skanska in the Czech Republic completed the Riverview development for Skanska Property Czech Republic in December 2014. Riverview is a 7-story office building with a spectacular central glazed atrium and a curved façade that faces the site's landscaped gardens.

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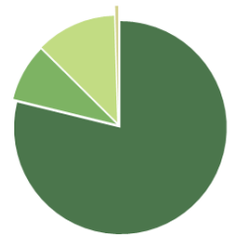
Riverview embodied carbon emissions by source (tCO_2e)



Materials - 2,772

Material transport - 302

Site emissions - 427

Worker transport - 16

The property offers 7,037 m^2 of high quality office space and a typical office floor is 1,197 m^2 in area. 280 m^2 of ground floor retail space is currently occupied by a restaurant/bistro. An underground parking garage provides 90 vehicle spaces. MSD Pharmaceuticals IT Innovation Hub is currently Riverview's main tenant and occupies 90 percent of the building. Skanska sold the property prior to completion in October 2014 to the investment company Invesco Real Estate for approximately US$ 25 million.

The Riverview project was Skanska's first project in the Czech Republic to use Building Information Modeling (BIM) in both the design and construction phases. The model was used to manage the construction process and to coordinate project documentation. BIM was also used to create supporting material for LEED certification.

Riverview is certified to LEED Gold (Core & Shell). LEED is a voluntary U.S. Green Building Council (USGBC) certification process intended to encourage and guide the construction of green buildings.

Contributing Toward Sustainable Development

Riverview is designed to use approximately 50 percent less energy than the Czech building code and 35 percent less potable water than a typical Czech office building. The building was constructed with environmentally responsible materials and promotes healthy working environments for building occupants. The development has also contributed toward sustainable urban development by reusing an existing contaminated brownfield site in a dense urban neighborhood, and by promoting more sustainable modes of transport. Skanska worked to promote high standards of safety on site during construction and no accidents were reported. The team promoted extensive tenant cooperation during the design process to create purpose-built premises.

Green Aspects

Energy

Energy efficiency

Riverview is designed to use 89.8 kWh/m^2, which is approximately 50 percent less energy than the Czech building code (179 kWh/m^2). The building has a well-insulated envelope and the walls, façade and windows have U-values of 0.22 W/m^2K, 1.04 W/m^2K and 1.4 W/m^2K respectively.

A sophisticated HVAC (Heating, Ventilation and Air Conditioning) system has been installed with highly efficient Air Handling Units, cooling towers and humidifiers. The system provides a low-speed airflow, which optimizes energy use. Chilled beams effectively distribute cool fresh air to realize energy savings of 25-30 percent compared with conventional fan coils. Air from the office space is primarily exhausted to the atrium, which uses natural ventilation. The underground garages are ventilated and heated with air from the office spaces. Meeting rooms are equipped with carbon dioxide sensors to optimize ventilation.

The glazed façade is reflective to avoid excessive solar gain and reduce the need for cooling. Lighting in the tenant premises is arranged in multiple zones to allow easy occupant control. The majority of tenant premises are equipped with energy efficient LED lighting and occupancy sensors and daylight sensors, which reduce the need for artificial lighting.

Intelligent energy management

A modern Building Management System (BMS) monitors the building's total energy use and allows tenants to sub meter their premises, which enables them to monitor and optimize their own energy use. The HVAC system is centrally controlled to optimize overall performance, such as by avoiding the simultaneous operation of heating and cooling systems.

Carbon

Carbon footprinting

Skanska conducted an embodied carbon footprint for the project, which calculated the project's emissions to be 3,517 tCO_2e in total. Embodied carbon emissions from construction materials and material transport were responsible for 2,772 tCO_2e and 302 tCO_2e respectively, site emissions for 427 tCO_2e and worker transport for 16 tCO_2e.

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Materials

Environmentally responsible materials

Low emission and low Volatile Organic Compound (VOC) materials included all adhesives, sealants, paints, coatings, flooring and wood products used within the building. Over 50 percent of the timber used on the project was Forest Stewardship Council (FSC) certified.

Waste management during operation

Riverview has designated waste sorting stations on every floor to encourage building occupants to sort their waste. Waste fractions include paper, plastics, metal, cardboard and glass.

Water

Water efficiency

Riverview is designed to use 35 percent less potable water than a typical Czech office building. The building is equipped with efficient fixtures and fittings, including fixture sensors, flow restrictors and dual flush toilets. The site has no permanent irrigation systems.

Other Green Aspects

Raising awareness of more sustainable buildings

Skanska compiled *Tenant Design and Construction Guidelines* that explain how tenants can make the most of the building's efficiency features, through recommended sustainability strategies, and how they can certify their office spaces according to LEED Commercial Interiors. Recommended strategies include mechanical, electrical, plumbing, layout, lighting and operations measures, which can often enhance the performance of the building with minimal investment costs.

Reducing heat island effect in Prague

The site's landscaping, white roofing and underground parking contribute toward a reduced urban heat island effect by diminishing the extent of dark and paved surfaces on the site. 1,200 m^2 of the site's surface is covered by vegetation.

Reduced light pollution

Automatic timers switch off non-emergency interior and exterior lighting between 23:00 and 5:00 to reduce light pollution. Light pollution can cause adverse human health impacts and disrupt urban ecosystems.

Social Aspects

Stakeholder dialogue and cooperation

Riverview is situated close to residential buildings. The team promoted good relations with the site's neighbors through regular communication, such as discussing when potentially disruptive construction activities would be carried out.

Tenant cooperation

MSD's IT Innovation Hub is based at Riverview, and every MSD team within the hub was engaged in the design process of the purpose-built premises. Briefing workshop sessions and design reviews were used to directly involve MSD teams in the design process. This close cooperation with the tenant resulted in the creation of a system of functional zones on each floor, which includes undisturbed workspace, collaborative areas for project work, innovation labs and refocusing zones. Riverview's functional zones are designed to meet various office needs and are intended to create highly innovative working environments that promote creativity and collaboration.

Occupational health and safety

There were no accidents reported on site during construction and the Lost Time Accident Rate per million hours worked was zero. Skanska followed its standard health and safety procedures, including several practices that were new to some contractors. For example, Riverview was the first construction site in Prague to use the Alsipercha fall restraint system as well as full mesh edge protection. In addition, a monthly lottery was held to encourage the submission of *near misses*, which were intended to learn from identified safety risks.

Healthy working environments

Riverview was designed to promote healthy indoor working environments for occupants. The HVAC (Heating, Ventilation and Air Conditioning) system provides around 30 percent more ventilation than Czech standards, and sensors verify that the system functions optimally.

Carbon dioxide sensors ensure that indoor concentrations do not exceed 800 ppm (parts per million), which exceeds EU regulations of 3,500 ppm. Chilled beams avoid causing drafts and are low-noise compared with conventional mechanical and fan coil ventilation systems.

Over 90 percent of all regularly occupied office areas are lit by natural light, and the atrium allows natural light to penetrate office spaces from within the building. Controls throughout the building allow occupants to directly control their indoor temperature, lighting and humidity.

In addition, the various terraces and balconies with panoramic views of Prague and the Vltava River provide stimulating working environments. Around 40 percent of the site is covered by a landscaped public garden or park that provides an attractive environment for relaxation.

Functional and flexible office design

The design team worked to meet MSD's requirements for an office building with highly functional and flexible workspaces. This flexibility enables MSD's Innovation Hub to be easily adapted over time and promotes a long useful building lifespan by being able to accommodate various tenant uses in the future. The open planned office floors can also be easily modified to accommodate single or multiple tenants in the future, and raised flooring enable various office layouts by allowing workstations to be connected via under floor wiring.

Riverview is equipped with advanced visualization tools and interactive panels, including a tool that allows writing on boards to be automatically captured, stored and shared with surrounding colleagues. The building has three high-speed elevators, modern communications networks and extensive storage space.

Contributing toward sustainable urban development

The project reused a contaminated brownfield site, which was remediated prior to construction. Riverview also contributes toward sustainable urban development by being located in a dense urban neighborhood in Prague that offers a wide range of amenities, including banks, restaurants and the Andel Shopping Center.

Promoting more sustainable modes of transport

Riverview has 27 bicycle parking spaces, and showers and changing facilities, to encourage tenants to cycle to work. The garage also offers priority parking spaces for electric and hybrid vehicles, and low-emitting and fuel efficient vehicle spaces account for 11 percent of all parking spaces. Riverview has good access to public transport with several nearby tramlines and two metro stations that provide over 450 daily metro train departures.

Economic Impacts

Regional construction workforce

Approximately 100 workers per day worked on Riverview's construction.

Efficiency financial savings

Riverview is designed to use approximately 50 percent less energy and 35 percent less water than a conventional Czech commercial building. Energy and water savings result in lower utility bills for the building's owners.

Learning From Good Practice

Skanska in the Czech Republic built on its recent experience and expertise of building commercial developments with a strong green profile, such as City Green Court in Prague. Skanska's experience from the Riverview project will be used to develop future green building projects in the Czech Republic, including Skanska's new Czech headquarters in Prague - Corso Court.