BREEAM Case Study Project Linden

Project & Building description
When complete, the Linden Building will be the latest addition to the ING head office in Amsterdam. The building will contribute to the development of Amsterdam as a 'smart city', as also indicated by Karres & Brands, the design agency responsible for the masterplan and spatial vision of the Cumulus Park area. Amsterdam Southeast is an area that is a meeting place for the business community, educational institutions, knowledge centres and local government, and this building continues to honor and contribute to that spirit.

Linden's design is characterized by its intention to contribute to sustainability and wellbeing. Conceived as a place that puts connecting with the environment at its heart, it aims to have building users at the centre of a healthy and sustainable workplace.

From design to construction, sustainability is an important part of the project. The building firstly avoids removing any green area, by building on the site of a former building within the district. Secondly, for the supporting structure and finishing materials, using circular materials was a design principle, minimizing the building's carbon and natural footprint. Thanks to its ambitious sustainability and well-being standards, Linden is designed to achieve an Outstanding score from BREEAM-Netherlands (BREEAM-NL).

Sustainability Ambition
Setting a high sustainability ambition was very important for ING as future occupant in the initial plans for the development of the building. The building's sustainable approach will be assessed using the BREEAM-NL methodology. The ambition is to have the design comply with the BREEAM-NL Outstanding certification level. This certification method has an advanced integrated approach,

which not only looks at energy consumption, but also at the technical quality of the building, the wellbeing of the building users and the construction process, among other things.

Environmentally friendly design measures and technical solutions
A large number of sustainable measures are included in the design of the Linden Building. These include:"

- A high-performance building management system to measure and control accurate installation performance.
- Installation of thermal energy storage for heating and cooling.
- Highly energy-efficient equipment like pumps, fans and heat-pumps as well as energy efficient lifts and LED lighting.
- Indoor climate control through climate ceiling systems.
- Submeters that track usage of and generate insights about energy and water consumption through the building.
- Measures to save water usage like electronic flush features in toilets and water saving taps.
- Water leak detection.
- the presence of EV charging stations in the parking areas and good access to public transport.
- Solar panels on the available roof area.
- Accessible and green landscape with attention for biodiversity.
- Special provisions have been made for various animal species, which will have a place on and around the building, such as local birds and insects.
- Greywater system that retain water for usage in gardens and toilets.
- Stair location and design, placing them in clear view and pathways that encourage the use of stairs instead of elevators.
- Flexible design of the building interior, requiring less adjustments for the multipurpose use of various teams.
- Establishment of a day catering and a sports facility, contributing to the well-being of the community.

Steps to reduce environmental impact
During the construction process, measures will be taken to minimise the environmental impact of the construction work. To this end, for example, waste is separated on site into at least 6 streams so that it can be further processed in a sustainable manner. The construction company also actively aims to reduce energy consumption at the building site and travelling to the building site, for example through a range of activities such as waste separation, use of electric cranes, use of electric chargers for electric cars, and the application of just in time logistics (so no waiting on site).

Cost-benefit
Achieving a sustainable building is of great value and fits in our Corporate Real Estate sustainability strategy, which aims to reach net zero by 2035. The measures taken and the process of obtaining a BREEAM Outstanding certificate may involve extra costs in the short term, but in the long term we believe it offers very high added value for the operation of the building.

Sustainable social or economic measures

The project is part of the further development of the Amsterdam South-East district. Green vegetation and garden areas will be installed around the building, contributing to the liveability of the area.

Process and organisation

The design for the building came about through an integrated process, in which a multidisciplinary design team was responsible for the overall design. This involved Paul De Ruiter for the architectural design, Halmos for the technical installation advice, Van Rossum for the structural design and DGMR for the building physics advice, including sustainability, acoustics, fire safety and daylight. By involving these specialists in the process, much attention was paid to the feasibility of the design. This involvement will also result in greater control of quality during construction.

Tips for future projects

To incorporate sustainability centrally into the design, it is important to establish this ambition early on and pay continuous attention to this topic during the process.

Technical & Design Information

Surfaces • Total Gross Area (NEN 2580): 50.500 m² • Office space VVO: 36.500 m² • Sports function VVO: 1.100 m² • Commercial area VVO: 250 m² • Terrain surface: 0,95 ha	**Energy** • Expected energy usage: 43 kWh/m² BVO (building and occupiers part) • Expected use of fossiel fuels: 0 kWh/m² BVO; • Expected energy use from renewable energy sources: 39kWh/m² BVO; • Expected water usage: 6 m³/person/year • Expected water usage from grey water system: 2m³/person/year
BREEAM-NL-credits • Management: Man 1, Man 2, Man 3, Man 4, Man 8 , Man 9 , Man 11 , Man 12 • Health: Hea 2, Hea 3, Hea 4, Hea 5, Hea 6, Hea 8, Hea 9, Hea 10, Hea 11, Hea 13 • Energy: Ene 1, Ene 2a, Ene 4, Ene 5, Ene 7a, Ene 8, Ene 26, • Transport: Tra 1a, Tra 1b, Tra 3a, Tra 4, Tra 5, Tra 7, Tra 8 • Materials: Mat 1, Mat 5, Mat 7, Mat 8 • Water: Wst 1a, Wst 2, Wst 3, Wst 4, Wst 5, Wst 6 • Land use and ecology: LE 1, LE 3, LE 4, LE 6 • Pollution : Pol 1, Pol 2, Pol 3, Pol 4, Pol 6, Pol 7, Pol 8 • Exemplary Performance: Man 3, Tra 3a, Mat 5, Wst 1, Pol 4	**Design team and figures:** • Developer: ING Bank N.V. • Architect: Paul de Ruiter • Construction Consultant: Van Rossum Raadgevende Ingenieurs • Installation Consultant: Halmos • Bouwfysics, acoustics and fire safety: DGMR BREEAM-NL Expert: DGMR • BREEAM-NL Assessor: W4Y • Ambition BREEAM-NL Score: > 85% (verwacht) • Project categories: Office and commercial buildings