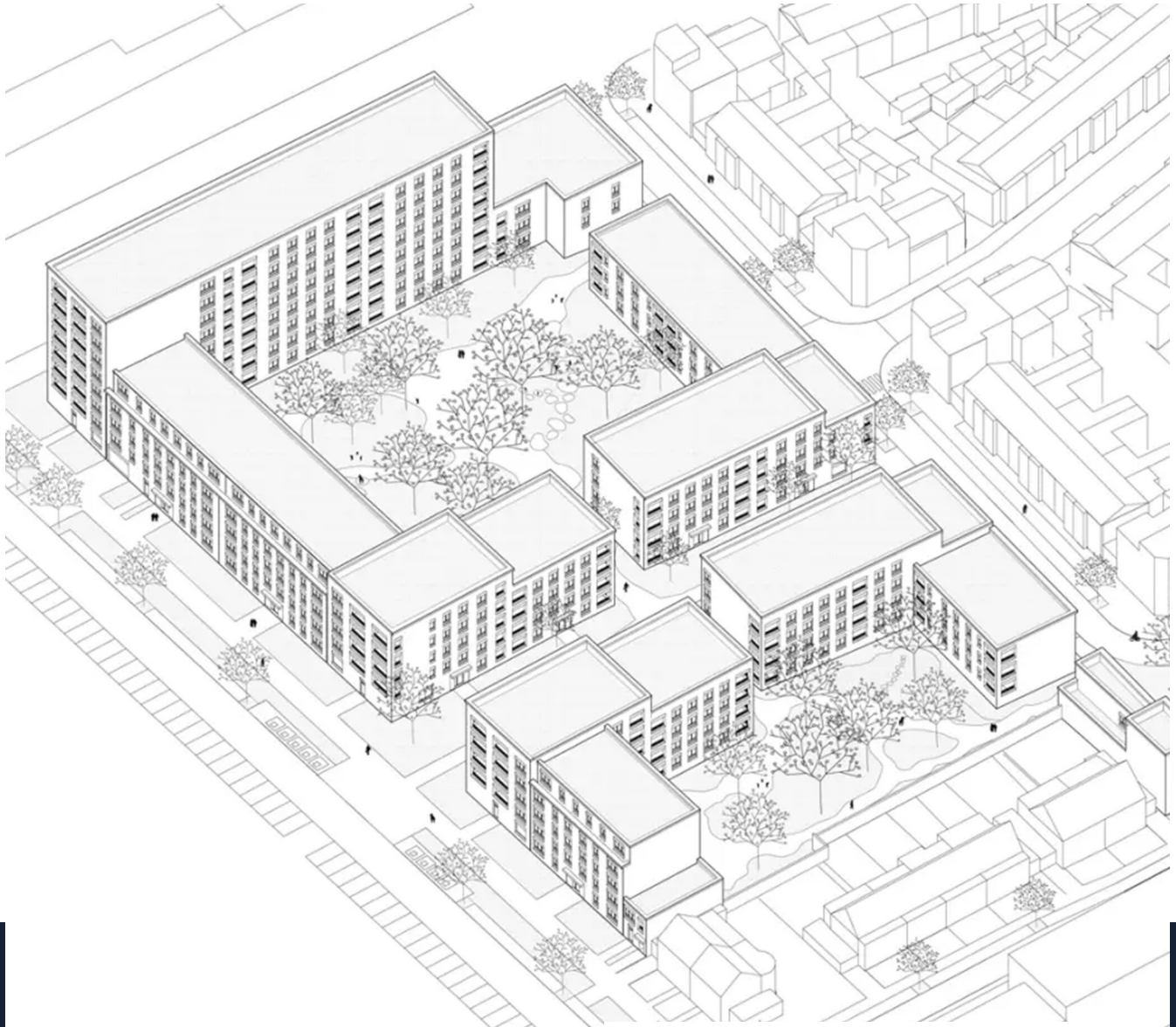

LUCHTBAL

Antwerpen

Replacement of 198 social housing units on Algemene Simondslaan in the Luchtbal district of Antwerp.

Status
2020 - ongoing

Services:
Building Services, Structural

Sectors:
Residential: Social housing

Client:
BV WOONHAVEN ANTWERPEN

Architect:
BV AREAL ARCHITECTEN - Tom Thys Architecten

Area:
17153 m²

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General

The Luchtbal – Generaal Simonds project in Antwerp comprises the realization of 180 to 200 social housing units, distributed across two large building volumes with varying heights from three to eight storeys.

Stability

The structural stability design was carefully integrated into the architectural concept from the early design phase. The foundation of the construction relies on a pile foundation, a necessary choice given the subsoil conditions of the Luchtbal district. Upon this rests a concrete load-bearing structure composed of load-bearing walls, floor slabs, and central stairwell cores that function as stabilizing elements for horizontal forces. The rational linking of building blocks and the systematic stacking of housing types allow for a repetitive and economically feasible load-bearing structure.

Special attention is given to the underground parking garage, which is positioned beneath the most rigid building volume on Havanastraat. The garage is designed with a rectilinear and efficient structure in which loads from the overlying residential volumes, technical rooms, and circulation cores are consistently accommodated. Underground technical installations, including the heat network and utilities, are integrated in various scenarios, so that the structure can flexibly respond to the final technical choices. The compact clustering of shafts and wet zones promotes the structural efficiency of the floors and walls, and minimizes penetrations.

The superstructure consists of concrete floor slabs that are aligned per storey with the layout of the housing units. Recessed terraces are structurally incorporated so that they do not require cantilevers and the facades maintain a logical composition. The facades themselves consist of a load-bearing substructure with a layered brick finish. The roof structure is designed as a load-bearing slab with green roof provisions, including infiltration surfaces and buffer volumes in accordance with applicable guidelines.

Fire safety plays an important role in the stability approach. The separation between low-rise and medium-rise buildings is structurally maintained, despite the presence of underground connections. Fire ladders are integrated into the recessed terraces and anchored to the load-bearing structure. Accessibility and level differences on the site are resolved by implanting the buildings according to the existing height profiles and through sufficiently spacious entrance zones that connect to load-bearing floor levels.

As a whole, the structural stability design forms a robust, durable, and economically founded concept that is fully in line with the design ambitions of Woonhaven Antwerpen and the urban planning boundary conditions. The structural principles — pile foundation, concrete load-bearing structure, rational stacking, integrated services, and an efficient underground system — guarantee the lifespan, safety, and flexibility of the entire building project.

Services

The technical design for the Luchtbal – Generaal Simonds project was integrated from the early design process into both the building structure and the organization of the housing units. The installations are designed with a view to future-oriented energy use, ease of maintenance, and a logical clustering of technical zones. An important starting point in the dossier is the possible connection to a district-wide heat network, the final decision on which was planned by Fluvius. Pending this decision, the design was prepared in multiple scenarios: each building section receives its own boiler room and technical rooms, so that both a collective connection to the heat network and an alternative heating configuration remain possible. These technical spaces are consistently planned on the ground floor and level -1, in close relation to the shaft layout of the overlying residential floors.

The organization of services within the dwellings is achieved through a clustered shaft structure, whereby wet rooms – kitchens, bathrooms, and storage rooms – are systematically grouped around the cores. This approach limits horizontal

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pipe routes and increases efficiency during installation and maintenance. At project level, the underground technical options were also developed, with two possible configurations depending on the final location of utility lines and heat network components. Meter rooms and cleaning rooms are already fully integrated into the entrance zones and cores, so that connections for water, electricity, and heating are logically and accessibly positioned.

The ventilation and sanitary installations are provided in accordance with applicable VMSW requirements. The presence of multiple building sections leads to a clear zoning of technical circuits per building, which increases operational reliability and keeps faults localized. The design also includes attention to pressure boosting installations for both mains water and fire systems. The technical plans provide for separate rainwater and wastewater drainage, coupled with infiltration facilities on the site and green roofs above the residential volumes. These green roofs are structurally provided and contribute to rainwater buffering and thermal performance of the building.

In addition, special attention was paid to the underground parking, which must not only accommodate vehicles but also provide space for pipes, ducts, and drainage structures. The parking zone contains technical connections, water meters, electrical panels, a high-voltage cabin, and rooms for heat network distribution. Throughout the entire substructure, emergency generators, MER and SER rooms, fire pumps, and connection pits with non-return valves are included. This position makes it possible to organize installations centrally, while the overlying residential blocks remain free from disruptive technical volumes.

Through the integration of services in the cores and the rational layout of service shafts, a compact, maintenance-friendly, and energy-efficient system is created. The design also allows flexibility toward future energy technologies, whereby the transition to a fully operational heat network or autonomous building installations remains possible without structural modifications. As a whole, the technical concept forms a coherent and future-proof installation architecture that perfectly aligns with the ambition to realize a sustainable, affordable, and well-manageable residential development.

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