

Regensburger Nordstern

Concept

The new neighbourhood Regensburger Nordstern creates a connection between the existing settlement of Wutzlhofen and the adjacent commercial area in the north. Furthermore it establishes new green and urban connections between the western areas and the areas east of the railroad line. The center of the design is a funnel-shaped central park, which opens up the existing greenery along Sandgasse. The green arms radiating from the park connect the adjacent landscape with the new neighborhood and thus form a star-shaped green framework which connects the mixed neighborhood islands. The heart of the quarter is the lively center at the new S-Bahn stop. Open space, topography and urban design enable an innovative concept for rainwater management. Furthermore the new district is characterized by its self-sufficiency in terms of energy production and consumption. Together with the spatial integration with the landscape, natural resources thus become an elementary component of the new district.



Site study area and project area

The focus of the project is clearly on the creation of a new district around the new S-Bahn station, Chamer Straße and the areas east of the railroad. In the study site, selective redensification - particularly in the northern commercial area - will be implemented. In addition, parts of the garages on Baltenstraße substituted with residential buildings to create an urban framework around the S-Bahn. The garages can be converted into studio space and open up towards the underpass.

Urban design

The basic urban design motif is formed by the compact neighborhood islands with a small neighborhood space in the middle. The building structure is based on three main pillars: 1. residential towers to accentuate important landmarks imitating the Regensburger Geschlechtertürme, 2. loose building structures towards the edges with orchards and 3. commercial courtyards for flexible uses.

Each island forms clear spatial edges to the outside - towards the park or the main development - with 4-7 storey multi-family houses, while they open up towards the blue-green corridors with 3-storey townhouses. Every island has a connection to public open space. To the east of the Pilsen Allee/railway line, commercial yards are integrated into the neighborhood islands, which also act as noise protection. In the northern part of the district, the typology changes to coarser commercial structures. Most of them have common commercial yards and form the transition to the existing commercial structures in the north.

Framed by the neighborhood islands, the new center at the S-Bahn station and the new educational campus form a social backbone along the railroad line and the central *Park am Stern*. The solitary buildings in the new center form a square that acts as a social center for the entire district. The 8-storey residential tower in the new center also forms an important landmark in the alignment of Sandgasse.



Green and open space

The star-shaped green space forms the central framework and connects the new district with the adjacent landscape and recreational areas of Brandlberg/Schwarzholz and Mühlberg. The centrally located funnel-shaped *Park am Stern* has an urban character; the blue-green corridors leading away from it have more vegetation and form the transition to the landscape. The biotope area along the railroad line will be integrated into the green network as a green oasis between the new center and the school campus. Therefore it will create synergies with the school right next to it e.g. for educational or recreational uses. At the edges of the settlement, existing orchard structures in the north of Regensburg will be incorporated. New orchards connect

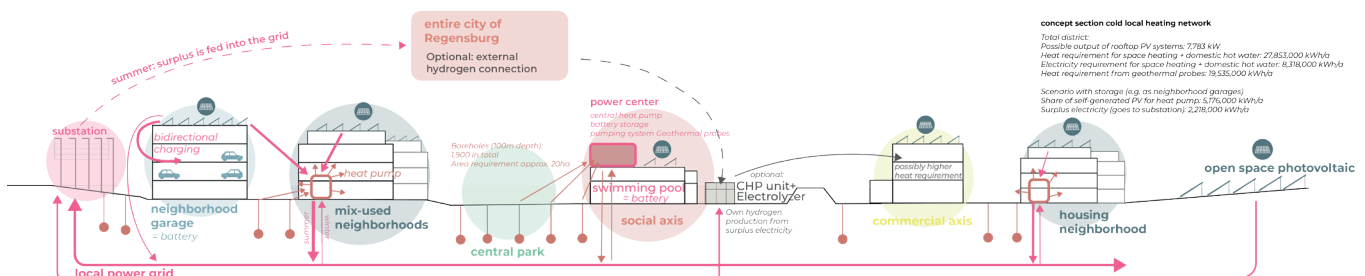
the open residential courtyards with the adjacent landscape.

A central element of the green and open space concept is the rainwater management across all plots. By integrating retention areas in the green corridors and in the park, rainwater from the neighborhood islands is diverted into the open space. Larger collection points are located at the lowest points in the central park and at the existing retention basin to the east of the railroad line. However, the retention basins should be conceived as technical infrastructure and as a design element of the open space. The rainwater management in the green network can therefore contribute to sufficient irrigation of the vegetation and help to cool down the neighbourhood through evaporation in hot months. In addition to the public green spaces, areas for allotment gardens are planned on the western edges.

The areas in the streets and squares are provided with sufficient green beds and retention areas in order to keep surface sealing to a minimum. Overall, the high proportion of green spaces and the careful use of the soil results in a soil sealing area of 39 % in relation to the project area.

Energy concept

The new district is characterized by its cold district heating network (kaltes Nahwärmenetz), which makes it a climate-neutral showcase project for the whole of Regensburg. The district's entire electricity and heating requirements are covered by its own production and any surplus energy produced is fed into the Regensburg grid. The central elements of the self-sufficient energy system are the substation, which is connected to the local power grid, PV



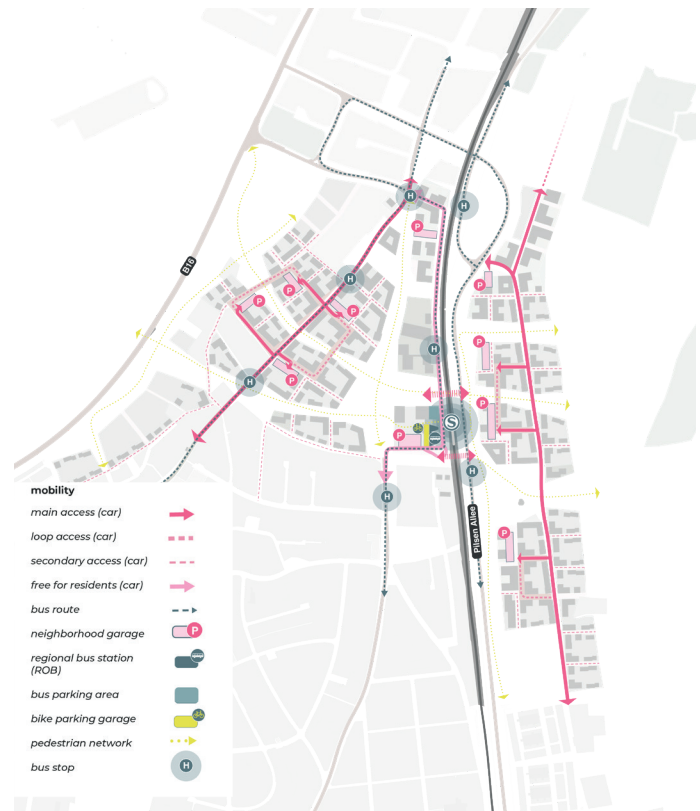
systems, geothermal probes, an energy center as a structural highlight and, optionally, a CHP unit (BHKW) with electrolyser if the district wants to produce its own hydrogen.

Energy production is basically based on PV electricity from PV systems on all roofs and the open space PV system in the east of the area. Each island forms an energy unit consisting of 4 or 6 blocks and has a neighborhood garage, which also acts as a central battery. Thanks to the principle of *bidirectional charging*, the solar power produced during the day is stored directly by charging the electric cars. This principle is currently being researched and represents an important future technology that will be established in the next 5 years.

The surplus electricity is fed directly into the local power grid. Each block shares a heat pump that uses the solar power and heat from the geothermal probes. The heat pumps can be used for heating in winter and cooling in summer. By sharing energy infrastructure block by block and island by island, an efficient system is created. Geothermal probes will be installed in the area between Chamer Straße and Pilsen Allee and to the east of Pilsen Allee. Depending on how deep the area can be drilled, an area of approx. 20 ha (for 100 m deep boreholes) or 6.5 ha (for 300 m deep boreholes) is sufficient for geothermal probes. There should be no boreholes under the buildings to make maintenance work possible.

An energy center is located in the central social axis. Its location directly next to the indoor swimming pool creates useful synergies: The indoor swimming pool can be used as a central heat storage facility. In addition, the energy center has a central heat pump for the indoor pool, the elementary school and the KiTa as well as the pumping system for the geothermal probes. In this way, the topics of energy and climate protection are presented in a central location close to the citizens and can also be used for educational purposes in schools.

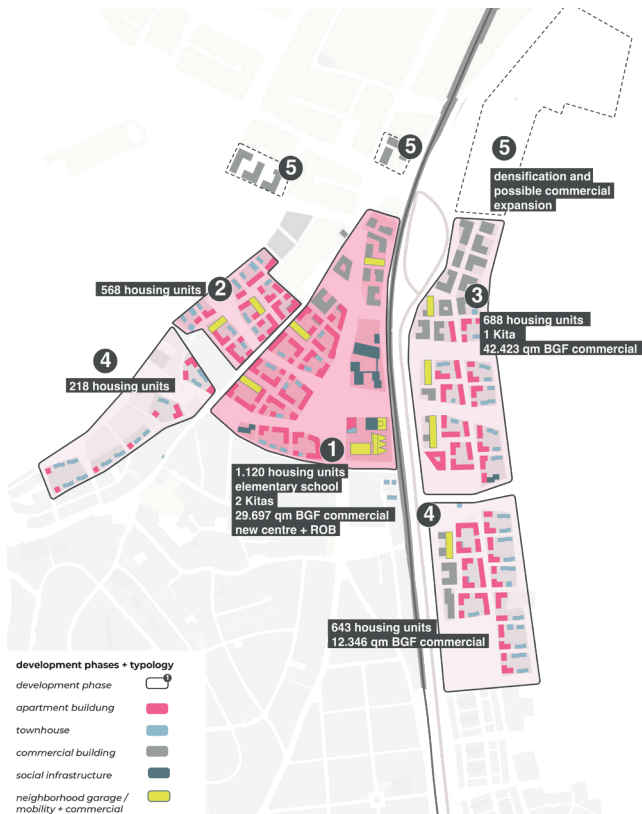
The commercially used areas are also equipped with PV roofs and heat pumps. As the whole area produ-



ces more energy than it consumes, the surplus electricity can be used for an own hydrogen production. This has the advantage that businesses with higher heat requirements (e.g. a large bakery) can also be located here. An electrolyzer converts the surplus electricity (which is collected in the substation) into hydrogen. A CHP (combined heat and power unit) can in turn be used to produce any higher heat requirements.

Mobility

The new district should offer a flexible basic structure for current mobility requirements and future mobility behavior. The main access roads, Chamer Straße and the extension of Haidhofweg, will be the main routes for motorized traffic. The extension of Sandgasse along the railroad line is mainly used for bus traffic, but can be opened up to local residents. Motorized traffic can drive up to the turning circle at the underpass to the Park&Ride quarter garage or to the S-Bahn station. The remaining areas of the new quarter are largely kept free by the 4-storey quarter garages. These are located at the neighbor-



Uses

With the new center and the school campus, important new uses for the entire north of Regensburg will be placed directly in the center of the district. In addition to the infrastructure for mobility, a new location for the Regensburg City Library is placed in the new center. A supermarket will be built on the first floor of the Park&Ride parking garage and the base of the 8-storey residential tower will provide space for gastronomic uses. The new educational campus with a 4-stream elementary school with adjoining sports areas, a KiTa and the new Nordbad swimming pool forms the other building block in the social axis along the railroad line. In the neighborhood islands themselves, active first floor areas for smaller stores are planned at the neighborhood squares, along the main development and at the edge of the park. In the transition to the commercial use, there are also partial areas for small businesses such as crafts due to the greater depth of the buildings on the first floor. To the east of the railroad line, the commercial courtyards are even more strongly integrated into the neighborhood islands and also act as noise protection. In the northern part of the district, the mixed use changes to purely commercial use. The commercial yards offer space for various sizes of smaller commercial enterprises.

Step-by-step development

The new district can be easily divided into different development steps thanks to the concept of the district islands. The first building block to be developed should be the central area between Chamer Strasse and the railroad line, whereby important infrastructure such as the new center, the school campus and the central park can already be established. The area west of Chamer Strasse could follow in the second phase. In the next two phases, the areas to the east of the Pilsen Allee and the south-western extension along the B16 could be developed. The commercial redensification can be implemented simultaneously to the other phases.

hood squares and intercept the MIV traffic from the main developments. This keeps the secondary developments largely free of stationary traffic, leaving more space for retention areas in the streets. The neighbourhood garages are also used as decentral small mobility hubs with sharing infrastructure (bikes, cars etc.) for the citizens.

With the regional bus station (ROB), which is located directly at the new S-Bahn station and the new center, Regensburg's Nordstern will become an important connection point between the district and the city of Regensburg in the future. The spatial linking of the Park&Ride quarter garage, ROB, S-Bahn stop and bicycle garage thus forms an important mobility hub in the entire north of Regensburg. The existing bus route 4 could also continue via the Sandgasse extension and thus better connect the new educational campus to the public transport network.

For pedestrians and cyclists, the new bridge over the train tracks and Pilsen Allee forms the heart of the new quarter. This also represents an important addition in an east-west direction to the existing cycle connection in a north-south direction.