STATION AREA - SÖDRA MUNKSJÖN

VIEW FROM KÄMPEVÄGEN LOOKING WEST

2016-06-17

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NEXT JÖNKÖPING

VÄSTRA STORGATAN
SÖDRA STRANDGATAN
KYRKOGATAN
KUNGSGATAN
JÖNKÖPING UNIVERSITY
KLOSTERGATAN
MUNKBROPSGATAN
MUNKSJÖN FABRIKSOMRÅDE
MUNKSJÖN
VÄTTERN
ROCKSJÖN
ÖSTRA STRANDGATAN
EAST MUNKSJÖN
HERKULESVÄGEN
SKEPPSBRON
JORDBROVÄGEN
KÄMPEVÄGEN
NEW STATION
BARNHEMSGATAN
FRIDHEM
HERKULESGATAN
SOLÄSEN
E4 40/47

0m 200 400 600

STATION AREA - SÖDRA MUNKSJÖN

1:5000 (A1)

2016-06-17

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NEXT JÖNKÖPING

One can argue that the new station and its elevated track area cut the city off to the south. On the other hand, one can argue that the new station adds a pulse to city that is hard to oppose. We believe in the latter. The new station gives great many opportunities if used right. Twenty thousand new passengers every day, fourteen thousand residents and some eleven thousand workplaces make a good foundation for a vibrant urban life.

URBAN PLANNING ANALYSIS

In year 2000 work began to develop and strengthen the city center of Jönköping. A few years later, the work continued throughout the area between Lake Vättern and the E4. The objective was to link the different areas around Munksjön together and develop them into mixed urban areas, which means that existing businesses such as factories, logistics centers, volume trade etc. will move as they might pose negative impact on urban development.

Around 2030 Munksjö fabriksområde and larger parts of Skeppsbron and the Station area will be completed and development of the area "Öster Munksjön" will start.
We suggest that the city's existing bike network will be supplemented and expanded by a loop around Munksjön and a “bike highway” along Barnarpsgatan / Jordbrovägen / Kämpevägen / Herkulesgatan / Östra Strandvägen / Västra Strandvägen / Kyrkogatan. This creates a coherent urban street around Munksjön. Along this street, we propose the planned tram / BRT line. By this, the new districts are tied together and it is possible to create a vibrant urban environment all the way from the city center to the station area and back again. Locating the Tram / BRT line on Barnarpsgatan instead of Klostergatan also creates a better connection to the university.

In the long term, we also believe a pedestrian and bicycle bridge can help connect Munksjö fabriksområde to the Öster Munksjön area

In a future scenario where Skeppsbron and the Station area is fully developed and Jönköping needs further expansion areas, the regional volume trade areas in Solåsen / Fridhemsgatan can gradually be replaced by a dense urban structure.

STAGES OF DEVELOPMENT

TODAY - Industrial area, rail yard.

FIRST STAGE - Skeppsbron is built from west to east and finished around 2030. The Station opens to traffic in 2032. The adjoining blocks to the north of the tracks is built at the same time to screen Skeppsbron from train noise.

NEXT STAGE - The urban grid expands further south to Barnhemsgatan. The south piazza and the Railway park emphasizes the station as a node.

FINAL STAGE - The city expands south and east to E4. The volume trade and hyper market areas in Solåsen and Fridhem is successively replaced by a mixed-use urban structure. This new city centre is fully integrated by the well developed bike network and the tram circle around lake Munksjön.

MAIN BIKE ROUTES
PUBLIC TRANSPORT (BUS)
TRAMS / BRT
RAILWAY TRACKS
HIGHWAY

PARKS
GREEN AREAS
EXISTING BUILDINGS
NEW BUILDINGS
TRAINSTATION ROOF
BUILDINGS UNDER TRACKS

NEXT JÖNKÖPING

GENERAL

The new Station is centered in the extension of Skeppsbrons main axis and walkway, Tallahovsesplanaden. By reducing through traffic on Kämpevägen, an attractive urban space can be created in front of the station.
A corresponding urban space is created on the south side, facing a park and a possible further urban expansion south and east.

Centering the station hall means putting cars, bikes and public transport out to the sides. The local public transport with Tram / BRT and city buses connect on the east side. The regional buses connect on the west side with the shortest possible distance to main routes E4, R40 & R47. Taxis arrive on the north side and a car drop off with short time parking is located on the south side of the station.

The high speed station follows the principal 6-track layout. The outer high speed passage tracks are lowered about a meter into the construction and screened with glass walls to reduce noise. The regional station follows the principal layout as well and is placed adjacent to the high speed station. To the west it connects to Vaggerydsbanan. East of the station the tracks slope downwards and turns north, passes below the high speed tracks and connects to the existing line around Rocksjön to Jönköping C.

Four tall buildings emphasize the urban spaces by the stations entrances.
The buildings positioned directly alongside the track area protect Skeppsbron from train noise.

The two blocks supporting Tallahovsesplanaden north of Kämpevägen is designed with a base that contains retail, cafés, restaurants and flexible generic office spaces. Four tall residential volumes are placed on top, two on each block. These volumes meet corner to corner to create an evening-sun and lake view oriented angle that is protected from train noise.

A cluster of taller buildings, rather than solitary exclamations, is formed manifesting the new Station area.

The spaces below the tracks can be utilized for parking and shopping in hyper markets and mega stores for daily goods, clothing, consumer electronics etc. This is a way to provide volume trade within an urban context. The building volumes, loading functions and parking use the space beneath the tracks.

The proposal contains a total of about 280.000 sq.m gross floor area within the competition area.

NEW STATION

The new station has a general and robust plan. The station hall is located on ground level, beneath the tracks. It has simple and clear connections to all different modes of traffic. Spaces for shops and services are located in smoothly rounded islands.

The station hall links the north and south sides of the track corridor together. Elevators and escalators connect the station hall to the platform level and track area. On the platforms are smaller sheltered waiting areas.

The large roof protecting the platform level is constructed of glulam beams of large dimensions. Placed upon one another they form an uncomplicated and robust constructive system. This wooden structure is protected by a saw-tooth glass roof. South facing parts of the roof is used for an energy farm of solar panels, north facing parts lets daylight down.
The roof construction is scalable and can be changed without the design idea being lost.

Materials are kept simple and clear and chosen for durability. Concrete, stone and of course wood.

LANDSCAPE

Closest to the station, the landscape treatment is focused on functionality and clarity. All modes of transport, walking and cycling included, connects to the station in a natural way. The outside and inside surfaces connect seamlessly with a high level of accessibility and clear guidance routes. Arriving by train, it is easy and intuitive to find your connecting bus, tram or your bike.

Outside the functional zone the outdoor environment is designed to offer places to sit down and take a break between journeys, eat a lunch sandwich or just sit in the sun.

South of the station is a new urban Station Park. The park has an ecological water theme with a large pond where rainwater from the station building and surrounding hard surfaces are led for delay and infiltration. The pond contains different species of plants that naturally purify the water. On an island in the middle of the pond, a coffee bar with its terrace and plantings is a central point. Bridges and walkways connect to the surrounding city. The southeastern part of the park is of a more peaceful nature.

North of the station the environment is characterized by movement and effective changes between the different modes of transport. Rows of trees are planted between the taxi zone and bicycle path to emphasize and clarify the scale of the building.
Towards Munksjön, along the axis of the station a park lane is divided into three zones. The first, closest to the station, is in a smaller scale with perennial plantings and benches. The second zone has an activity based programme with skate parks, playgrounds and open lawns. The third zone contains more sports-oriented activities such as soccer and basketball.

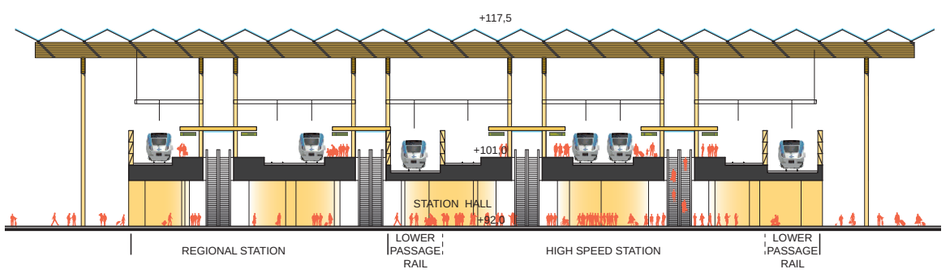
TRAFFIC

The new bike network has bidirectional lanes on either side of Kämpevägen. Via Tallahovsesplanaden the bike network is connected to with a loop around Munksjön. A bike hub with indoor bike parking spaces and services is located under the tracks along the bike route south to Barnhemsgatan and Industrivägen. Bike parking is also available directly outside the station hall entrances on both the north and south side. On other streets around the station area where there are no separate bike lanes, bikes share space with cars.

Since the station hall will be the connecting link between Tallahovsesplanaden and Industrivägen, we suggest two cross streets west and east of the station. Since the main axis is made pedestrian, the proposed roundabout by Barnhemsgatan moves westwards.
Regional bus services connect to the station from the west cross street where it is possible to create a direct link to E4, R40 & R47, through the new exit from the roundabout at Ljungarum junction.
Local bus services and Tram / BRT shares platforms on Kämpevägen, but are separated in the local transport hub under the tracks directly east of the station hall.

Kämpevägen is prepared for Tram / BRT that connects to the center both west and east of Munksjön through Jordbrovägen and Herkulesvägen respectively. To the south, the system is connected to Industrivägen through a dedicated lane through the hub and further south through the park.

The car traffic network follows the proposed principle of Skeppsbron where main access is from Kämpevägen and through cross streets to various destinations. East-west through traffic is mainly transferred to Barnhemsgatan through cross streets under the tracks to reduce the amount of through traffic on Kämpevägen. The urban space north of the station is conceived as a shared space area to limit the amount of car traffic and making space for bikes, pedestrians and public transport. This will reduce the possible barrier effect of a regular street and strengthens to connection to the sunny north side.
A Taxi drop-off is located on the northwest side of the station hall and drop-off for cars is located on the southwest side. Parking for both commuters and local residents is arranged in adjacent blocks west and east of the station hall.



STATION CROSS SECTION LOOKING WEST

0m 16 32 48 1:400 (A1)

Munksjön

PARK

PLAYING FIELD 20x40m

BASKET BALL

Munksjöpromenaden

SKATE

Oskarshallsgatan

SYRGASVAGEN

PARK

OSKARSHALLSGATAN

TALLAHOVS-ESPLANADEN

OSKARSHALLSGATAN

GREEN SQUARE

SKEPPSBROGATAN

RING LINE BUS/BRT/TRAM STOP

NORTH PIAZZA

BIKES

TAXI

BIKES

BIKE SERVICE

OFFICES

OFFICES

HOTEL

HYPER MARKET

OFFICES

MEGA STORE

4700 m2

3600 m2

2700 m2

9000 m2

STORM WATER PARK

CAR HUB WEST 480 SPACES / 2 LEVELS

REGIONAL BUS HUB

STATION HALL

LOCAL TRAM / BRT / BUS HUB

BIKE HUB

CAR HUB EAST 480 SPACES / 2 LEVELS

LOADING AREA

OFFICES

OFFICES

OFFICES

OFFICES

OFFICES

OFFICES

OFFICES

CAR DROP-OFF

SOUTH PIAZZA

BIKES

BIKES

PARK

WATER

CAFÉ

CAFÉ

OFFICES

Fridhemsrondellen

BIKE PASSAGE

BARNHEMSGATAN

NEW CIRCULATION

TO E4

INDUSTRIGATAN

KONRADSSONS KAKEL

STATION AREA - SÖDRA MUNKSJÖN

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0m 40 80 120

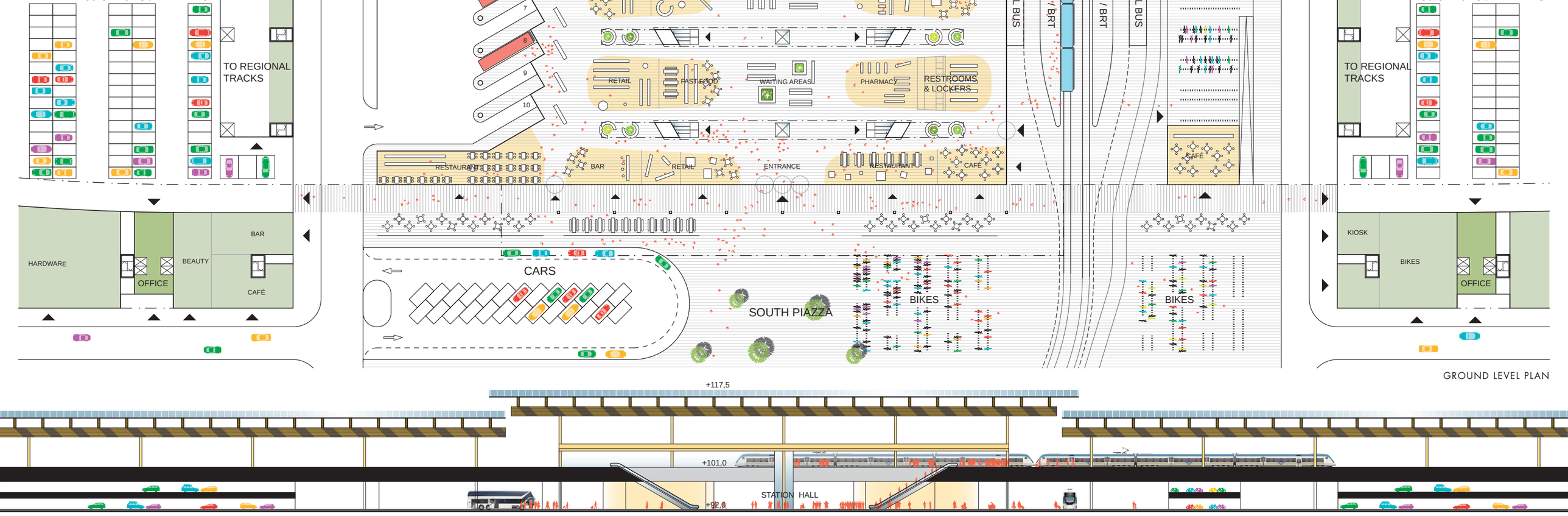
1:1000 (A1)

GROUND LEVEL SITE PLAN

NEXT JÖNKÖPING

BIKES
CARS
PLATFORM
RING LINE BUS/BRT/TRAM STOP
PLATFORM
CARS
BIKES
NORTH PIAZZA
HOTEL LOBBY
TAXI
BIKES
BIKES
FAST FOOD
PHARMACY
OFFICE
GIFTS
RAMP TO 2ND LEVEL
RAMP TO 2N
RESTAURANT
SPORTS BAR
CONVENIENT STORE
ENTRANCE
MARKET HALL & FAST FOOD
BIKE SERVICE
LOCAL TRAM / BRT / BUS HUB
RESTROOMS & LOCKERS
TICKETS & SERVICE
WAITING AREAS
BUSINESS LOUNGE
RETAIL
PLATFORM LOCAL BUS
PLATFORM TRAM / BRT
PLATFORM TRAM / BRT
PLATFORM LOCAL BUS
REGIONAL BUS HUB
STATION HALL
BIKE HUB 2000 BIKES IN 2 LEVELS
CAFÉ
RETAIL
SMALL SHOPS, BOOKS, GIFTS AND MORE
CAR HUB WEST
480 SPACES / 2 LEVELS
CAR HUB EAST
480 SPACES / 2 LEVELS
RETAIL
FAST FOOD
WAITING AREAS
PHARMACY
RESTROOMS & LOCKERS
TO REGIONAL TRACKS
TO REGIONAL TRACKS
RESTAURANT
BAR
RETAIL
ENTRANCE
RESTAURANT
CAFÉ
CAFÉ
HARDWARE
BEAUTY
BAR
OFFICE
CAFÉ
CARS
SOUTH PIAZZA
BIKES
BIKES
KIOSK
BIKES
OFFICE

GROUND LEVEL PLAN



STATION PRINCIPAL SECTION LOOKING NORTH

STATION AREA - SÖDRA MUNKSJÖN

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0m 16 32 48

1:400 (A1)

NEXT JÖNKÖPING

SUSTAINABILITY

The station building itself is primarily based below the railway bridge and with escalators, lifts and stairs to enter the station level, which reduces the solar gain to the flow area. The building form and massing has been developed to create a low energy and sustainable building, with low carbon emissions.
The building orientation will maximize the daylight penetration to the internal flow area through the facades, together with creating opportunities for mid-season natural ventilation, and to reduce acoustic intrusion from street and rail noise, whilst maintained optimal external views.

The concepts have been developed to achieve a low-energy solution to lighting, cooling, ventilating and heating the building, whilst maintaining the requirement for flexible flow and commercial space.

High performance glass is used to meet the requirements for airtightness, reduction of heat gain, indoor climate options and daylight performance.

Energy sources are required for power, heating and cooling within the building.

It is proposed that the base cooling load will be provided by the city district cooling system, together with the use of natural ventilation in mid-season. Electrical energy will be used to power lighting, computers, lifts, ventilation, cooling, pumps and other systems. The energy will be taken from the local grid. Heating will be provided by the city district heating system.

We propose to integrate renewable energy sources through the use of photo-voltaic panels integrated within the station roof and the use of district cooling from Vättern.

The entire station roof plan will be undertaken as a PV energy farm, this equals to approximately 15.000 m2 of solar panels angled against south.

An energy farm this size will be able to produce 3.000 MWh on a yearly basis.
The power will be distributed in the local grid to supply the station and surrounding buildings.

LED light sources will be provided throughout the building to give high levels of energy efficiency.
Lighting controls will include daylight-linking to ensure that light is not used unnecessarily. A central battery system will be provided for provisions of emergency lighting. The slave emergency lighting systems will consist of discrete bulkhead fixtures and illuminated emergency exit signs.

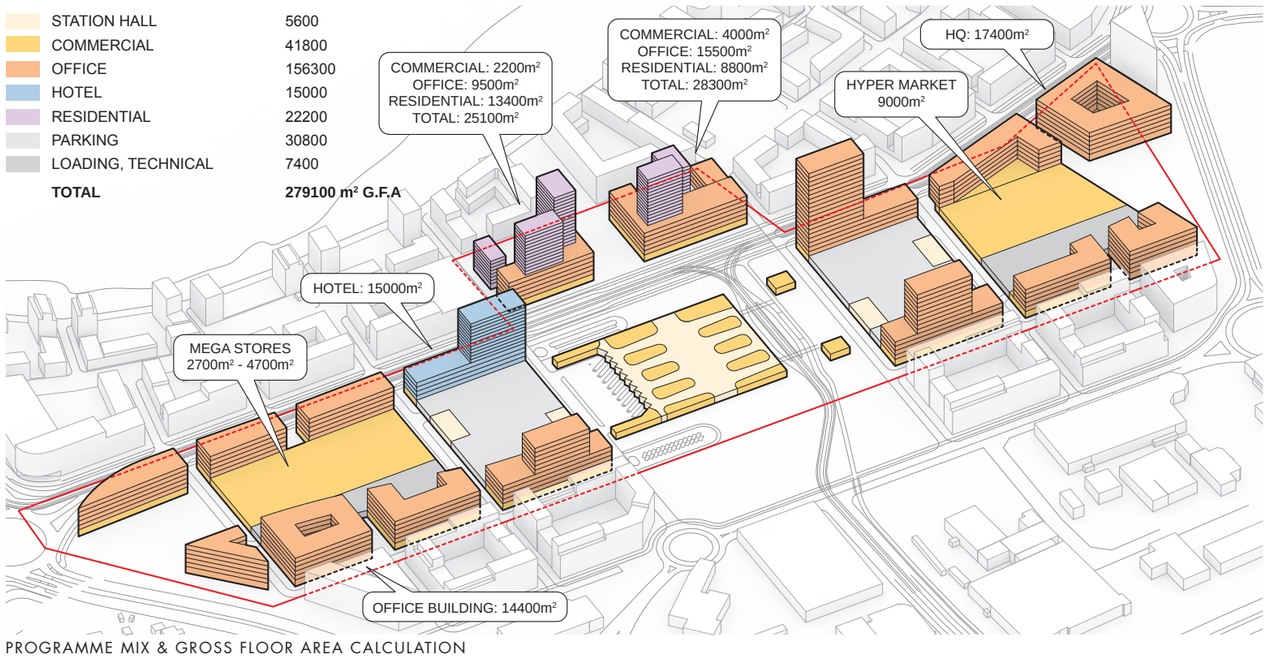
It is important to maintain a comfortable indoor climate within the station building to ensure comfort. The indoor climate proposals have been developed to optimize the performance of temperature, humidity, noise, light and CO2 content of the air.

The station building will use a mixed mode ventilation system. Within the flow areas there will be a net heat gain throughout most of the year and it is intended to maximize the passive design element, through the use of exposed concrete soffits and openable windows, such that night cooling can be used as part of the energy strategy.

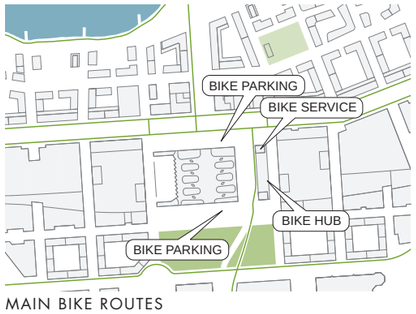
STRUCTURE

The proposed structural concept for the station viaduct structure uses modular precast concrete segments. With this solution, large spans can readily be achieved, allowing maximum flexibility in the use of the space below. The form of structure is readily adaptable to varying geometry due to track layout within the station and on the approaches on either side. Openings between different station elements can be accommodated and the concrete structure will be stiff, which means deflections under train loads can be controlled which is a key requirement for a high speed rail where trains may be passing at speeds up to 250 kph. Precast concrete will ensure a high quality of finish and minimize the risk to construction schedule due to unforeseen events.
The solution will be durable and require low levels of maintenance.
The superstructure will be supported on columns and isolated from the substructure below by bearings. This will help to limit the transmission of noise and vibration from the trains.
Natural light to the area below the structure could be improved by casting light tubes into the viaduct segments or including openings between different elements.
The required structural depth is related to the longitudinal span of the structure.
Span to depth ratios will typically be in the range 20 to 25. This means that, for a structural depth of 1.6m, longitudinal spans of up to 40m can be achieved.

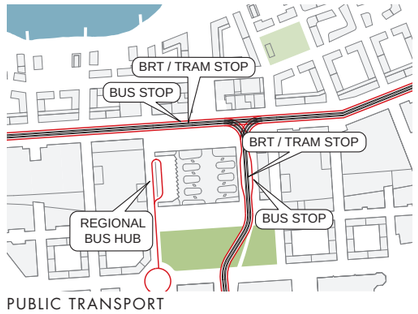
STATION HALL	5600
COMMERCIAL	41800
OFFICE	156300
HOTEL	15000
RESIDENTIAL	22200
PARKING	30800
LOADING, TECHNICAL	7400
TOTAL	**279100 m² G.F.A**



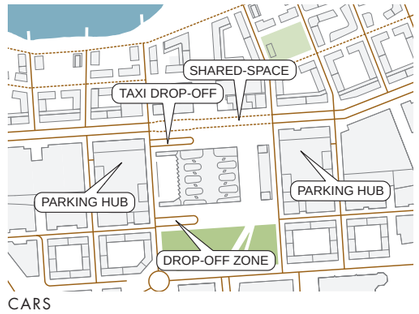
PROGRAMME MIX & GROSS FLOOR AREA CALCULATION



MAIN BIKE ROUTES



PUBLIC TRANSPORT



CARS

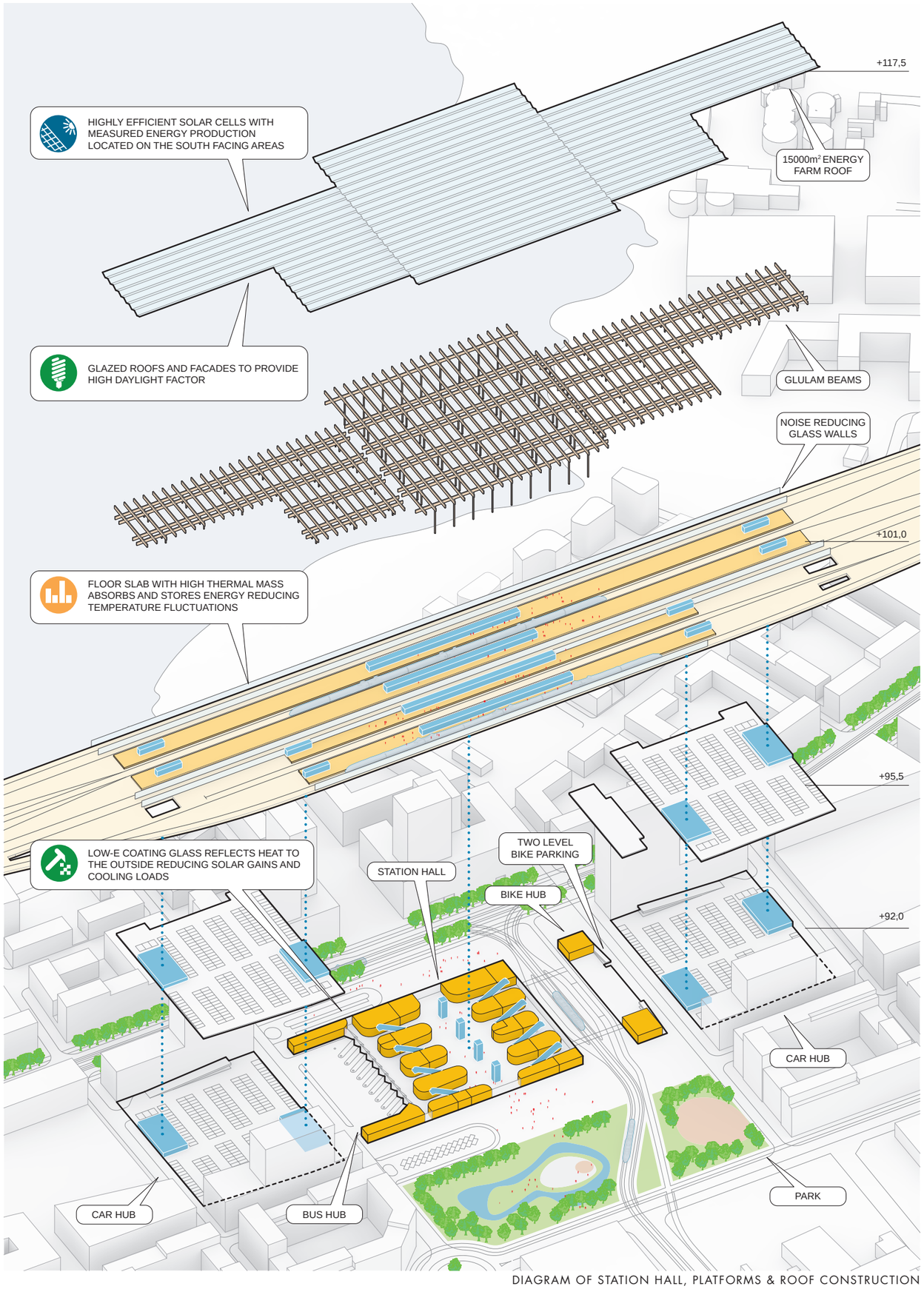


DIAGRAM OF STATION HALL, PLATFORMS & ROOF CONSTRUCTION