

# Project 2 – In the Subway Network



References: the Sky Reflector Net of Fulton Center, NYC; James Carpenter, Grimshaw Architects, Arup | Pipette light installation at Saint Pancras Square, London; Speirs & Major, Miriam Sleeman, Tom Sloan Design | World Trade Path Station, NYC; Calatrava | Steeles West subway station, Toronto; Will Alsop | Kaohsiung MRT Central Park Station, Taiwan; Richard Rogers | Riyadh Metro Station, Snøhetta

## Background

*Project 2 will take on the Stockholm subway, including the existing network as well as new extensions. Students will select sites appropriate for densification along the lines, including the planned Blue Line extension to Gullmarsplan, the Meatpacking District and Nacka, combining residential development with small-scale industries and services. Computational design approaches will include digital fabrication, daylight evaluation, and performance simulation.*

*The initial premise for the new metro extension is based on the “Stockholmsförhandlingen” - the Stockholm agreement, which is part of the largest infrastructural venture in Sweden in the last 150 years, “Sverigeförhandlingen” – “The National negotiation on housing and infrastructure”, in which the intention of the State is to build high-speed railways from Stockholm to Gothenburg, and from Stockholm to Malmö, in order to increase public transport, improve accessibility and increase housing construction in the three major cities; Stockholm, Gothenburg and Malmö. Financing will be provided by the State, relevant municipalities and county councils and by user charges and private investors.*

*The Stockholm agreement entails a Metro expansion to Nacka, Arenastaden and Barkarby, in which the blue line is being expanded to Gullmarsplan and connected to the green line for greatly increased capacity through central Stockholm. The expansion involves nine new stations and increased accessibility to many parts of central Stockholm. The expansion of the metro will start by 2016 and the earliest parts begin served approximately 2020. Extended metros create opportunities for increased residential construction. The agreement also means that local authorities themselves or by other landowners / contractors erect about 78 000 homes in the metro adjacent areas by 2030, which when distributed between our sites could entail some 5000 units. A larger congestion tax will be enforced to address congestion in the road network and to enable financing of nearly half of the 19.5 billion as the investment cost for the metro extensions (this will be addressed in the spring). In addition, the state contributes with another quarter, the municipalities with even more and the Stockholm County pay above 650 million for infrastructure.*

# Introduction

Project 2 will relate to the subway as infrastructural element, and explore how new subway stations may affect the urban condition, and in particular provide new (or different) dense urban centers. Four sites that are part of the extension of the Stockholm Blue Line to the south and east have been targeted as being of particular interest. In *Slakthusområdet* – the former Meat Packing district of Stockholm, the existing Globen station will be closed, and replaced with a new station within the district. The specific location is yet to be determined – and this will affect the design, and adjacencies to major recreational venues as well as low density residential districts are of relevance. At *Gullmarsplan* the new line will have to interfere with several other infrastructural systems - other subway lines, a bus station, the tram line, and the area itself is likely to be transformed. This situation is very dense already, and requires good strategies in order to incorporate additional housing and services, as well as a cultural venue – with the ambition to transform Gullmarsplan from a pure infrastructural node to a location in itself. As part of the planned Nacka extension, the new subway station at *Nacka Centrum* will see an over decking of the highway, residential additions to a commercial center, and potentially new administrative or school buildings. *Järsla metro* conjunction with Saltsjöbanan station Saltsjö Järsla and is the transfer point between the Saltsjöbanan line, metro and bus. For residents in the eastern parts of Finntorp, Birka area, Järsla lake, Lillängen and Ekudden it is also the metro station that is closest. The stations Järsla and Nacka are placed on either side of an area in Nacka with many civic buildings, a fire station, a City Hall, schools and a sports area. Nacka and Järsla are the least dense of the four sites, with nearby access to green areas and to the waterfront of Nacka Strand and Järsla Sjö.

On all four sites, design projects will explore the location of the station in terms of access points and connections, but with the excavations planned, there is also an opportunity to investigate new, partially submerged, building typologies. On one hand, programs less dependent on daylight may be located underground, and on the other hand there may be ways to design passages to bring daylight down. Most development will however take place over ground, but the access-points to the subway will be important – the new stations will increase the flow of people dramatically, and provide the opportunity to include programs of interest to the complete area of Stockholm.

In general, the sites of project 2 are denser, more connected, and less likely to be able to approach in a Tabula Rasa manner. They are more 3-dimensional (many layers of traffic, and the subway itself). They are all quite urban or sub-urban, and less undefined than previous sites.

## General issues that affects design:

- *The construction of the subway will for all sites involve major excavation work – this may open up to the location of additional programs underground, for further densification. In turn, this may provide challenges in terms of daylight and accessibility – can we provide new opportunities for services with daylight underground? And can this be an opportunity for alternate vertical communications systems?*
- *A main challenge may be to provide an underground station with daylight access, yet balancing this with density achieved by combination of subterranean spaces (services + light industry) and local high density in the urban fabric (housing + services/culture).*
- *Several entrances / access points may be proposed, which in turn will affect the urban fabric. There may be a choice of several smaller access points, or fewer larger ones.*
- *Each site will provide altered or new connectivity between local area and Stockholm tube network – and the areas will therefor go from local to regional in accessibility. This in turn allows the integration of programs that may require a wider area of attraction, such as cultural venues, very specific services or municipality centers.*

- *At organizational level, the location of tills (the border to areas only accessible with a ticket) may make a difference – placed at ground level or further down.*
- *Project 2 will address architectural implications in urban / suburban contexts, and local conditions must be related to.*
- *Students may decide to work with a smaller or bigger area, in either case the program should address the requirement for housing development as specified in the back ground.*
- *A minimum of 50000 m2 of programmatic area needs to be developed, including housing and additional programs.*

## ***General Schedule***

The first week will entail collaborative site investigation, including the development of a digital site model, and preparations for a physical site model – which should be done by individual teams. Site models should be produced early on, and be used as working models. As a parallel, team based research should be made into international references of subway/urban development.

## ***Deliverables***

### **Week 1**

- A collaborative digital site model.
- One physical site model 1:500 – to be used as a working model – initially shared, preferably later one per project.
- Start of design portfolio, collecting common site analysis and references, including diagrams, site plans, photographs and any other representation of relevance.

*This material will be discussed in tutorials, there will be no separate review.*

### **Interim Review**

- Well defined programmatic overview.
- Updated physical model presenting concept.
- Formal concept, presented in sketches and volumetric renderings.
- Definition of potential structural issues through diagrams.
- Site plan at 1:1000 showing concept.
- One or several sections at 1:1000 showing concept.

### **Final review – week 3**

- Relevant site investigations.
- Plans, sections, elevations at 1:500, site plan at 1:1000.
- Axonometric at 1:500, presenting overall concept and area of resolved design.
- Selected area of resolved design at 1:200, presented in plans, sections and elevations.
- Resolved structural solutions.
- Physical model at 1:500.
- Exterior and interior illustrations, appropriate diagrams.

## Site 1 – Slakthusområdet



### Background

The extension of the Blue line to the south entails a closure of the current Globen tube station, and a new station within Slakthusområdet – the former meatpacking district of Stockholm. Slakthusområdet is will be transforming from a past light industrial area, to a mixed residential new area over the next 10 years. It also sits next to one of the big entertainment districts of Stockholm – with the Globen and Tele2 Arenas. The area is currently quite disconnected from the surrounding areas, something which will change. The current plan for the subway includes several options (one which is currently preferred, but for the studio this remains open). The new tube line is scheduled to open in 2025.



The four options for the new stretch: Blue – close to current model, but with stations underground, Black – centrally in the district and underground, pink – centrally with bias towards south and underground, green – to the south and underground.

There are several alternatives for the new subway station – project will likely involve the specific location, potentially open air station (involving a major cut in ground) and the development nearby. Perhaps suggesting densification around the station.



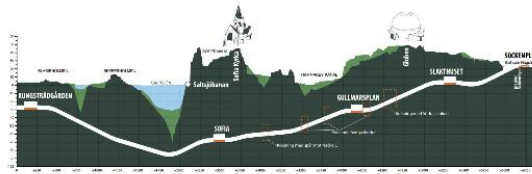
Figur 22 Profil alternativt Blå.



Figur 23 Profil alternativt Svart.



Figur 24 Profil alternativt Rosa.



Figur 25 Profil alternativt Grön.

The four options also have some repercussions on the depth of the station – this will require further investigations and may condition the possible solutions for underground passages and associated programs.

## Challenges

- *How can Slakthusområdet retain light industry (such as small workshops, local production or media producers) while growing into a new, and more networked urban district, including residential development and services?*
- *Can the subway and related structures provide an important locus and hub where these programs are reflected?*
- *In all new proposals for the location of the station, the (too long) distance to Enskede gård has been questioned – is there a solution to this?*

## Local site issues and aspects

- Decision on subway location should be made (one of the four or another option), considering the district and adjacent sites.
- Decision on subway entrances should be made (following plan document, or suggesting alternate solutions).
- An overall concept of station and relation to ground level and surroundings – opening up platform for daylight, underground with open space, smaller tunnel option etc.

## Proposed programs

A new urban situation that mixes small industrial programs with residential areas as well as services – in the creation of an alternate urban hub in Stockholm. Minimum total program development 50 000 m<sup>2</sup> is required at schematic level, with the option to go for more resolved design on areas of particular interest. The base division of programs, according to local standards, would be 50% housing, 20% offices, 10% services, 10% industry, 10% institutions and culture, but this should be altered to the local conditions, as an outcome of the first week's analysis.

## *Site 2 – Gullmarsplan*

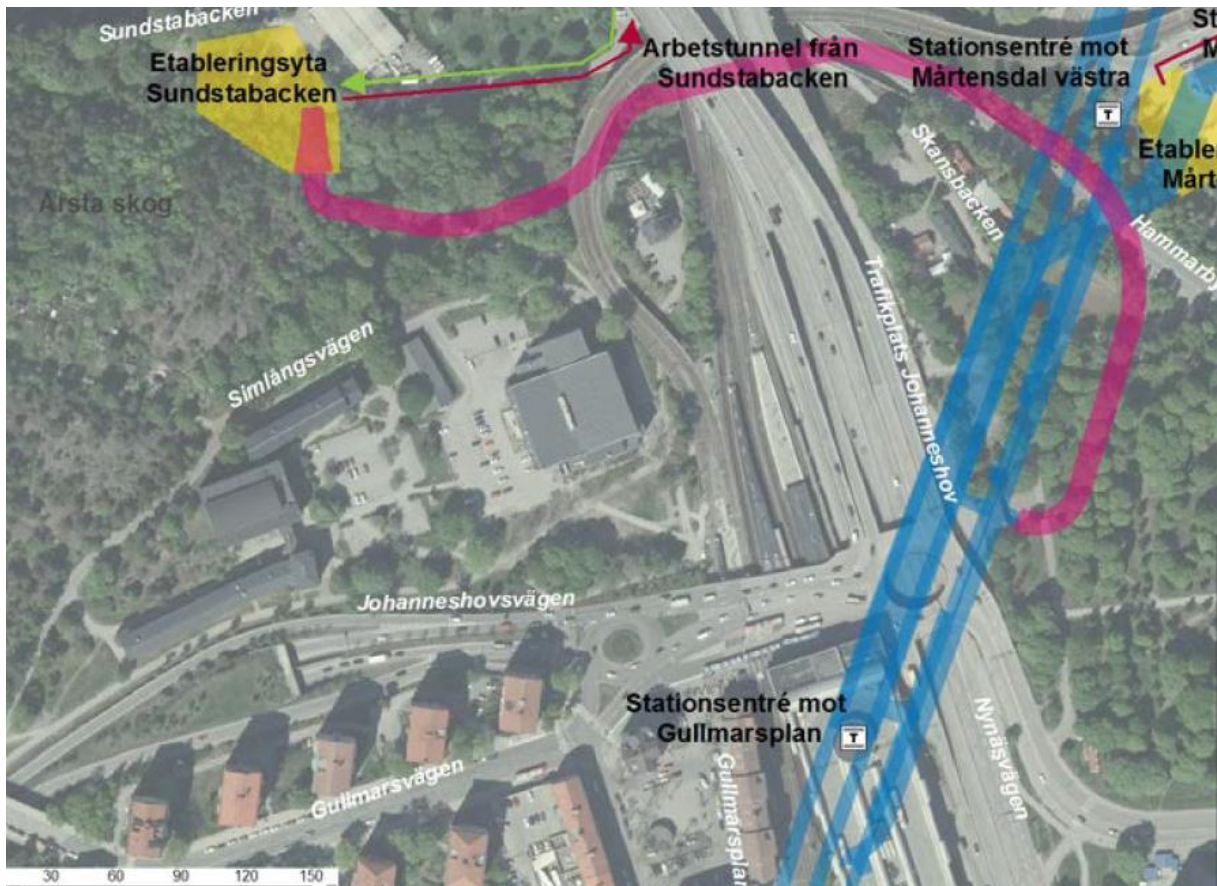


### *Background*

Both blue metro lines stop today at Kungsträdgården. The plan is to extend one of them through Sofia on Södermalm further to Nacka centrum. Branching in Sofia, the other line will be extended through Gullmarsplan to existing green line in Sockenplan. The construction starts 2018 and will be ready for 2025. To finance the project there is a need to densify areas around the new line to get more incomes through new building allowances and getting more tax-payers in the region. A vision of 78 000 new housing units is set between the municipalities involved.

### *Challenges*

Gullmarsplan is already a hectic traffic hub, connecting metro green line to both buss and trams. The new connection to the blue line will elevate the complexity. A new entrance to the station, opening to Mårtensdal will be constructed within a new planned building. The station will also be connected to the existing platforms. Orientation situation is already a big problem in the area, due to hilly landscape, different levels, bridges, and barriers. A challenge to be faced in this project is to investigate if architecture can contribute to a more readable and clear urban structure and enhance orientation. Gullmarsplan is a well-used traffic junction, where passengers switch between different means of public transport. Is there a way to transform this traffic hub to something more of a destination as well? That becomes more important once you consider the exceptional location, in relation to the water, nature, city center and Södermalm.



Gullmarsplan is in early stage planning, but the location of the new underground is set.

### *Local site issues and aspects*

The landscape is hilly and consists of big height differences. The urban fabric are scattered with largescale areas with industrial character in the western parts of Hammarby Sjöstad. The landscape is characterized with infrastructure and bridges. Lots of people pass the area, inasmuch as it's an important link between Södermalm and Årsta.

In Årstaviken there is a natural forest area called Årsta skog, which connects to the waterfront on north. Along the waterline there are many well-used walking paths. Sundsta gård is a protected historical environment consisting of 19th century buildings, just by Årstaviken. The other historical important building is the windmill by the Skanstull Bridge.

The northern entrance is mainly industrial area today. There is a new masterplan which covers this area, which suggests new functions such as offices, commercial, and crafts in the green area. The walking path between the existing industries and the roads is a noise polluted environment without specific recreational values. The southern entrance within the existing station does not affect cultural, natural, or recreational values.

### *Proposed programs*

A suggested approach is to develop an improved urban context that transforms the current communication hub into a functioning local environment, through an integrated context of cultural programs and residential areas as well as services – a new version of Gullmarsplan. Minimum total program development 50 000 m<sup>2</sup> is required at schematic level, with the option to go for more resolved design on areas of particular interest. The base division of programs, according to local standards, would be 50% housing, 20% offices, 10% services, 10% industry, 10% institutions and culture, but this should be altered to the local conditions, as an outcome of the first week's analysis.

## *Site 3 – Nacka Centrum*



### *Background*

In 2030, Nacka predicts 40 000 more residents and that the closest areas to Stockholm, Sicklaön, is and integrated part of the inner city. In order to meet the growing population, they plan to build about 14,000 new homes in this area over the next 15 years. A prerequisite for housing construction is that the metro is extended to Nacka.

The adopted plan program by the municipality for Central Nacka includes a possible decking over of Värmdöleden. Depending on deck location and design it may be appropriate with a subway entrance on the decking. The location and design of the bus terminal is a crucial parameter for the metro function.

### *Challenges*

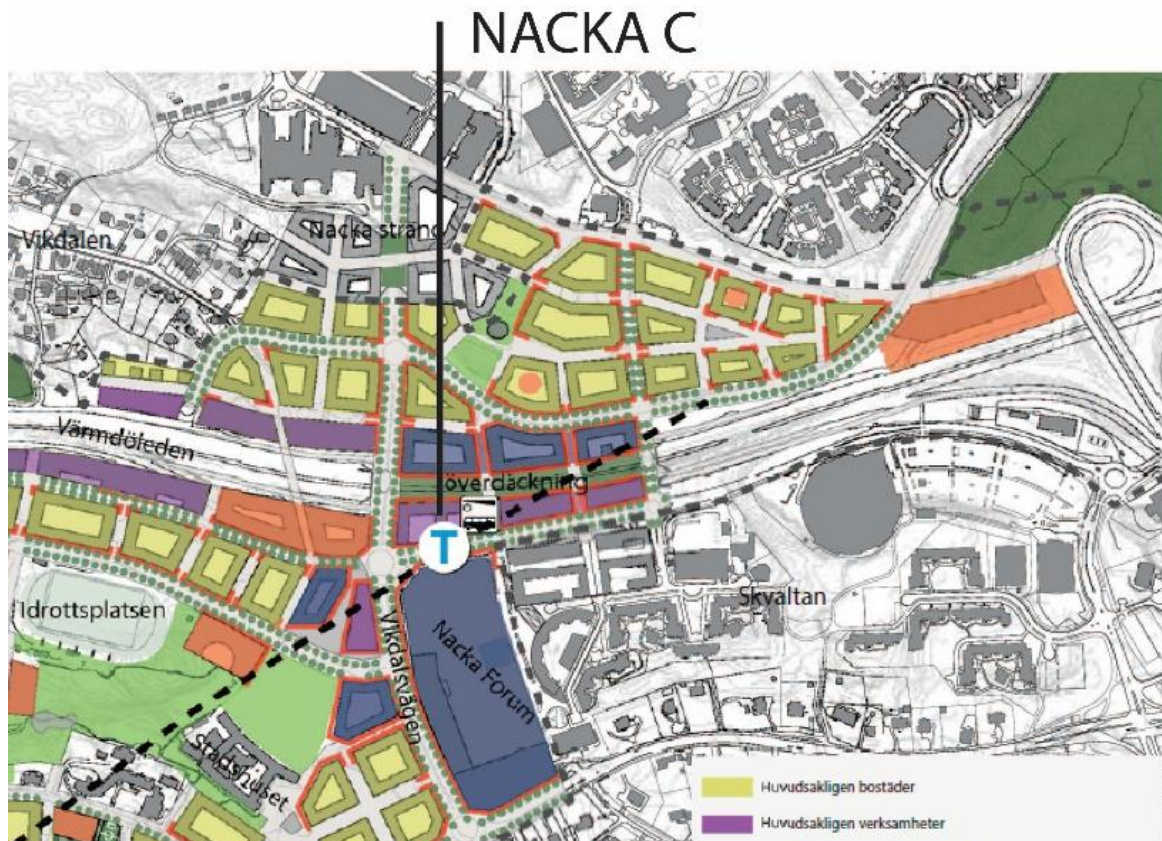
- How can a previous local center find its identity as it takes part in the Stockholm infrastructural network?
- What new operations besides the usual mall shops may find its locations here? Can your interventions provide a new opportunity to connect commercial and residential areas, and at the same time transform a semi-rural highway area into an alternate urban district?
- Can the new excavations for the subway provide additional spatial and programmatic opportunities?
- Can the current version of a suburban mall be turned into a local urban context, with the addition of residential architecture?

### *Local site issues and aspects*

- Final call on subway entrances in relation to the planned over decking, as well as the distribution of additional development need to be addressed clearly.
- The submerged spaces of the subway can provide great new potential of spatial experiences in a situation that previously saw a highway, a bus stop, and a mall.



- There is a particular opportunity in finding a strategy for the “cladding” of the existing structure of the mall in residential development, and at the same time provide new urban contexts.



### *Proposed programs*

*An expansion of the Nacka Forum mall, as well as community services as well as a school and sports facility and/or university locality is part of the local program. Residential development is key as well. Minimum total program development 50 000 m<sup>2</sup> is required at schematic level, with the option to go for more resolved design on areas of particular interest. The base division of programs, according to local standards, would be 50% housing, 20% offices, 10% services, 10% industry, 10% institutions and culture, but this should be altered to the local conditions, as an outcome of the first week’s analysis.*

## *Site 4 – Järsla*



### *Background*

In 2030, Nacka predicts 40 000 more residents and that the closest areas to Stockholm, Sicklaön, is and integrated part of the inner city. In order to meet the growing population, they plan to build about 14,000 new homes in this area over the next 15 years. A prerequisite for housing construction is that the metro is extended to Nacka.

Järsla metro station is planned in conjunction with Saltsjöbanan station Saltsjö Järsla. The station is the transfer point between the Saltsjöbanan line, metro and bus. For residents in the eastern parts of Finntorp, Birka area, Järsla lake, Lillängen and Ekudden it is also the metro station that is closest. The large school and sports area can be reached from this station. Järsla is an industrial historic area with one of the oldest industrial buildings on Stockholm, the De Laval industry complex, now turned into high end housing on the water front of Järsla Sjö and a smaller commercial area close to the Saltsjöbanan station.

### *Challenges*

- How does a new tube station change an area with mixed programs of housing and small scale industrial?
- What new residential typologies can emerge in this context?
- What role may the waterfront play?
- How can industrial facilities, that may become obsolete, find a new use in this altered context?

### *Local site issues and aspects*

- The design of entrances will in this context be quite important – they may be considered to be solitaires in a suburban environment – canopies or roofs that are not part of other constructions.
- How can the interplay between over ground and underground transport be developed - there may be good opportunities to create visual connections to underground platforms, and get daylight into submerged spaces.
- The site may also provide opportunities to relate landscape to architecture – and in extension relate the waterfront to the proposed new junction.



### *Proposed programs*

The local requirements include besides residential development, primarily sports facilities – including a new swimming stadium, an ice hockey rink, a small sport hall, and/or a soccer field. Minimum total program development 50 000 m<sup>2</sup> is required at schematic level, with the option to go for more resolved design on areas of particular interest. The base division of programs, according to local standards, would be 50% housing, 20% offices, 10% services, 10% industry, 10% institutions and culture, but this should be altered to the local conditions, as an outcome of the first week's analysis.