

# NACKA CITY (VÄSTRA SICKLAÖN)

showcasing studio teaching  
and student work

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This book is inspired by teaching on a postgraduate module, the Sustainable Urban Development Project (BPLN0059), within the MSc Sustainable Urbanism programme at the Bartlett School of Planning, University College London. Teaching is delivered by six academic tutors led by Dr Catalina Turcu across two master programmes, MSc Sustainable Urbanism and MSc Transport and City Planning, and runs over eleven weeks during the winter term (January to March). Half-way through the project work, the students undertake one-week fieldtrip to the country and location of the project site.

The module's teaching philosophy rests on the Capstone teaching and learning approach. That means that students work or 'collaborate' directly with a 'client' (i.e. a municipality or city in this case) while on an academic assignment. Students have to deal with complex urban challenges in the development of a large-scale site and propose 15-20 year long Strategic Sustainable Urban Plans (SSUPs) for the site.

This book draws on a selection of student work from the 2016-17 and 2017-18 cohorts and looks at a site in the municipality of Nacka in the Stockholm Region, Nacka City (or Västra Sicklaön in Swedish). The book is developed over four parts: introduction, site analysis, theoretical underpinnings of student work and, finally, an overview of four student projects.

We would like to thank and acknowledge here the work of six tutors and two cohorts of students (2016-17 and 2017-18) reading MSc in Sustainable Urbanism and MSc in Transport and City Planning at the Bartlett School of Planning, University College London in the UK. Without their dedication, hard work and excellent project outputs this book would have not been possible.

Special thanks are due to Peter Brokking, Tigran Haas and Mats Lundström of Stockholm's Royal Institute of Technology (KTH) and their students for organising KTH-UCL student workshops during fieldtrips to Sweden. Many thanks are also owed to Sabina Nilsson who has kindly supported and organised documentation gathering and students' meetings and visits in Nacka, as well as to staff from the Nacka Kommun including Erik Wilberg, Marianne Areskog, Anna Green, Ewa Bohm and Andreas Totschnig, for their valuable contributions and time put towards the work showcased in this book. Finally, many thanks to Camilla Edvinsson who has inspired Bartlett students by taking them on tours to the latest sustainable urban development projects in Stockholm: the Royal Seaport (Norra Djurgårdsstaden) and Sustainable Jarva.

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# INTRO

## CAPSTONE LEARNING

The module's teaching philosophy rests on a Capstone approach to teaching and learning. This is an integrative experience that enables and empowers students to engage with real-life clients through real-life projects. It aims to encourage students to think critically, develop communication and research skills, teamwork and project management, while 'designing' an urban solution. Capstone projects also encourage students to connect their projects to local challenges and integrate outside-of-academia learning experiences such as interviews with users and other scientific observations.

Capstone models of teaching and learning have been increasingly incorporated into higher education over the past years. Since its conception in the United States in the mid 1990s, Capstone education has been especially adopted by business schools throughout North America, while, more recently, it has been rolled out within engineering design and sustainability programmes.

Capstone education provides 'unique settings for students to build their professional capacity in collaboratively [with a 'client'] identifying, analyzing

and developing solution options to sustainability problems' (Wiek et al., 2013, p. 433).

In order to deliver creative solutions to the urban challenges arising in society, one needs to first be exposed to those problems (Fadeeva et al., 2010). The pedagogical underpinnings of Capstone education fit the foundations of education for sustainable development which calls for innovative models of teaching that offer 'interactive, experiential, transformative, and real-world learning' (p. 309; see also Rowe, 2007).

Hence, throughout the project students are first 'exposed' to urban challenges and then 'work' alongside those/city/municipality dealing directly with such challenges. The Capstone learning and experience ultimately aim to simulate a real life urban development situation.



Photograph by C. Turcu (2018)



Photograph by L. Hagermann (2018)



Photograph by C. Turcu (2018)



Photograph by R. Mayers (2018)

Photograph by *anonymous* (2018)





## OUR TEACHING APPROACH

Inspired by Capstone education, our teaching approach is student-centered and delivered via a mixture of weekly lectures which are tutor-led and, weekly studios which are student-led.

In addition, students are required to deliver two oral group presentations. The municipality/city (i.e. the 'client') we work with is involved in teaching early on through presentations, site visits and workshops. A wide range of in-house municipal material, otherwise not available publicly, is also made available to students. In return, students give oral presentations and make available their final project work to the municipality/city.

Students work in small groups of 5-6 and there is a mix of backgrounds and skills within each group. Group working enables students to conduct a wide review of literature and data; teaches students to work in teams and 'project manage' their tasks, drawing on individual strengths; and encourages students to 'negotiate' solutions both within the group but also with the municipality/city.

Each group has to deliver the project in four steps over the eleven week period

of teaching as follows:

1. Scene setting and site analysis
2. Vision, branding and urban strategies
3. One-week fieldtrip to project location/country
4. Implementation, finance and governance
5. The Strategic Sustainable Urban Plan (SSUP)

The municipality/city gives introductory lectures to the project i.e. wider scene setting and policy context; site challenges and proposals etc., and halfway through the project, students attend one week fieldtrip to the country of site location.

During this time they meet a range of municipal/city stakeholders, attend workshops, meetings and presentations; ask questions; visit the site and other relevant sustainable urban developments; and collect primary 'data' including photographs, urban analysis inventories, videos, interviews with locals etc. The data and information gathered during the fieldtrip is then used in project work.

# 1.3

## THE FINAL 'PRODUCT'

Teaching concludes with student presentations (or final 'crits') in front of the whole class, tutors and municipal/city representatives, where substantial feedback is given on their work. Following this, student groups have approximatively one month to re-work the feedback received into their proposals and produce a 7500-word group report as their very final assignment. The final reports are made available to the municipality/city and, on occasions, selected projects are invited back to present their ideas in front of the city/municipality.



Site visit to Kvarnholmen in Nacka City, Stockholm fieldtrip 2018. Source: Photograph by C. Turcu

## BOOK OUTLINE

# 1.4

Following this introduction, the book develops over three main parts. The next section introduces the site, Nacka City, located in the municipality of Nacka in the southeast of Stockholm City; it outlines current municipal plans for development and urban challenges as identified by students. That is followed by a discussion of main theoretical concepts and debates that underpin student work. Finally, four student projects are presented.



Student workshop with KTH University, Stockholm fieldtrip 2018. Source: Photograph by C. Turcu



Student fieldtrip to the municipality and model of Nacka City region. Source: Photograph by A. Juangbhanich, 2018



Student fieldtrip and site visit in Kvarnholmen, Nacka City. Source: Photograph by A. Juangbhanich, 2018



Student cohort, Stockholm fieldtrip 2018. Source: Photograph by C. Turcu



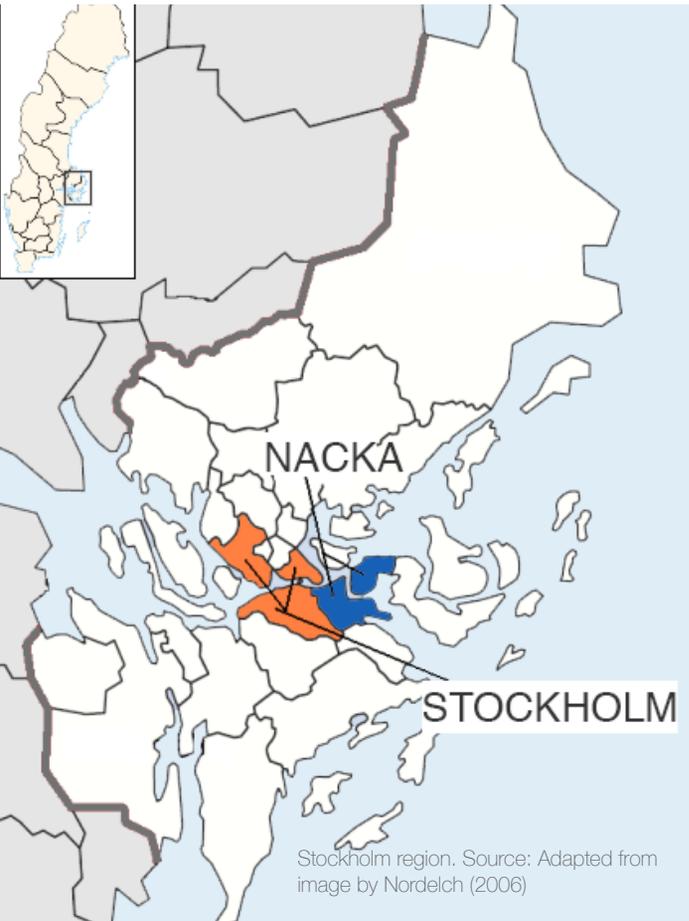
**Nacka City (or Västra Sicklaön) is a mixed-use and industrial urban area earmarked for re-development and located in the municipality of Nacka or Nacka Kommun ('the municipality' thereafter), in the southeast of Stockholm City.**

SITE

## NACKA CONTEXT

The municipality of Nacka is the third largest municipality in the Stockholm Region (Nacka Municipality, 2016). It consists of four districts: Boo, Fisksätra & Saltsjöbaden, Sicklaön and Älta (Nacka Municipality, 2016). Nacka City is situated in the western part of the Sicklaön district hence, also known as Västra Sicklaön, approximately 2.5km from Stockholm city centre.

Nacka City has been identified as a strategic area for further growth within the Stockholm Region (RUFSS, 2010). Hammarby Sjöstad is located on the eastern side of Nacka City, . This is Sweden's first internationally renowned urban eco district, developed in the 2000s.



Stockholm region. Source: Adapted from image by Nordelch (2006)

## GEOGRAPHICAL FEATURES

The municipality covers some 9550 hectares of land and water (Nacka Kommun, 2012), including 34 km<sup>2</sup> of water area and 10 km of coastline (Nacka Kommun, 2012a).

It is located in close proximity to Stockholm City, as the map of the Stockholm region shows, and surrounded by the municipalities of Stockholm, Lidingö, Vaxholm, Värmdö and Tyresö.

The municipality is part of the Stockholm Archipelago and surrounded by many waterways, natural reserves and forests, and has stunning waterfronts. The majority of the maritime traffic for Stockholm City passes through Nacka's coastal waters.

## LAND USE

As the map below suggests, Nacka City offers a good mix of uses including residential, commercial, industrial and agricultural, and can be broadly classified as brownfield land. The area has cultural roots in a strong industrial heritage of mills and machinery manufacturing, and farming heritage.

The municipality owns some 4,800 hectares of land, including natural areas and undeveloped plots. The built-up land is mainly owned by private owners such as property companies, developers, housing associations and private individuals (Nacka Kommun, 2012a).

## POPULATION

The municipality has a relatively young population. The average age is 38 years, compared with 41 years which is the national average (Nacka Kommun, 2012b).

It is estimated that the municipality's population will increase by 23,000 between 2011 and 2020 from ca. 90,000 to over 113,000 inhabitants. The expected net average migration is about 1,700 people per year, with 8,600 expected immigrants per year (Nacka Kommun, 2012a).



-  Nacka City (Site boundary)
-  Nacka Municipality boundaries
-  Local centres
-  Secondary centres
-  Underground metro line (Tunnelbana)
-  Underground metro line (Tunnelbana) - Planned extensions
-  Suburban railway (Saltsjöbanan railway)

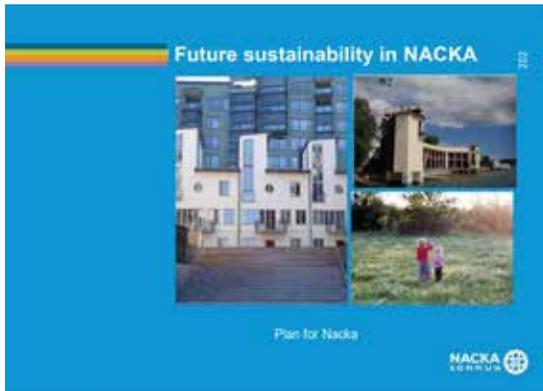


Source: Adapted from Nacka Kommun (2012a).

# 2.2

## CURRENT MUNICIPAL PLANS

The municipality have produced two strategic urban plans to date: the Comprehensive Plan (Översiktsplan) in 2012 and the Detailed Plan (Utvecklad Strukturplan) for Nacka City alone in 2015. Both plans address visions and strategies for the sustainable urban development of Nacka City.



Future Sustainability in Nacka, Comprehensive Plan  
Source: Nacka Kommun (2012a)



Detailed Plan for Nacka City. Source: Nacka Kommun (2015).

### THE COMPREHENSIVE PLAN

The comprehensive plan envisions the municipality to grow into an attractive and sustainable area. It focuses on four urban strategies:

1. Create a denser and more mixed town in western Sicklaön (or Nacka City)
2. Complete transportation by metro in the municipality
3. Develop municipal local centers and their surroundings
4. Plan, manage and develop the green and blue structure.

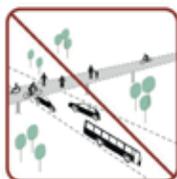
### THE DETAILED PLAN

Nacka City's Detailed Plan was first developed in 2015 on the basis of the Comprehensive Plan's strategy to deliver 'a denser and more mixed city on the western Sicklaön' (Nacka Kommun, 2015). The Detailed Plan sets out to develop in Nacka City by 2030 (Nacka Kommun, 2015):

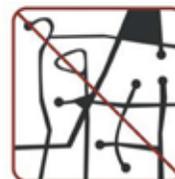
- 14,000 new homes; and
- 10,000 jobs.



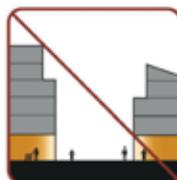
Place for all - traffic in the same street space



Interconnected street networks



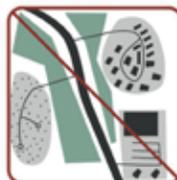
Open ground floor with different activities



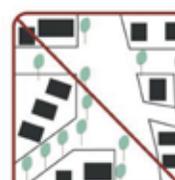
Cohesive green infrastructure of avenues, parks and nature



Contiguous buildings through densification of openings in the city



Clear boundary between public place and private land



Important planning principles for creating a denser and mixed Nacka City. Source: Adapted from Nacka Kommun (2015).

The vision for Nacka City is to be 'Near and Innovative'. This was the result of working collaboratively with the existing local people with some 5,000 residents participating in the municipality's 'vision workshop', in 2013 (Nacka Kommun, 2015; 2016).

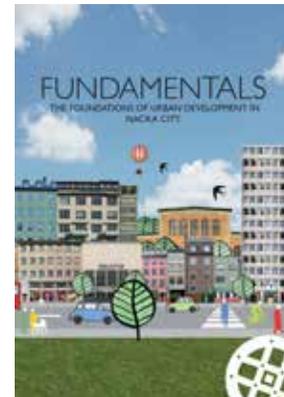
To achieve the vision, the municipality proposes the adoption of seven core principles or 'fundamentals' to be incorporated in the design of new

urban redevelopment strategies (Nacka Kommun, 2014; 2015; 2016). The seven fundamentals serve to inform the development of:

- denser, well-connected and accessible urban areas;
- mixed-use, diverse, and vibrant urban centers;
- a society that fosters creativity, innovation: and
- local identity.

# THE DETAILED PLAN'S FUNDAMENTALS

Each fundamental outlines a key urban design principle and asks a series of questions to be considered in the development process. The seven fundamentals are: cohesion, urban space, city streets, urban greenery, neighbourhoods, street furniture, and character



Detailed Plan for Nacka City. Source: Nacka Kommun (2015).

## Cohesion

Cohesion takes into consideration ‘the flow of people and their meeting places’. That is, taking into account the movement and interaction between people, public spaces, nature in the design and development of Nacka City.

### **Questions:**

*How does the movement work? Is there any natural centre? Is there a coherent network? Where do people change direction? Where is the flow greatest? What function do the intersections have? Where are the places for children? Where might people be expected to stop?*

## Urban space

Urban space signifies the meaning of public space. Public space offers openness to the urban environment but serves different functions and creates meaning. Emphasis is given to the design of public spaces as ‘a place [for residents] to meet and spend time’; but also one that caters for flexibility and spontaneous use of the space that can accommodate temporal activities and events.

### **Questions:**

*What are the neighbourhood’s public spaces? How are the public spaces connected? How do we identify and design the space? Where are the opportunities for views in the public space? Do meetings take place in different places in different weathers? Are the public space and the meeting places equally accessible, safe and welcoming?*



## City streets

Streets have to be designed based on 'function, content and traffic' movement. This fundamental highlights the importance of city streets to remain and be 'brought to life' as public spaces. Streets are to be designed for pedestrians with reduced vehicle speed limits.

### **Questions:**

*What speed should the street be designed for? Is speed affected by the design of the street space? What traffic levels are reasonable? Where do cyclists need a separate cycle path? Where can bicycle and motor traffic share the street? Can the width of the street be reduced to give a more intimate street space? How does the topography affect the shape of the street? Is the street designed for pedestrians? Where is public transport expected to go?*

## Urban greenery

Urban greenery regards the infrastructure and network of green spaces and water bodies already present in Nacka City. Recreational spaces are to be retained or created in conjunction to these networks.

### **Questions:**

*Are there different types of parks in the neighbourhood? How do the green spaces link up? Does everyone have access to a green space that they can spend time in? What are the green spaces designed to look like when the leaves have fallen? Is there scope for parks that are looked after by residents? Are there any existing green assets? Can you see a bit of greenery?*



The seven fundamentals. Source: Reproduced from Nacka Kommun (2014).

### Neighbourhoods

Neighbourhoods concern the architecture and design of buildings in Nacka City. The municipality promotes variation in building height and architectural features. Open-block typologies (e.g. building units with access to gardens and courtyards) are strongly favored. Design of ground-floor units are to consider accessibility to and from the street. High-rise blocks should only be considered for certain sites. Wind conditions are also highlighted as an important factor.

#### **Questions:**

*Do the neighbourhoods provide different conditions for vibrant ground floors? What thoroughfares have the conditions for this? Are the entrances on the street? Should the neighbourhood be open for*

*throughflow? Have any visual openings been made possible? Is there to be any clearly defined area for high-rise blocks? Are the possibilities of a winding street space being exploited? Are there any views or sightlines through the neighbourhood?*



## Street furniture

This fundamental connects the design and arrangement of street furniture to the concept of 'welcoming people'. The type and design of paving, planting, bins, benches, public artwork, and street lighting are considered as having an important role in urban development. Design that caters for artistic features that can change overtime is seen as key.

### **Questions:**

*Are the paving, material choices and light fittings consciously positioned and designed? Is there any space for creative design? Are there any spaces that are created by light? Is account taken of darkness? Is there furniture for rest and aesthetic purposes? Where is there space for public art?*

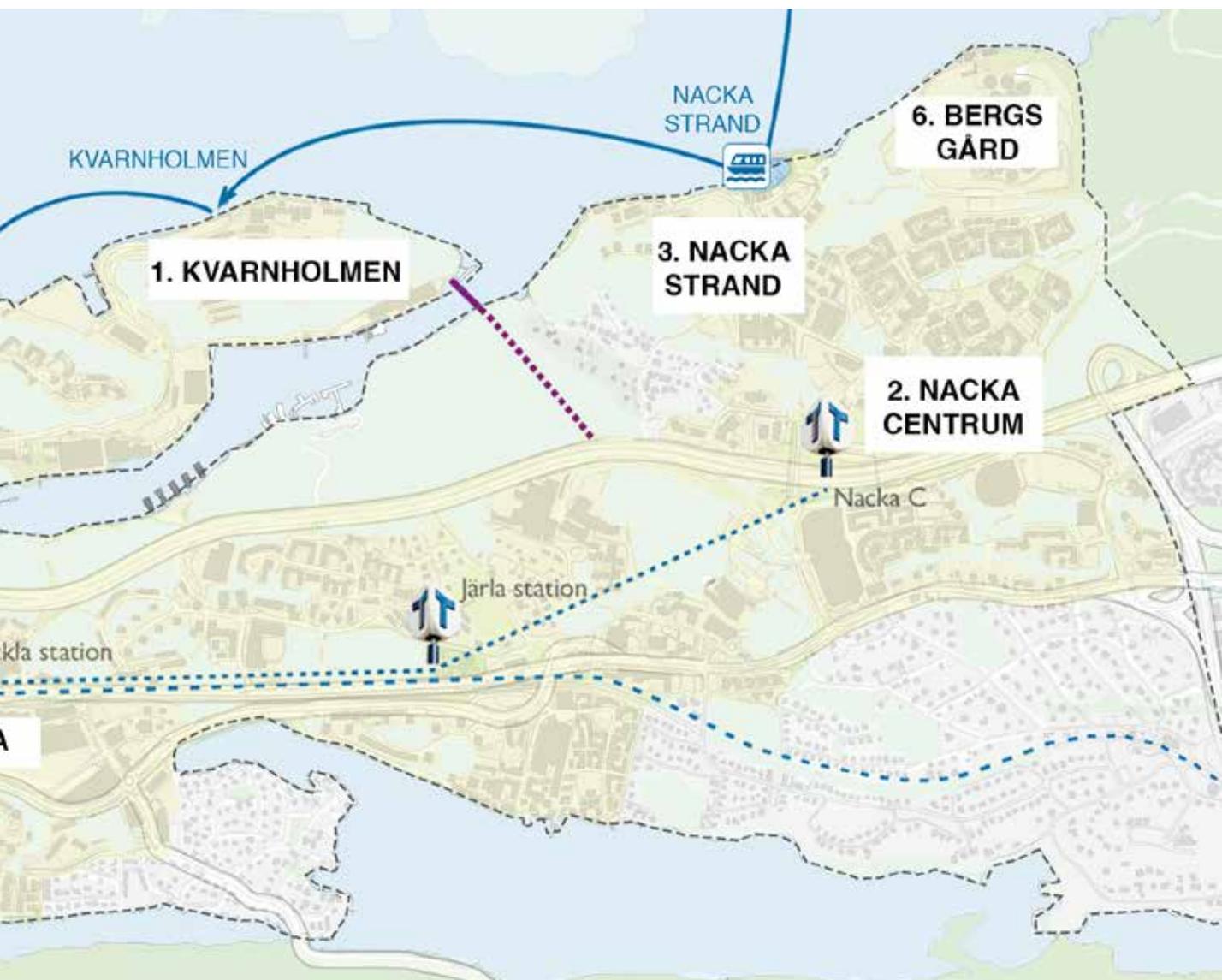
## Character

Character refers to the design and content of urban space that creates and fosters meaning. Taking into account cultural heritage, for instance, is key to this fundamental. This fundamental considers urban design strategies that foster the creation of 'identity' in places.

### **Questions:**

*Has the character been identified? Are we taking account of Nacka's particular topography? What existing features and cultural assets strengthen the sense of place? Will these be of value in the new city? What aspects of the planned development will provide local character? Is there any new design language? Is there any special place in the neighbourhood?*





Source: Adapted from Nacka Kommun (2012).



Artistic impressions of the municipality's vision for five of the strategic development areas in Nacka City.  
Source: Reproduced from Nacka Kommun (2016), images courtesy of Wiberg (2017)

Central Nacka - concept sketch for sports facilities

Central Nacka - interactive art installation





Nacka - concept sketch of Värmdövägen residential and shopping district



Central Nacka - concept sketch for urban plaza

Nacka Masterplan bird view



### TRANSPORT

Nacka City is served by the Salsjobaden commuter rail to the south and local bus services otherwise.

Two major motorways cross Nacka City from east to west: Varmdoleden, a large motorway with three lanes; and Värmdövägen with two lanes. Nacka is also accessible from the west via the Hammarby's tram line which stops at Sickla Udde (see adjacent map).

The Comprehensive Plan (2012) proposes the extension of the underground (T-Bana) through Nacka City as an enabling mechanism for the municipality to deliver additional homes by 2030. The extension has already been approved with three new underground stations within Nacka City at Sickla, Järla and Nacka Centrum.

- Motorway - Varmdoleden (3 lanes each direction)
- Värmdövägen and secondary roads
- Tertiary roads
- Saltsjöbanan railway (Trains 25 and 26)
- Tvärbanan (Tram 22)
- - - Approved metro extension





Nacka City Transport Strategy Map.

Source: Produced on the basis of the Detailed Plan for Nacka City (Nacka Kommun, 2015)

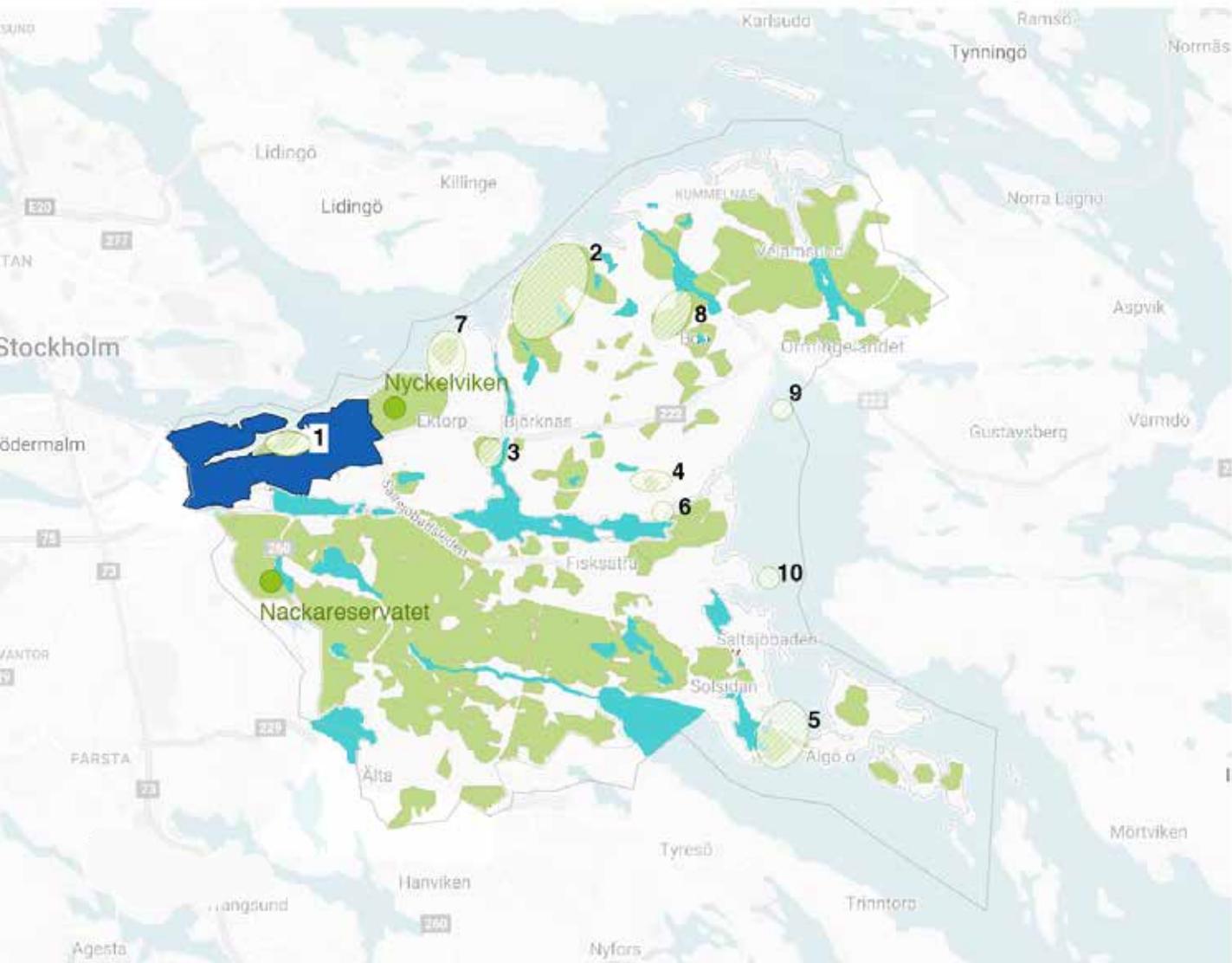
### NATURE

Nacka City is surrounded by plenty of beautiful nature reserves, lakes and coastline. The municipality owns some 9,654 ha of green space (Nacka Kommun, 2016) ranging from wetlands to ancient forests, and includes 1 of 10 strategic 'green wedges' of the Stockholm region (Åkerlund, 2011). It also holds ca. 10km worth of archipelago coastline which provides stunning water views and recreation opportunities.

The municipality homes some of the largest green areas in the Stockholm region including nature reserves such as Nyckelviken and Nackareservatet (see adjacent map). A lot of effort and resources are spent on ecological conservation and safeguarding these areas (Nacka Kommun, 2011).

The Comprehensive Plan states that at least 10 more conservation areas are to be established in the municipality (Nacka Kommun, 2012a), including Ryssbergen at the centre of Nacka City.





Nacka Municipality Nature Reserves. Source: Produced on the basis of the Detailed Plan for Nacka City (Nacka Kommun, 2015). Base map from Map data ©2019 Google

# SICKLA

View of Sickla and Järla seen from Hammarbybacken.  
© Roland/Adobe Stock





## MAIN CHALLENGES

Four main challenges for the future redevelopment of Nacka City have been identified throughout our project work. They are: transport & infrastructure, densification, housing and communities.

### TRANSPORT & INFRASTRUCTURE

#### Car-dependency

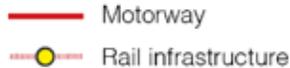
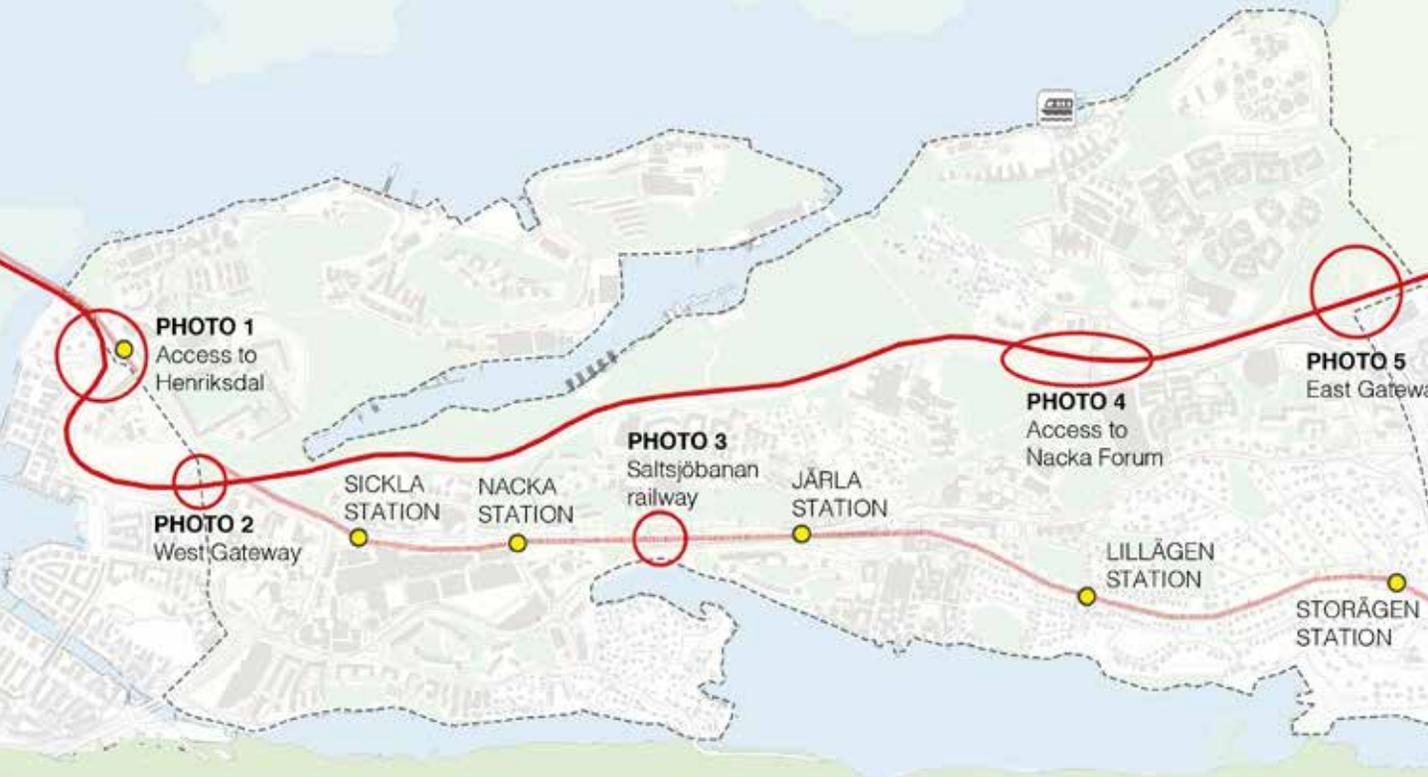
The municipality and so, Nacka City, have high levels of car ownership which are significantly higher than the regional average. In 2016, the municipality had an approximate 448 private cars per 1,000 inhabitants compared to 375 in Stockholm City and an average of 404 in the Stockholm Region (SCB, 2017).

Despite various modal options (e.g. existing bus, boat, light rail and the suburban Saltsjöbanan railway services, walking and cycling facilities) private cars remain the dominant mode of transportation in the municipality.

*Is Nacka City going to be yet another car-dependent development?*



From left to right: access to Henriksdal; West gateway; Saltsjöbaden; access to Nacka Forum; East gateway.  
Source: Images from Map data ©2017 Google



Nacka City Community Severance Map.

Source: Produced on the basis of the Detailed Plan for Nacka City (Nacka Kommun, 2015)

## Spatial & community severance

The existing motorways, Värmdövägen and the Värmdöleden, cut through Nacka City east-west and sever north-south connections. This creates spatial and community barriers, alongside high levels of pollution.

The adjacent photographs are images of the existing motorways at different parts of the site.



*Are Nacka City's neighborhoods going to be separated by polluted motorways?*

### Topography

Nacka City's hilly topography creates challenging and expensive construction conditions. It is also a challenge for those with mobility needs and/or those who lack a car.

*Is Nacka City going to be accessible to all?*

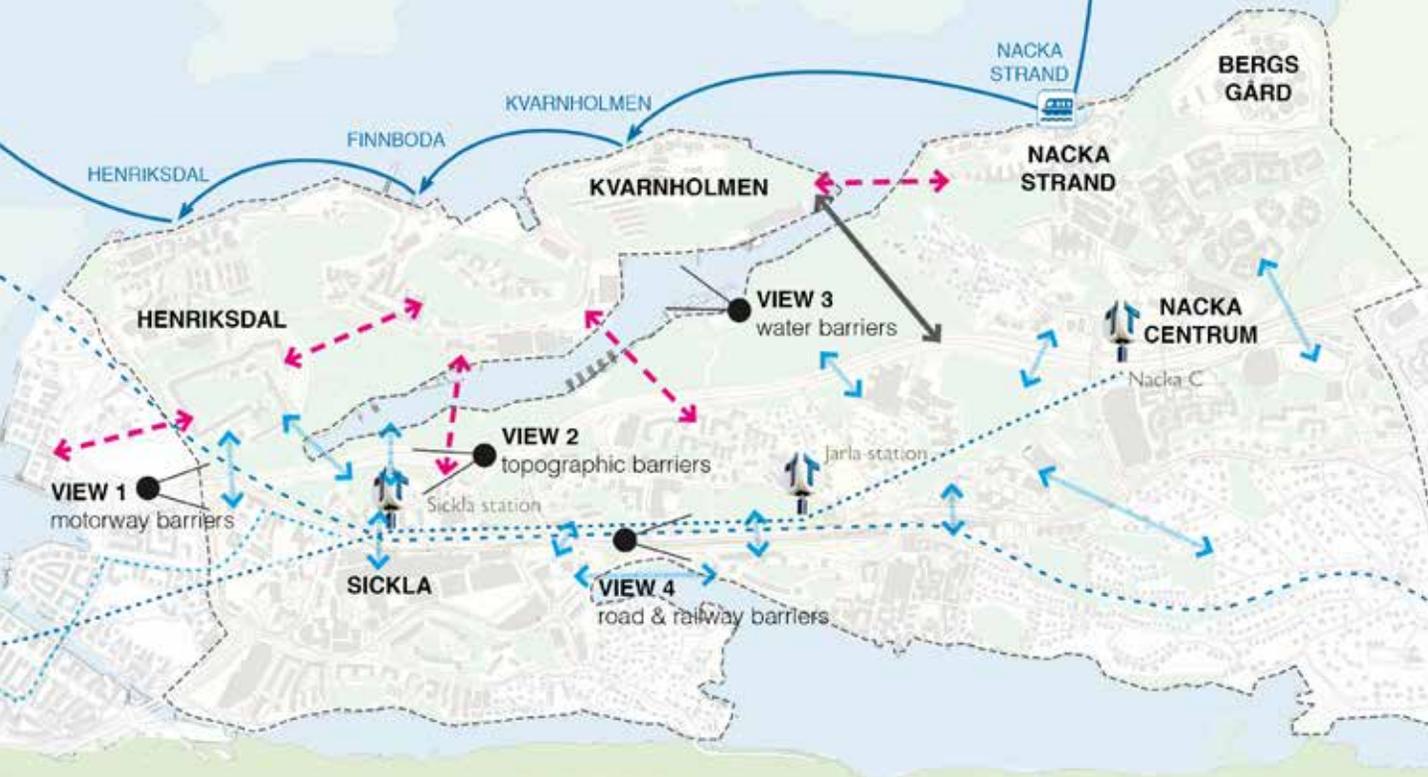
### In-site connectivity

Nacka City's current land use profile and transportation networks create barriers that limit the connectivity of different areas of development. Take for example the man-made and natural barriers illustrated in the adjacent map.

*Are Nacka City's neighbourgoods going to have legible connections?*



From left to right: motorway barriers; topographic barriers; water barriers; road and railway barriers  
Source: Images from Map data ©2017 Google



Nacka City In-site Connectivity Map.  
 Source: Produced on the basis of the Detailed Plan for Nacka City (Nacka Kommun, 2015)

- Man-made barrier (roads and railways)
- Natural barrier (water and topography)
- Car only access



### DENSIFICATION

#### Existing proposals

The municipality plans to deliver some 14,000 new homes in Nacka City by 2030. The pace and amount of development are significant and taking place over a relatively short period of time.

*How sustainably is Nacka City going to be developed?*

#### Social challenges

There are social challenges associated with urban densification. Among others, these include lack of housing affordability (Burton, 2001); and lack of neighbourhood safety, place attachment and satisfaction with local area (Bramley et al., 2009).

*How affordable, safe and cohesive is Nacka City going to be?*

#### Environmental challenges

Densification can raise challenges for environmental sustainability as development consumes natural resources. Densification can also lead to loss of existing green areas and open space and reduce residents' access to nature (Dempsey et al., 2011; Haaland & van den Bosch, 2015).

*Is Nacka City going to consume resources efficiently and provide appropriate access to nature and public/green space for all its residents?*



- Site boundary
- ..... Bridge/ tunnel (Svindersviksbron/ Ryssbergstunneln)
- ..... Tunnelbana (Metro)
- ..... Tvärbanan (Tram)
- - - - Saltsjöbanan railway
- Ferry
-  Approved metro stations (extension)

Nacka City Planned Development Map.  
 Source: Produced on the basis of the  
 Detailed Plan for Nacka City (Nacka  
 Kommun, 2015)

# HOUSING

## Sweden's housing model

Some authors criticize Sweden's current housing model as socially unsustainable and driving socio-economic inequality (Christophers, 2013). There is no social housing in Sweden. All citizens are entitled to 'affordable housing' (Sweden has an 'universalist' housing system). Affordable housing can be subsidized and also called 'rental' or 'public' housing. However, it is not equivalent to social housing and does not offer lower rates to specific social groups; prices are set by the market. Public housing in Sweden is said to operate in much of the same manner as a private housing company would operate.

Even with local sustainability exemplar developments such as Hammarby Sjöstad and the Stockholm Royal Seaport, critics comment that they fail to safeguard social sustainability and deliver housing for all (Bredenoord, Van Lindert & Smets, 2014; Iveroth et al., 2013; Rutherford, 2013).

*Can Nacka City pioneer new housing models for lower-income households?*

## Housing shortage

Almost 600,000 people are on the waiting list for housing in Stockholm (Stockholm Housing Agency, 2017). There is a severe shortage of housing for low-income groups in central areas of Stockholm, with the poorest increasingly being pushed out of the city center and premium developments (Lind, 2017).

Sustainability flagship developments such as Hammarby Sjöstad and Royal Seaport in Stockholm have been criticised for delivering housing for Swedish-born 'elites' and failing equal access to housing for all (Bredenoord, Van Lindert & Smets, 2014; Iveroth et al., 2013; Rutherford, 2013). This is despite most of Sweden's current population growth (75%) which comes from low-skilled immigration (Warner in Pareja-Eastaway & Winston, 2016). Hence, there is a particular shortage of affordable (or rental) housing for young people, students and migrants.

*Can Nacka City provide affordable housing via innovative housing models and re-invent affordable housing in Sweden?*

**Affordability**

House prices in the municipality are amongst the highest in the Stockholm region (Pihl, 2016). They are over 25% higher than the average for Stockholm region and almost quadruple the national average. High prices and lack of affordable housing mean that many parts of the municipality are not accessible to lower income groups (Lind, 2017).

*Can Nacka City provide affordable housing in line with regional/national averages or lower?*

# COMMUNITIES

## Integration

Nacka faces the challenge of social integration between existing and new/immigrant communities. There is strong engagement between the municipality and existing communities but little interaction between existing residents, asylum seekers, immigrants and other migrants.

*Is Nacka City integrating existing and new communities and residents?*

## Employment

The municipality is a largely residential area at present. As a result, a high number of its residents commute to Stockholm City center daily. Only 28.4% of its current working-age population works within the municipality (SCB, 2016). Without local employment opportunities, Nacka City runs the risk of becoming yet another 'dormitory' area.

*Is Nacka City going to provide employment opportunities alongside housing development?*



Residential buildings in Kvarnholmen  
© Roland/Adobe Stock



Houses at Järla lake  
© Roland/Adobe Stock



Houses in Järla  
© Mats/Adobe Stock

## Sense of place

Nacka City's car-dependent infrastructure and limited internal physical connectivity poses threats to community cohesion and well-being (Anciaes, Jones & Mindell, 2016) and damages perceptions of 'sense of place' and 'neighbourhood vibrancy' (Barton, 2013).

*Is Nacka City going to be seen as a 'place' of choice for living, working etc?*

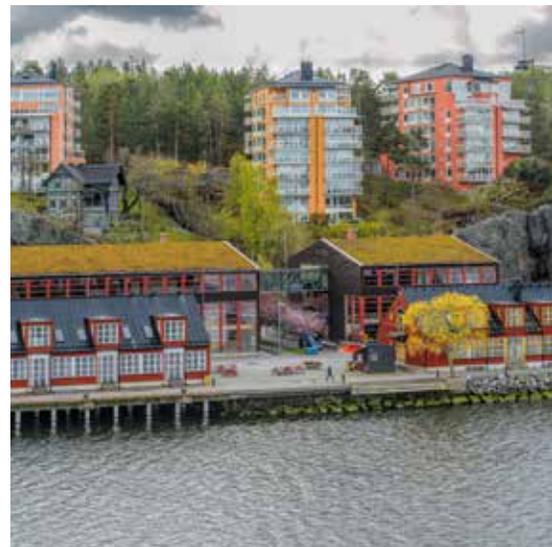
## Identity

Nacka City has been identified as an opportunity growth area to support Stockholm region's wider growth strategy (RUFS, 2010). Close proximity and strong dependency on Stockholm City can strip away Nacka City's identity and deem it into a satellite development.

*Is Nacka City going to have its own identity within the wider Stockholm region?*



Houses at Järila lake  
© Roland/Adobe Stock



Residential buildings and storehouses at Nacka Strand © Igor Groshev/Adobe Stock

# STOCKHOLM FIELDTRIP 2018

MSc Sustainable Urbanism cohort and tutors. Source: Photograph by C. Turcu





**A number of theories and urban models have been deployed by students to underpin their sustainable visions and Strategic Sustainable Urban Plans (SSUPs) for Nacka City. Broadly these can be classified under:**

- **compact cities**
- **sustainable cities**
- **cities for people**
- **just cities**
- **power in the city.**

# THEORY



Student workshop with KTH University, Stockholm fieldtrip 2018.  
Source: Photograph by C. Turcu

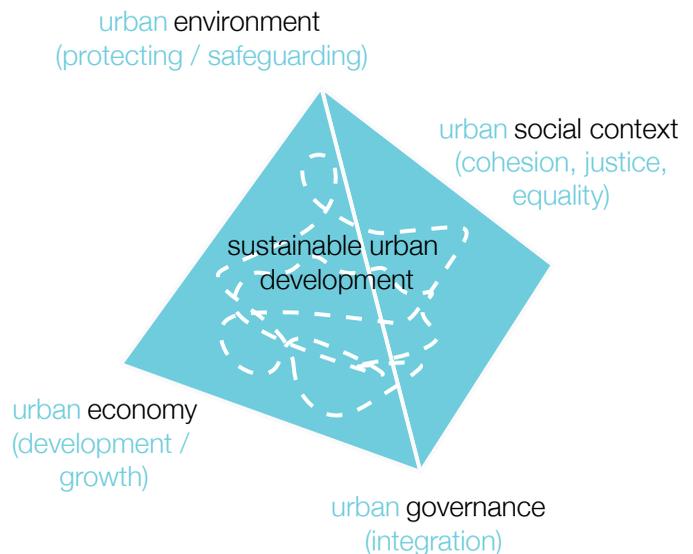
## DEFINING SUSTAINABILITY

Sustainable development as a concept has a relatively short history. It was famously coined by the Brundtland Report in 1987 as ‘development that meets the needs of the present without compromising the ability of future generations to meet their own needs’ (Brundtland, 1987, 54). This definition is, however, ‘too elastic’ (Turcu 2012b). That is to say, it can be used to convey too many divergent ideas and encompass a range of meanings.

The complex interdependencies between economic, social and environmental phenomena, and the need to balance or harmonies these over time, have been the focus of particular attention in defining sustainable development. This is illustrated by the ‘triple bottom line’ or ‘people, planet, and prosperity’ or ‘three pillar’ (economic, social and environmental) model of sustainability (Pope, Morrison-Saunders & Annandale, 2005; Parkin, 2000).

However, a fourth pillar was added more recently to the three-partite model of sustainable development: the governance/institutional/cultural pillar. The fourth pillar accounts for the participative, democratic and political aspects of processes that move us towards sustainability. Drawing on this, Valentin and Spangenberg (1999) developed ‘the prism of sustainability’ (see

image on the right). The prism is a dynamic model of sustainability that provides a four-dimensional ‘space’ in the middle, where the four dimensions of sustainable development can interact and where sustainable development is shaped. The book and students’ work presented here adheres to this latter understanding of sustainable development.



The prism model. Source: Adapted from Turcu (2010), Valentin & Spangenberg (1999)

# 3.2 COMPACT CITIES

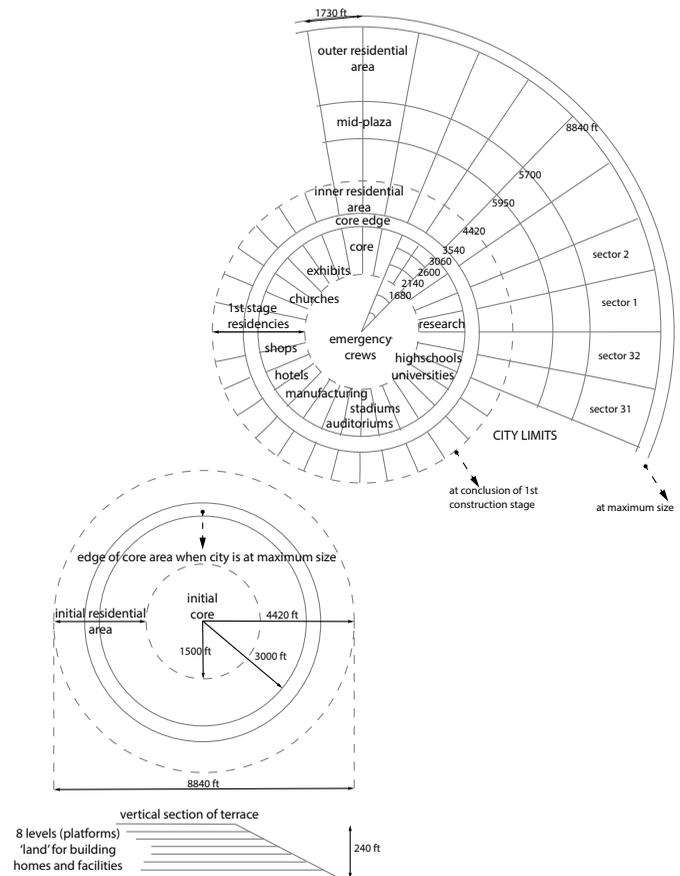
Compact city debates promote high density, mixed-use, high degrees of connectivity, contained urban development and integrated infrastructure (Neuman, 2005). It is seen as a sustainable model of urbanisation which encourages efficient transportation, walking and cycling and counteracts urban sprawl (Burton, Jenks & Williams, 2003). Cities well-known for their compact development are Barcelona, Paris and New York. Some of the pros and cons of compact development from a sustainability point of view are presented below (see also Breheny, 1996; Burton, 2000a; 2000b; Burgess, 2002; Burton, Jenks & Williams, 2003).

Advantages (Burton, 2000a, 2000b)

- reduced travel
- lower CO2 emissions
- lower costs, economy of scale
- lower energy use
- efficient infrastructure
- sense of community

Disadvantages (Burton, 2000a, 2000b)

- traffic congestion
- high concentrations of pollutants and exposure to pollution
- lack of affordable housing
- no sense of freedom, alienation and isolation
- lack of large spaces and green space



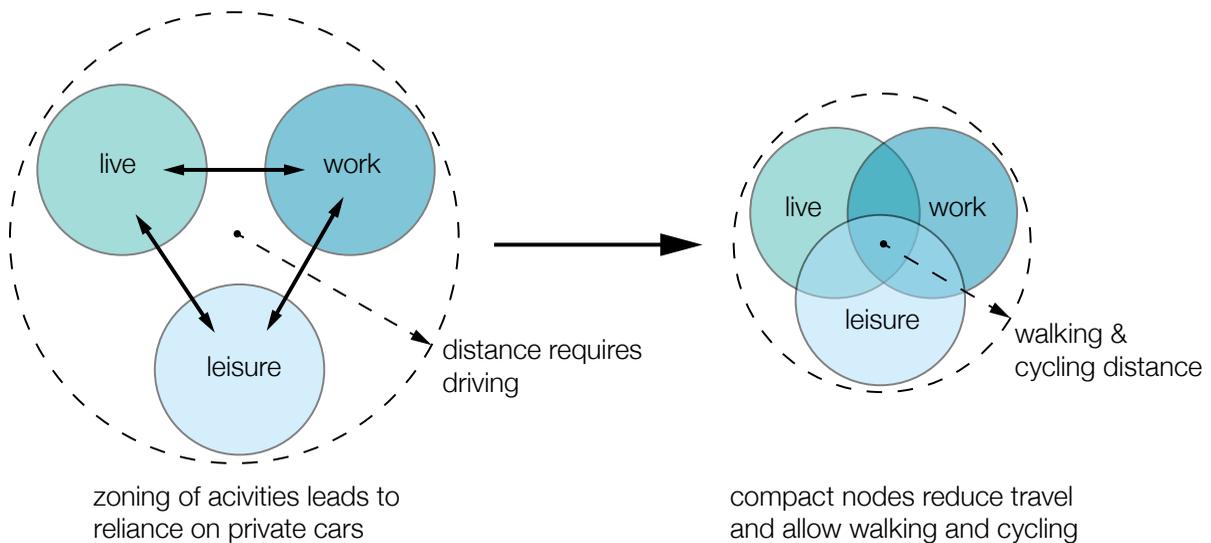
Compact cities model by Thomas L. Saaty.  
Source: Adapted from Saaty (2013).

## KEY REFERENCE: COMPACT CITY MODELS

Below are examples of compact cities models developed by architect Richard Rogers and Thomas L. Saaty.

These models have been developed to reduce the amount of travel required in a city through the construction of well-connected mixed-use nodes

and amenities between residential, work and recreational areas. Car-dependency is seen as a main source of energy consumption and pollution in cities, compact city models enable opportunities for active modes of travel.



Compact cities model by architect Richard Rogers. Source: Adapted from Rogers and Gumuchdjan (1997)

## POLYCENTRISM

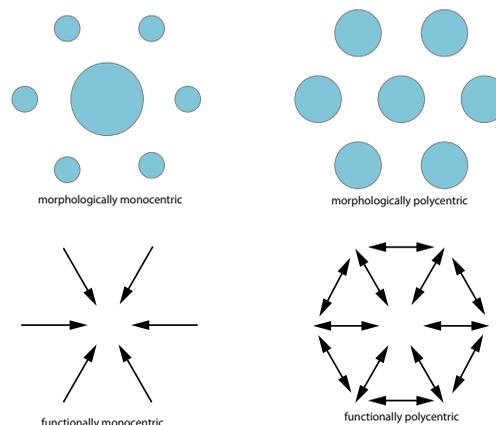
The polycentric city model is a type of compact development, which entails densification and provision of urban services around selected centers or ‘urban nodes’. These centers or nodes can be inter-urban or intra-urban and are connected with each other either by transport infrastructure or development corridors under the underlining principles of spatial cohesion and social equity (Baudelle & Peyrony, 2005). Examples of polycentric cities include Stockholm and Copenhagen.

The images that follow are examples of polycentric models and the arrangement of ‘urban nodes’ alongside mass-transit corridors.

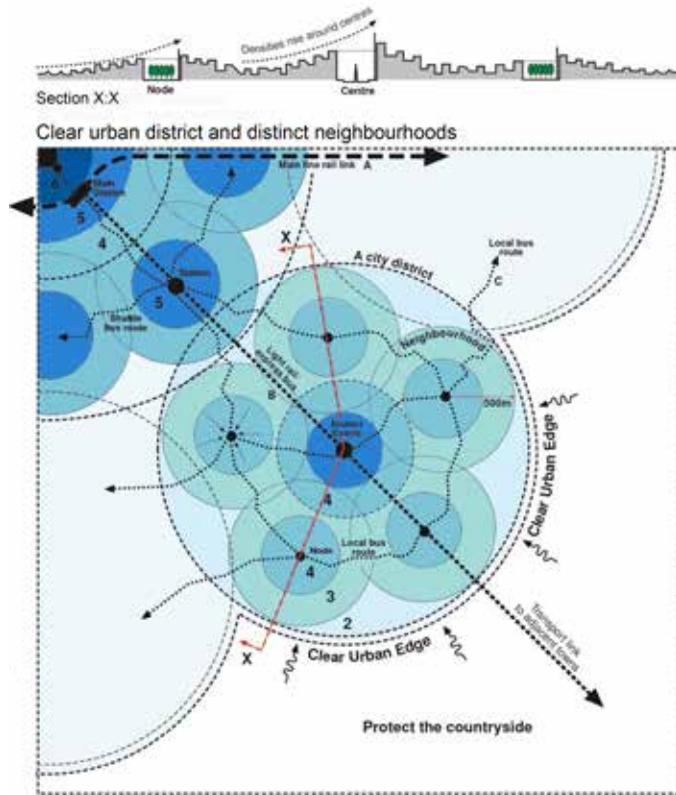
While polycentricism as a type of urban structure that improves the performance of cities has gained much attention over the past years, definitions of polycentricity can vary (see e.g. Burger, Van Der Knaap & Wall, 2014, Schläpfer, 2014). Hence, polycentrism remains what scholars call a ‘fuzzy concept’ i.e. a concept that lacks a generally accepted definition.

However, two important characteristics of polycentric models are their morphological and functional dimensions i.e. morphological denoting the size and spatial distribution of city centres or urban nodes; and functional referring to the linkages between different

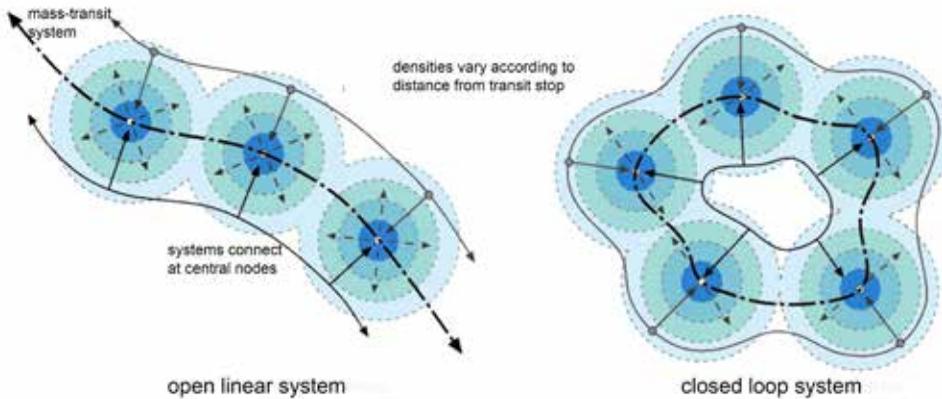
centres (see also diagram below). The latter takes into account for instance the movement and flow of people, strength of business networks and the social connections created.



Morphological versus functional polycentricity. Source: Adapted from Burger, Van Der Knaap & Wall (2014) and Schläpfer (2014)



Polycentric Cities  
Diagram.  
Source: Adapted from  
Designing Buildings Wiki  
(2019)



Rogers and  
Gumuchdjan (1997)  
note how compact  
nodes linked by mass-  
transit systems can be  
arranged in response to  
local constraints.

### HIGH RISE HIGH DENSITY



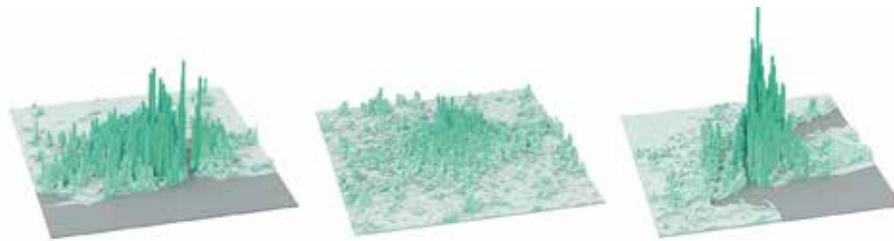
Hong Kong Skyline. © anekoho/Adobe Stock

The high-rise and high-density development model is also a form of compact development and a characteristic of many Southeast Asian cities, for example Hong Kong portrayed in the image above. High-rise high-density development allows for short journeys to work, easy access to services, extensive use of mass transit and adequate provision of public space (Burton, Jenks & Williams, 2003).

The series of images produced by LSE Cities (2013) on the next page illustrate the degree of residential density in some cities. Cities such as Hong Kong, New York, Barcelona for instance can be seen to have high concentrations of residential density within a confined metropolitan area compared to

places such as Rio de Janeiro, London, or Stockholm.

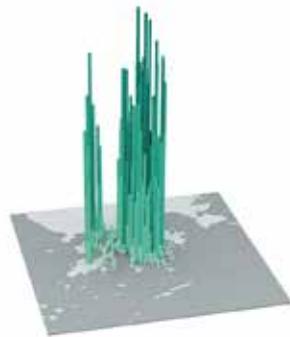
This type of development, however, raises a number of social, economic and environmental concerns including: high levels of air pollution and urban island effect (Kilburn & Low, 2011); negative impact on health and wellbeing (Rydin et al., 2012b); fostering socio-economic segregation (Wacquant, 1993); and poor sense of community and belonging (Guildford, 2007). It is also difficult to 'translate' to other geographical contexts due to cultural differences and attitudes towards proximity. Benefits and limitations of high-rise high-density are argued both ways in the literature.



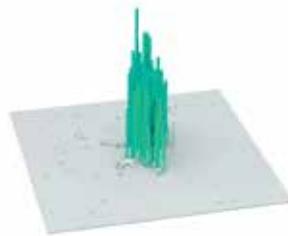
**RIO DE JANEIRO**  
peak density 42,300 pp/km<sup>2</sup>

**LONDON**  
peak density 27,100 pp/km<sup>2</sup>

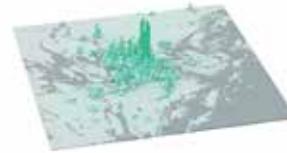
**NEW YORK**  
peak density 59,150 pp/km<sup>2</sup>



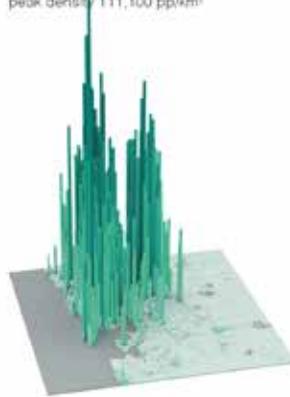
**HONG KONG**  
peak density 111,100 pp/km<sup>2</sup>



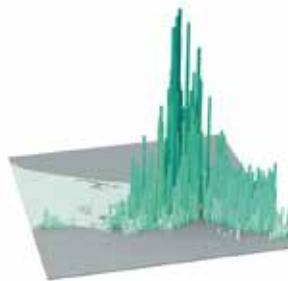
**BOGOTÁ**  
peak density 55,800 pp/km<sup>2</sup>



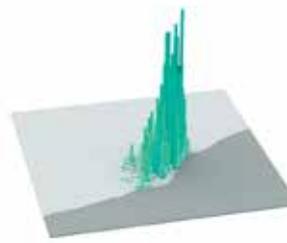
**STOCKHOLM**  
peak density 24,900 pp/km<sup>2</sup>



**MUMBAI**  
peak density 121,300 pp/km<sup>2</sup>



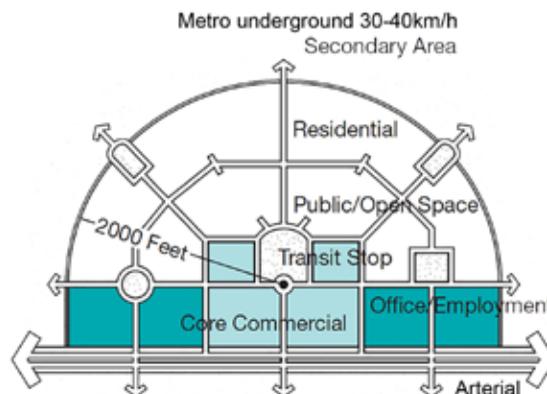
**ISTANBUL**  
peak density 77,300 pp/km<sup>2</sup>



**BARCELONA**  
peak density 56,800 pp/km<sup>2</sup>

Residential density in cities. Source: Adapted from LSE Cities (2013)

## TRANSIT-ORIENTED DEVELOPMENT



TOD concept. Source: Adapted from UN Habitat (2013)

Developing transport systems that ‘understand’ and respond to urban form plays a pivotal role in the transition to a low-carbon economy (Hickman & Banister, 2014). The key idea behind TOD is to locate new development within and around transit nodes with an aim to deliver significant transport energy savings, reduced reliance on private car usage, increase mix use, and deliver pedestrian friendly communities (Dittmar & Ohland, 2012).

The principles of a TOD are as follows:

- a ‘dense network of walking and cycling routes [which] results in short, varied, and direct connections that improve access to goods, services, and public transport’;
- ‘frequent, fast, and reliable high capacity rapid transit [to] reduce dependence on personal motor vehicles’;
- ‘intensifications of residential and commercial uses around high capacity rapid transit stations ... [to] ensure that all residents and workers have access to high quality public transport’;
- ‘a diverse mix of residential and non-residential land uses [to] reduce the need to travel and [to] ensure activation of public spaces at all hours’;
- compact ‘redevelopment of existing urban fabric [to] ensure that residents can live close to jobs, schools, services and other destinations, resulting in reduced travel times and emissions’ (Source: Institute for Transportation and Development Policy, [online])

## KEY REFERENCE: ØRESTAD, COPENHAGEN'S NEW DEVELOPMENT FINGER

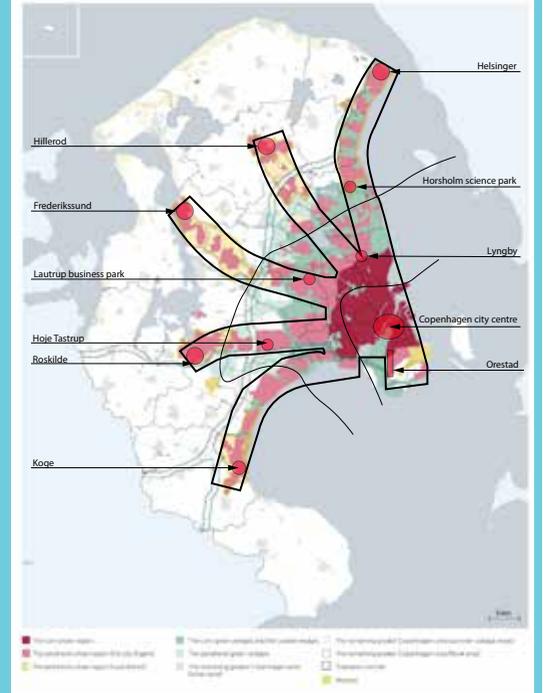
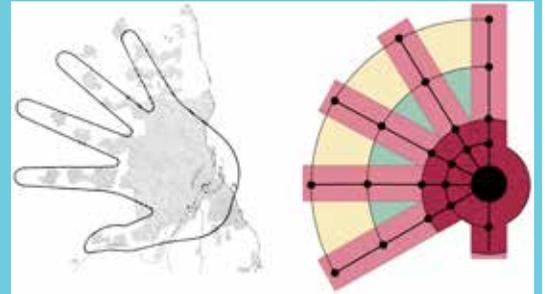
Started in the late 1990s, the development of Ørestad New Town is the latest addition to Copenhagen's Five Finger Plan developed in the mid 20th century (see adjacent images).

Designed with TOD principles in mind, Ørestad is a linear town built around transit stations located along a driverless light rail mini-metro line (Knowles, 2012). Ørestad's vision aimed to generate 60-80.000 jobs, 20.000 education place and homes or 20.000 inhabitants (ibid).

Integrated public transport and bicycle accessibility are at the heart of the development, with car commuting in the area having declined to 49% according to a 2010 survey (Knowles, 2012).

The development of Ørestad Station connecting the town with the 'historic Copenhagen' (Visit Copenhagen, 2019) successfully attracted new residents, businesses and retail and leisure activities in the area. By drawing inward investment and job-creation, the town contributes to Copenhagen's international competitiveness.

Ørestad is also home to iconic residential buildings such as the 8 house and Mountain Dwellings that are designed by Danish starchitect firm Bjark Ingels Group or 'BIG' (see BIG, ca. 2019).



1. Copenhagen's Five Finger City Plan, 1947;
2. Copenhagen Strategic Framework, 3. Copenhagen Plan with Ørestad located south of Copenhagen City Centre. Source: Adapted from Danish Ministry of the Environment (2007)
3. Left: Plan of Ørestad in Copenhagen. Source: Adapted from Tardin (2013)

# ØRESTAD

Copenhagen's new development finger.  
Source: Wikimedia Commons/Fred Romero



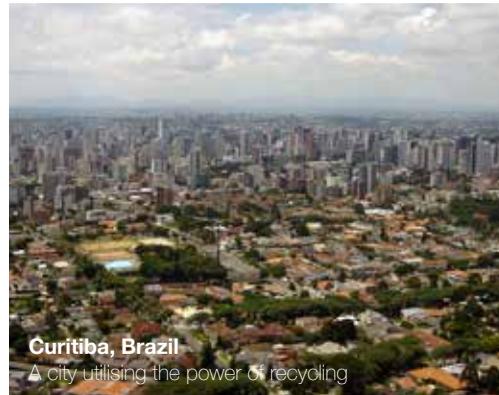


# 3.3

## SUSTAINABLE CITIES

The concept of ‘sustainable cities’ is closely linked to the definition of sustainability put forward by the 1987 Brundtland Commission, as well as to the ‘triple bottom line’ or three pillars (economic, social and environmental) of sustainable development. In some cases, interpretations of sustainable cities emphasize the importance of the environmental pillar. In contrast, other interpretations emphasise the socio-economic aspects that are also central criteria to sustainable urban development.

Multiple types of ‘sustainable cities’ have emerged that promote certain principles and give rise to specific development models. While sharing the overall objective of better reconciling environmental, social and economic goals (De Jong et al., 2015), the types differ conceptually and lead to different development models. Four city concepts under the umbrella of ‘sustainable cities’ are discussed below: the low carbon city, green city, eco city and circular city. Others not discussed here include: the liveable city, smart city, digital city, knowledge city and resilient city (De Jong et al., 2015).





Netherlands



**Stockholm, Sweden**

The cleanest city in Europe



**Vancouver, Canada**

A city with lowest carbon emissions



away from fossil fuels



**Portland, Oregon**

A city that teaches citizens to embrace nature.



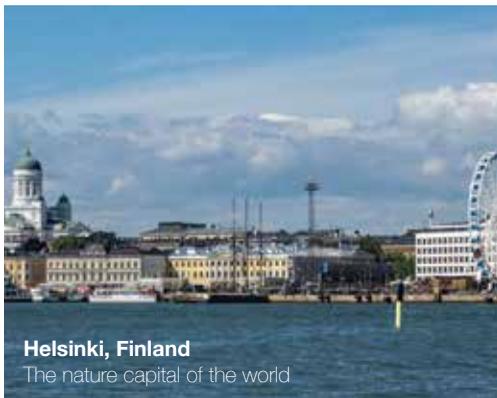
**San Francisco, California**

The first American city to ban the plastic bottle



**Africa**

ative waste management



**Helsinki, Finland**

The nature capital of the world

Examples of 11 cities that promote sustainability in their own ways. Source: Content adapted from Vyas (2018). Images from Wikimedia Commons.

### LOW-CARBON CITIES

This concept is directly linked to the climate change debate, the idea of transforming urban production and consumption to make it less energy intensive, increasing the share of a city's renewable energy intake and reducing GHG emissions. Low carbon strategies emphasise the offsetting of CO<sub>2</sub> emissions through methods such as carbon credits and tree planting, also referred to as carbon sequestration or 'carbon sinks.' Similar to the concept of low carbon cities is the concept of carbon-neutral cities (see e.g. Newman, 2010).

This relatively narrow focus on energy makes the low carbon city an attractive concept to apply in practice because it usually employs a way to measure progress via energy-related carbon emissions and/or carbon footprints.



Low carbon cities framework developed by the Ministry of Energy, Green Technology and Water (KeTTHA) in Malaysia. Source: Adapted from KeTTHA (2011)

## KEY REFERENCE: VANCOUVER, LOW CARBON BY 2050

Vancouver aims to operate on 100% renewable energy by 2050.

In order to achieve the low-carbon transition, the city has implemented low carbon housing and transportation. For example, all residential areas have either new low carbon district heating systems or are converting existing systems to run on low carbon fuel sources.

Low carbon transit initiatives are also in place. Both private and public vehicles are currently being replaced with electric, plug-in hybrid or sustainable biofuel powered alternatives (IRENA, 2019)

Vancouver, Canada. Vancouver, Canada. © akira1201/Adobe Stock

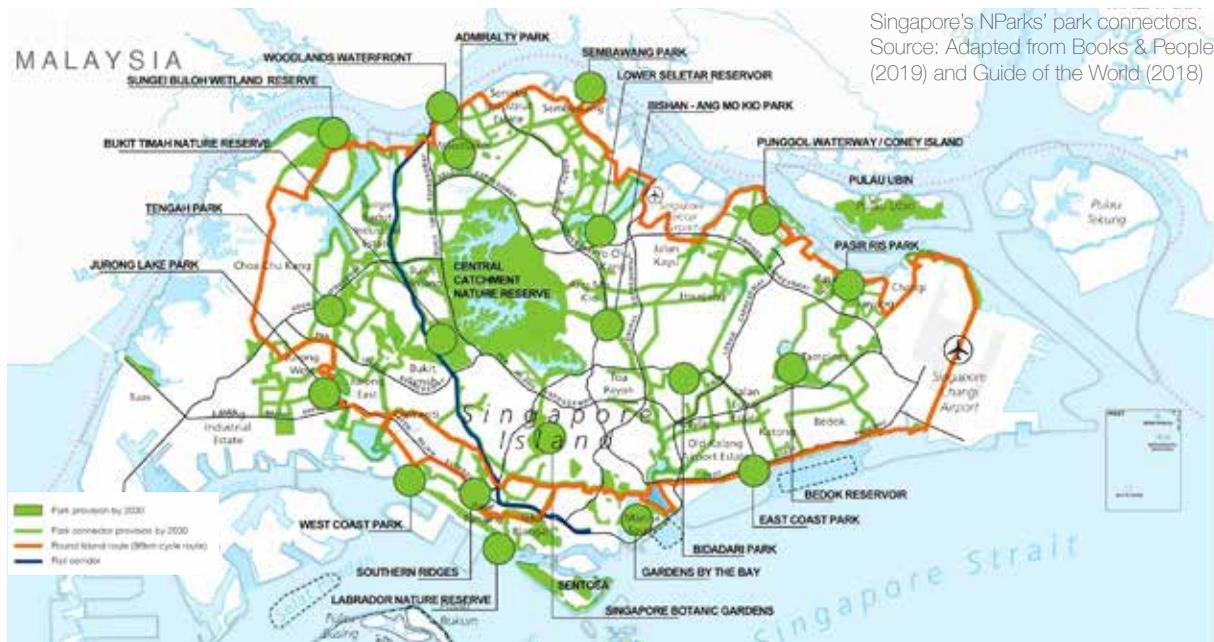


### GREEN CITIES

The concept of 'green cities' is used frequently and has important links to the 'sustainable city' concept. Its strong focus on the natural environment connects its definition to the integration of living systems and landscape experience in cities. In some cases, the concept of green cities has been associated with zero-emission and zero-waste urban design, the promotion of compact energy-efficient development, and the re-generation of city centers (Lehmann, 2010). It is however, more often than not, been associated with notions of environmental preservation, conservation of green space, green infrastructure, and connected to health and well-being (see e.g. Campbell, 1996, Kahn, 2007; Richardson et al., 2012). These constructs resonate with what some call the 'biophilic city' (Newman, 2010; Beatley & Newman, 2013). Biophilic

cities are 'cities that provide close and daily contact with nature, but also seek to foster an awareness of and caring for this nature' (Beatley & Newman, 2013, p. 3328).

Moreover, Kahn (2007) describes green cities as having 'clean air and water and pleasant streets and parks'; resilient to natural disasters; low in risk of infectious disease outbreaks; encouraging of green behaviour; and as having a 'relatively small' ecological impact (p. 4). 'Green urbanism' (Beatley, 2012), for example, is a framework that falls under the green cities concept. Cities that exemplify green urbanism are said to be those that 'strive to live within ecological limits, fundamentally reduce their ecological footprints, and acknowledge their connections with and impacts on other cities and communities and the larger planet' (ibid, p. 6).



## KEY REFERENCE: SINGAPORE, ASIA'S GREENEST CITY

Singapore is known to many as Asia's greenest city (e.g. Kolczak, 2017 STB, 2019). The city is described as 'one of the best landscaped cities in tropical Asia' (Newman, 2010, p. 166). The city's ethos is said to be shifting: from a 'garden city' to becoming a 'city in a garden' (ibid).

Singapore has been fast to develop a number of well-known green urban projects in the past years. Not limited to these are the 101-nature park 'Gardens by the Bay' in 2012 (see adjacent images), and even more recently in 2019 the world's tallest made-made waterfall inside of 'Jewel' – a nature-themed retail complex at Changi Airport (Jewel, ca. 2019).

Moreover, the city is known for its grand networks of parks (see image on opposite page; also Beatley, 2012) and vertical gardens (Yuen and Hien, 2005; Newman, 2010; 2014). Development of the city's green infrastructure is promoted by the government through the Skyrise Greenery initiative where subsidies are given for installation of green roofs, green walls, and balcony gardens (Newman, 2010; 2014).

Every contractor/builder is also required to 'fully compensate' for their impact on land degradation by providing additional vegetated areas. E.g. if 70% of the land is covered in built-up areas and only 30% is left green, builders are required by law to provide the additional 70% of vegetation elsewhere (Construction Climate Challenge, 2019).

The city is home to innovative green architecture some of which is designed by Malaysian architect-ecologist Ken Yeang (Newman, 2010). Singapore's city planning authority have future plans to 'open up 100km of waterways and 360km of park connectors by 2030' (Khoo and Chong, 2018)



Indoor waterfall at Gardens by the Bay, Singapore.  
© Nikolai Sorokin/Adobe Stock

# GARDENS BY THE BAY, SINGAPORE

Aerial view of Gardens by the Bay, Singapore. © Jorggranson/Adobe Stock





## ECO-CITIES

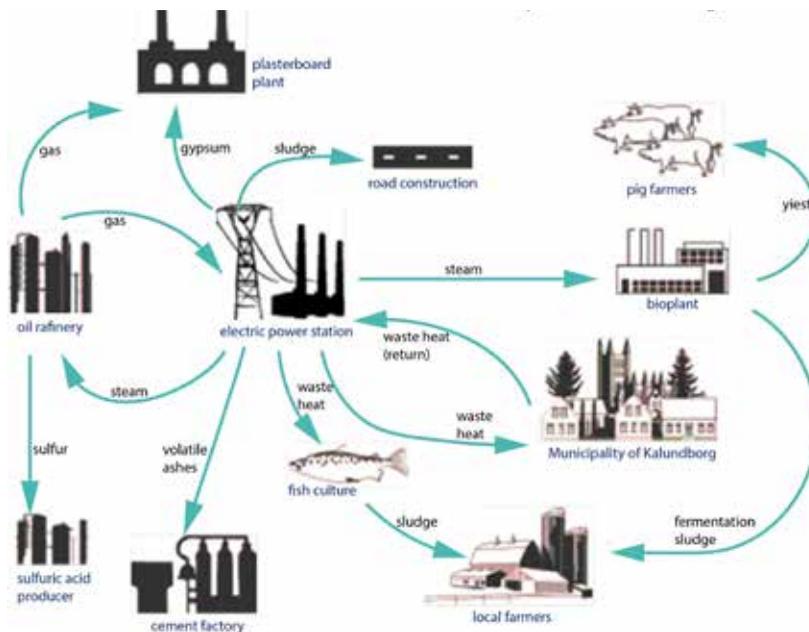
The original idea of the eco city, coined in the mid 1970s, derives from the ‘principles of living within the means of the environment; that is, with its population and the artefacts produced and used remaining within the ecological carrying capacity of the city’s bioregion’ (De Jong et al., 2015).

However, the concept has evolved as different stakeholders have used it in different ways. For example, Suzuki et. al (2010) defines ‘eco2 city’ where a city’s ecological sustainability depends on its economic and social vibrancy. Some particular applications

that have been associated with this concept include: achieving carbon-neutrality, a well-planned city with a good public transport system; ensuring resource conservation; conducting water and waste recycling; implementing local urban agriculture; and ensuring decent and affordable housing for all socio-economic and ethnic groups.

### Eco-efficiency and ‘cradle to cradle’

Closely drawn upon within eco city debates are the concepts of ‘eco-efficiency’ and



Industrial system at Kalundborg, Denmark Source: Adapted from Botequilha-Leitão (2012)



## KEY REFERENCE: HAMMARBY SJÖSTAD, STOCKHOLM'S FIRST ECO-DISTRICT

While there has been a growing number of eco-developments around the globe including Masdar in Abu Dhabi, Songdo in South Korea, and Tianjin in China, (Caprotti, 2014), Hammarby Sjöstad in Stockholm is one of the first examples of such development.

Hammarby Sjöstad (adjacent images) is a sustainable mixed-use development in the southeast of Stockholm City which includes 11.000 apartments, leisure facilities, commercial and service facilities, green public spaces and a wide-ranging network of public transport links. Initiated in the early 2000s, this eco-district was designed as an experiment to achieve low carbon emissions by means of circular resource flows, substitution for renewals and energy efficiency (Williams, 2017).



In order to meet the ecological goals of the development, the Hammarby model comprises of a set of specific strategies and features which include biogas production from waste, power generation from trash, photovoltaic systems, solar hot water tubes, centralized vacuum tube recycling collection, storm water management and green roof systems (The World Energy Foundation, 2016). Particularly innovative in the Hammarby model is its eco-cycles system (see diagram on p. 71) which ensures the circularity of the water and sewage, energy and waste resources flow (Sousanabadi Farahani & Mohammadi, 2013).

This flow is aimed at reusing and recycling resources, energy recovery and renewable energy (Williams, 2017). Hammarby, however, continues to face a number of challenges including meeting its car ownership targets (The World Energy Foundation, 2016), reaching energy efficiency goals (Sousanabadi Farahani & Mohammadi, 2013) and overcoming income-segregation (Rutherford, 2008).



Views of Hammarby Sjöstad, Stockholm.  
Source:  
© Roland/Adobe Stock (top and right)  
© Adam/Adobe Stock (bottom)



### CIRCULAR CITIES

The ‘circular city’ is perhaps one of the most recent developments of city types developed under the umbrella of ‘sustainable cities.’ It draws on the concept of circular economy as a transition from the traditional linear ‘take-make-dispose’ model of urban production and consumption, to a circular model which decouples growth from environmental degradation and natural resource consumption (Ness, 2008; Ghisellini, Cialani & Ulgiati, 2016a; Murray, Skene & Haynes, 2017).

Scholars do not agree on the definition of the ‘circular city’ (see Prendeville, Cherim & Bocken, 2018). However, a review of 114 circular economy definitions show that despite varying understandings, the concept is most frequently used to depict strategies that reflect the 4Rs: reduce, reuse, recycle, recover (Kirchherr, Reike & Hekkert, 2017). Though circular cities and eco-cities concepts share some understanding – i.e. both are about cyclical processes, both are about ‘closing the loop’ – the main objective of the circular city ‘is considered to be economic prosperity’ (ibid, p. 221). Thus, similar yet different from eco-cities, the discourse behind circular cities is often framed in relation to procuring or managing greener ‘supply chains’ (see e.g. Pomponi & Moncaster, 2017). Concepts and strategies from the circular cities concept are also connected with the concept of sharing

economy (see e.g. Prendeville, Cherim & Bocken, 2018).

The ReSOLVE framework developed by the Ellen MacArthur Foundation (2015), for instance, is a pioneering exemplar. The framework denotes how circularity principles can be applied to businesses and cities that seek to transition towards a circular economy. Six action areas are identified that forms the acronym ‘ReSOLVE’: Regenerate, Share, Optimise, Loop, Virtualise, and Exchange.

**PRINCIPLE 1:  
Preserve & enhance natural capital**



FINITE MATERIALS

*Renewables flow management*

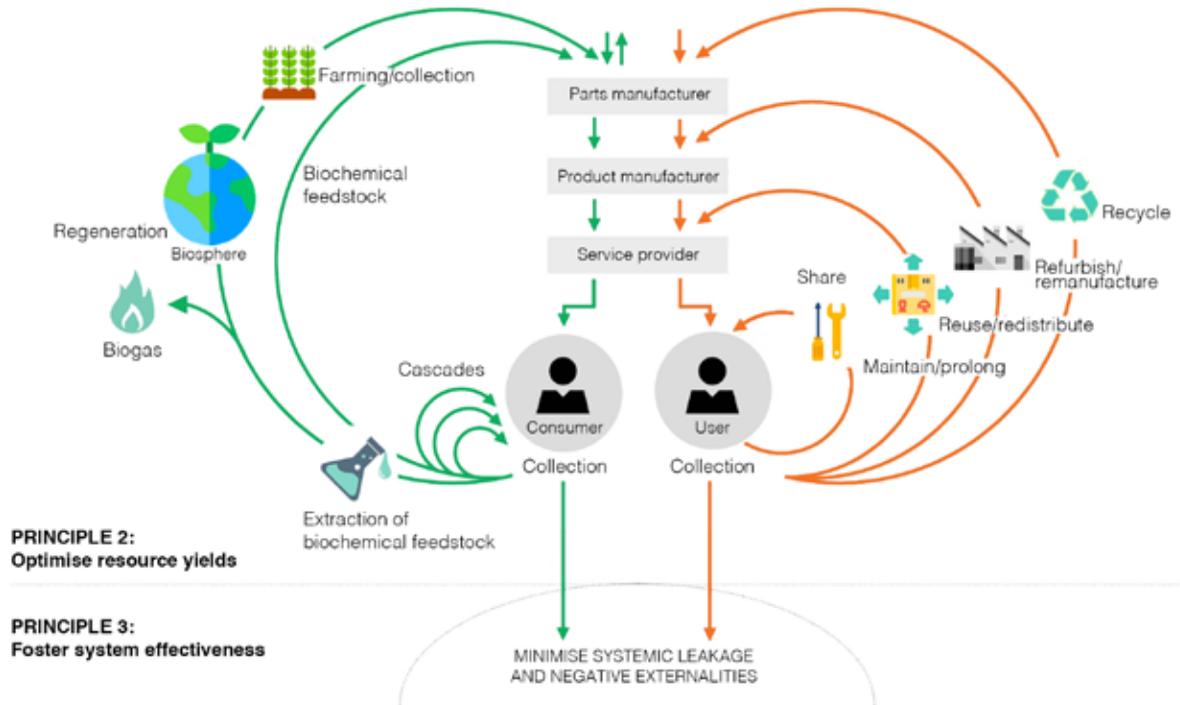
Regenerate

Substitute materials

Virtualise

Restore

*Stock management*



The ReSOLVE Framework. Source: Adapted from Ellen MacArthur Foundation (2015)

‘Cities for people’ are centered around the social sustainability pillar of sustainability. The debate on people-centred cities draws on Jane Jacobs’ ideas (Chapple, 2014), the American urban writer who championed a people focused approach to understanding cities. Such an approach aims to tailor urban solutions around end-user needs and, more importantly, to empower citizens by engaging them in both decision-making and the delivery of urban environments.

‘Cities for people’ ideas have been employed across a range of movements including: New Urbanism (Lund, 2003), Tactical Urbanism (Lydon & Garcia, 2015) and DIY Urbanism (Finn, 2014), among others.

In terms of urban form, concerns for users’ well-being have led to design principles that prioritise pedestrian experience over car-centred developments and a human scale experience throughout the built environment (Gehl, 2013).

Materialisations of these ideas include: mix-use and pedestrianised High Streets such as Strøget Street in Copenhagen and Buchanan Street in Glasgow; and the more recent so-called ‘complete streets’, increasingly popular in Western Europe, Canada and cities in North America, which amalgamate together automobiles, bicycles

and pedestrians (PPS, 2010). A similar design ideology can be found in other safe road/ shared street models such as the ‘woonerf’ in the Netherlands, the ‘home zones’ in Britain and the more widely implemented ‘living streets’ (CityLab, 2015).



‘Woonerf’ design in the Netherlands. Source: Sunday (2017)

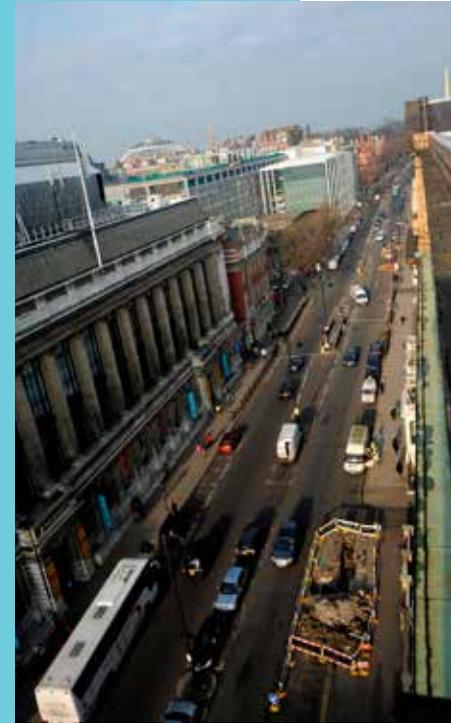
Exhibition Road before the re-design. Source: Photograph by the Royal Borough of Kensington and Chelsea

## KEY REFERENCE: EXHIBITION ROAD, SHARED SPACE IN LONDON

One of the most famous and publicised in the UK (Hammond & Musselwhite, 2013), the scheme was proposed by Daniel Moylan, a Councillor in the Royal Borough of Kensington and Chelsea where Exhibition Road is located (Murray, 2017).

Moylan was influenced by the works of Dutch traffic engineer Hans Monderman who advocated for the design of shared space. To Monderman, shared space helps to slow down vehicle speed and increase interaction between the different modes of travel. With a vision to redesign and re-open the road in time for the 2012 London Olympics, a design competition was held in 2003. Architects Dixon and Jones won the competition and redesigned Exhibition Road according to the principles of shared space (ibid).

Exhibition Road was redesigned and re-opened in time for the 2012 London Olympics (see adjacent images). The street was designed with pedestrians having the greatest priority. Vehicle speed is reduced due to the nature of the shared space.



Exhibition Road can still be visited today; it is also the exact same road at which The Great Exhibition of 1851 was held. The stretch connects South Kensington Underground Station to the south of Hyde Park. On both sides of the street are various cultural and education institutions; the Victoria and Albert Museum (V&A), the Science Museum, Imperial College, the Goethe Institute and the Royal Geographical Society for example are connected via Exhibition Road (Murray, 2017).

Exhibition Road after it reopened in 2012.  
Source: Mairs (2017)

## LIVEABILITY & QUALITY OF LIFE

Within the debate of ‘cities for people’, the concept of ‘liveability’ bridges between urban form and everyday urban life, in order to promote social interaction and nurture the formation of social networks in the city (Caves & Wagner, 2018).

Liveable cities provide choice and opportunity for people to live their lives and raise their families to their fullest potential (Brebbia & Sendra, 2017, p. 286).

## SOCIAL COHESION

Social cohesion involves ‘building shared values and communities of interpretation, reducing disparities in wealth and oncome, and generally enabling people to have a sense that they are engage in a community enterprise, facing shared challenges, and that they are members of the same community’ (Stanley, 2003, p. 7).

This concept is often discussed alongside concepts such as social inclusion and social capital (Oxoby, 2009). It could also refer to ideas of common values and civic culture, social order and social control, social equity, social solidarity, social mobility, social networks, place attachment and identity.

## KEY REFERENCE: BISPEBJERG NEIGHBOURHOOD SOCIAL COHESION

‘Residents’ Project Bispebjerg’ is one of three master plans for community regeneration currently running in Bispebjerg, Copenhagen and is built on the collaboration between social housing organisations, residents and local authorities.

The goal behind this ‘place-based’ neighbourhood plan is to facilitate social mobility and improve quality of life amongs the deprived and marginalised population living in this social housing estates. What’s more, by taking on a bottom-up approach, the Project’s strategies allow for grassroots initiatives start up and develop their own activities relevant to the community (Divercities, 2015).

The strategies developed focus on 1) vulnerable residents, 2) children, youth and families and 3) resident democracy. Consequently, the project engages with aspects of social cohesion by actively engaging with issues of ethnicity, age, gender, as well as diversity in cultural background, lifestyles and socio-economy status.

A team of seven paid residents organise and ensure the delivery of the outreach work and that of the different types of initiatives. The on-site coordinated activities include counselling towards conflict resolution, residents’ democracy and home maintenance, a residents’ café, a women’s club, a fathers’ network, a holiday camp for children, assistance with homework and club guides for children (Barberis et al., 2018).



Urban transformation towards social cohesion in Bispebjerg , Copenhagen. Source: Wikimedia Commons/News Oresund

### SAFETY & SECURITY

Safe use and secure access to public space are generally discussed side by side when it comes to the design and management of the built environment. This is concerned with 'the extent to which streets enable people to use, enjoy and move around the outside environment without fear of tripping or falling, being run-over or being attacked' (Burton & Mitchell, 2006).

Safety and security measures in the built environment include user friendly structures such as levelled and/or clearly marked crossings, easy to use urban furniture, appropriate street lighting etc.

Some of the principles behind designing a safe and secure build environment include: inclusiveness (i.e. everyone can use them safely, easily and with dignity); responsiveness (i.e. they take into account

what people need and want); flexibility (i.e. different people can use them in different ways); convenience (i.e. everyone can use them without too much effort or separation); accommodating (i.e. for all people, regardless of their age, gender, mobility, ethnicity or circumstances; and realistic (i.e. offering more than one solution to help balance everyone's needs and recognising that one solution may not work for all).

However, designing a safe and secure built environment comes with its challenges. It is argued that it tends to control and regulate behavior in public space; discourages long-term comfortable use of public space; and it can discriminate against vulnerable socio- economic groups i.e. teenagers and homeless people (Savičić & Savić, 2013).

Robson Square, Vancouver. Source: Flickr/mag3737



## SENSE OF PLACE

‘Sense of place’ is usually used in a broad sense and/or as an umbrella concept to encompass attributes that make a place easily recognisable and/or having an identity’ of its own (Lynch, 1960). It can also refer to a relationship between users and a space which fosters feelings of affinity and belonging to that space (Relph, 2008). Places are embedded within both history and meaning (Tuan, 1979). Consequently, sense of place resides in the signification and emotional attachment that people assign to certain locations, as well as in the individual and/or collective memories that accompany that attachment (Tuan, 1979; Shaftoe, 2012).

Dempsey et al. (2011) argue that social sustainability links directly to community everyday lives and identify ‘sense of place’ as one of the five dimensions that account for everyday social life at neighbourhood level from a sustainability perspective (Dempsey et al., 2011. p. 295). The other four dimensions are: social interaction/social networks in the community; participation in collective groups and networks in the community; community stability and safety and security.

From a ‘sense of place’ perspective, sustainable communities are generally understood as places in which people enjoy living and working. Such communities are promoted by the literature on the topic (Dempsey et al., 2011; Nash & Christie, 2003)

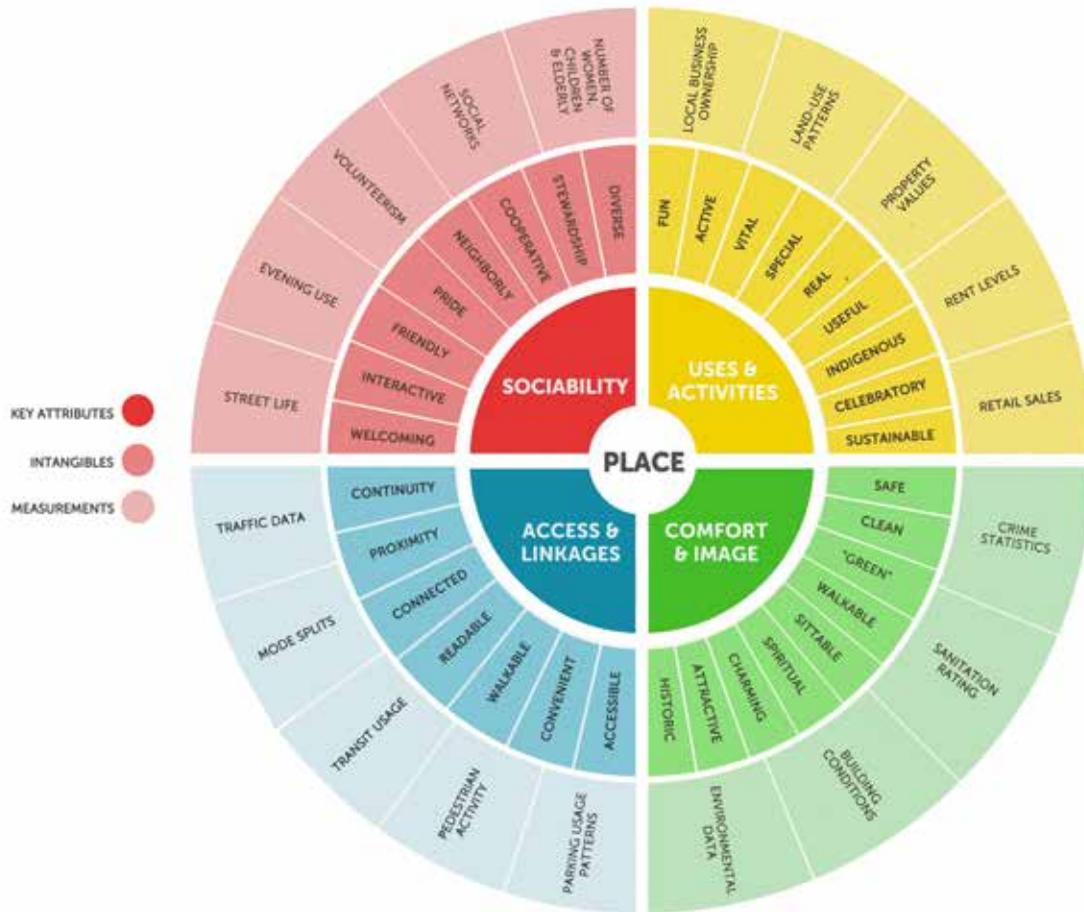
as localities that ‘meet the diverse needs of existing and future residents, are sensitive to their environment, and contribute to a high quality of life. They are safe and inclusive, well planned, built and run, and offer equality of opportunity and good services for all’ (Office of the Prime Minister, 2005, p. 56).

### **Placemaking: a design approach to sense of place**

Place-making as a concept is characterised by a community-based approach, with the aim to create liveable and active urban environments that foster a sense of place and a community feeling (Carmona et al, 2012).

In terms of urban form, place-making translates into intensification of activities and a positive pedestrian experience. Ground floor uses create spaces where people feel comfortable and safe (Jacobs, 1992), while places of encounter and social interaction enhance the vitality of street life (Carmona et al., 2012).

Although gaining momentum in policy-making agendas, from a socio-economic perspective place-making remains a largely vague term that becomes problematic when employed to promote economic development and regeneration projects to the detriment of existing socially vulnerable communities.



The Place Diagram. Source: Adapted from PPS (2016)

The concept of 'just cities' draws on ideas of fairness, justice, and equity (in relation to inequality). It began through the initial scholarship of John Rawls (2009) and has been re-framed in the context of cities by David Harvey (2003; 2010) and later, among others, Susan Fainstein (2014).

Harvey defines the territorial social and distributive justice as the fair distribution of income and goods that should:

1. meet the needs of the population within each territory;
2. maximise inter-territorial multiplier effects; and
3. compensate where difficulties stemming from the physical and social environment arise (Harvey, 2003; 2010).

Social equity is concerned with fair access to goods and services necessary for everyday life, along with employment, good quality housing (Rode et al., 2014; Simon, 2016), socio-economic inequality and intra-generational equity (Anand & Sen, 2000).

In this sense, the concept refers to 'the distribution of welfare goods and life chances on the basis of fairness' (Murphy, 2012, p. 20).

A number of theories and models have emerged in relation to these ideas including,

- Healey's (1997) theory of collaborative planning which emphasises democratic decision-making assuming that just cities build on strong participation and deliberation in decision-making processes;
- Purcell's (2008) and Zucker's (2003) model of distributive justice which sees equity as a core characteristic of decision-making and equality as a prerequisite of any democratic process;
- Young's (1990) social differentiation without exclusion model which focuses on diversity and group differences, arguing that shared identities are equally important as common interests; and
- Fainstein's (2014) 'just city planning' which argues for the fair representation of various interests in decision-making.

### AFFORDABLE HOUSING

Affordable housing and social housing are used interchangeably and can be defined as directly or indirectly subsidised housing and/or rented housing at below market rates. These are usually allocated by the state/public bodies to segments of the population who have difficulty affording housing at market value. Social/affordable housing has been seen as an effective means of overcoming shortages arising from war damage and rapid urbanisation.

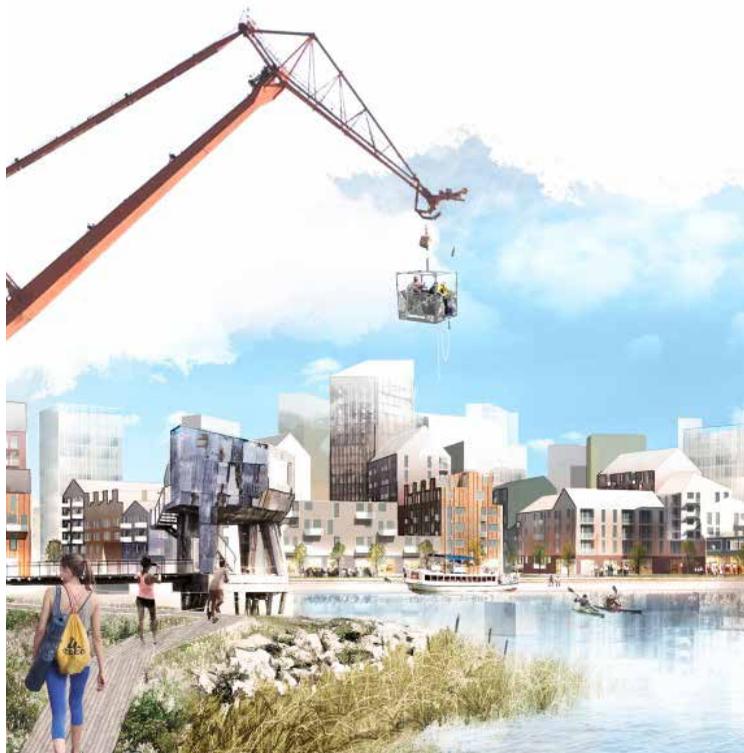
We live in a rapidly urbanising world characterised by urban population growth with increasing inequality and segregation in our society. Hence, housing shortages and affordability remain as key challenges for many cities and regions.

The following are examples of urban strategies that have been utilised by various cities to deliver affordable housing:

- increasing awareness and knowledge around the long-term benefits of integrating affordable and sustainable housing (Jamaludin, Mahayuddin & Hamid, 2017)
- re-assessing policy packages including planning/building regulations and financial support (i.e. subsidies, grants etc.) (Johnson & Heinz, 2006)
- exploring community governance models,

- grassroot initiatives in which residents can develop their own neighbourhood plan (Seyfang & Smith, 2007).

In certain regions where national and local policies are inefficient in tackling housing affordability, residents have also taken matters into their own hands and explored alternative housing models. Such initiatives have led to self-build and co-housing models that can be seen today (Bredenoord, Van Lindert & Smets, 2014).



## KEY REFERENCE: AFFORDABLE HOUSING IN FRIHAMNEN, GOTHENBURG

The city of Gothenburg envisages a large urban renewal of its waterfront. In line with the RiverCity vision, disused docks are being transformed into new residential and commercial areas. The city's ambition is to create a 'sustainable livable city centre'; with plans to create a social mix in the central area of Frihamnen – an old free port area (Windh, ca. 2014; see also RGPG, 2011).

Gothenburg inhabitants are described as coming from diverse socio-economic backgrounds hence, housing needs to be affordable to them and there is no system in place for social housing in Sweden. To challenge the current system, Gothenburg decided to do something different. In Frihamnen, residential apartments with the same standard and location are offered at different levels of rent to accommodate lower-income households. This was implemented even though it meant 'bending rules and budget' to deliver affordable housing (City of Gothenburg, 2011; Windh, ca. 2014).

The model is one described as 'counting backwards': 'how much can a low-income household pay in rent each month? After that [rent levels are set] according to solvency and [builders and developers are invited] to try and meet those levels in new production apartments' (ibid).

50% of the apartments in Frihamnen are rentals and 50% are purchasable. Rent is set at four different rates, each taking up a quarter of the housing stock:

- 25% will cost ~€100 per sq.m. per year
- 25% will cost ~€140 per sq.m per year
- 25% will cost ~€180 per sq.m per year
- 25% will not have a set rent level but can be used to balance income for the lessor.

Artistic impression of Frihamnen, Gothenburg in 2021. Source: City of Gothenburg (ca. 2019)



### ACCESSIBILITY & CONNECTIVITY

The accessibility and connectivity concepts can be used as means to achieve social equity by providing fair and equal access to basic services and proximity to everyday activities for all. They are often associated with mobility and transportation debates and may make reference to travel times, affordability of transport mode, frequency of services, proximity of infrastructure nodes, and balancing a variety of transportation modes etc. (Bocarejo & Oviedo, 2012).

Accessibility refers to proximity to services and facilities, as well as ease of access to an altogether legible and safe to navigate urban realm (CABE, 2008).

Connectivity is employed to evaluate permeability of the urban fabric, as well as directness and distance of route of travel from a point of origin to various destination points (Randall & Baetz, 2001).

Accessibility and connectivity can be more easily delivered in a dense and/or densified urban environment via, for example, sustainable public transportation, and by taking a holistic planning approach to ensure that the needs of all population groups are met.

Main challenges include lack of transport and housing affordability for lower socio-economic groups, but also travel behavior such as reliance on private car use.



The Transmilenio in Bogotá  
Source: Wikimedia Commons/Felipe Restrepo Acosta

## KEY REFERENCE: 'PRO-POOR' PUBLIC TRANSPORT, THE TRANSMILENIO IN BOGOTÁ, COLOMBIA

In 2014, the government of Bogotá introduced a 'pro-poor' public transport subsidy scheme that aims to assist low-income households and their accessibility to the city's public transport system – including access to the Transmilenio or the city's local Bus Rapid Transit (BRT) service (Crawford ca. 2011; Rodriguez & Peralta Quiros, 2016; Guzman & Oviedo, 2018). The design of the scheme was supported by the World Bank in 2013 (Rodriguez & Peralta Quiros, 2016); the scheme enables citizens that live Bogotá with a SISBEN score (Colombia's index for household economic well-being – Vélez et al., 1998) of 40 or less to opt for a public transit subsidy that discounts the fare to almost half-price. Subsidised fares are provided via a personalised 'smartcard' and is capped at 40 trips per month (Rodriguez & Peralta Quiros, 2016).

The Transmilenio itself consists of 114km or 12 lines of BRT services that serves the city of Bogotá and Soacha (a municipality part of the Metropolitan Area of Bogotá) (Alcaldía de Bogotá, 2018). The service also runs free feeder buses from low-income communities located on the outskirts of the city that

are yet to be integrated to public transit networks (Crawford ca. 2011; Guzman & Oviedo, 2018). Ticket prices are kept uniform across all stations to ensure that those located further away (often communities in less affluent areas) are not penalised with increased costs (Crawford, ca. 2011).

At large, the Transmilenio have improved mobility across the city – especially connections to less affluent neighbourhoods – and have been referred to as an example of planning for inclusive and affordable transport systems (see *ibid*). The project has created jobs for the city during its construction phases, and have demonstrated successful reduction of carbon emissions and road accidents by deterring the use of private vehicles. A 14% drop in CO2 emissions per passenger has been reported; and only after two years of its operation, road accidents and fatalities are said to have decreased by 94% (*ibid*).



### GREEN & BLUE INFRASTRUCTURE

Delivering access to and provision of green and blue infrastructure for all in the city are seen as delivering social and environmental justice, and social equity through, for example, more social cohesion and mix via recreation and meeting opportunities (Andersson et al., 2019; Gehrels et al., 2016). This also creates a healthier built environment by mitigating noise and air pollution, reducing criminality (Andersson et al., 2019; Gehrels et al., 2016) and incidence of mental health conditions such as anxiety disorders and depression.

Fjord City waterfront development, Oslo.  
© Viktor Sokolov/Adobe Stock



## KEY REFERENCE: OSLO'S WATERFRONT, DESIGNING FOR SOCIAL COHESION

Oslo's strategic development plan for Oslo (2018a) emphasises social and cultural sustainability goals. The social equity principles that underlined these goals can also be found in the development proposal for Oslo's waterfront, the Fjord City project (City of Oslo, 2018b), where measures such as mixed-use services and walking distance to transportation hubs were put in place in order to ensure both equity of access and quality of services (Stenbro et al., 2016).

However, the role that the new waterfront can play in terms of social cohesion is hindered by the housing development, as well as the surrounding cultural and business venues which mainly appeal to higher socio-economic groups (Briers, 2011).

Adjacent images show snapshots of Fjord City, with diagrams on p. 85 illustrating the project's strategy for opening up 9km of public space along the waterfront to bring water infrastructure at the heart of a newly created urban space.



Views of Aker Brygge at Fjord City, Oslo. Source: 123RF  
Source: © emiliano/Adobe Stock (top); Wikimedia Commons/  
Jean-Pierre Dalbéra (bottom)



Fjord City – 9km of continuous public space along the waterfront.  
Source: Adapted from Nordregio (2018) (above) and Rodeo arkitekter (n.d.) (right)

strategies - 2014



ESTABLISH TESTBEDS



CONNECT PROMENADE



STRENGTHEN CONNECTIONS



INCREASE COMFORT

strategies - 2030



VARYING TEMPO



BUILD NETWORK OF MOVEMENT



INCREASE CONTACT WITH WATER



INCREASE RECREATION

It is argued that successful sustainable urban development is determined by 'good governance' models which consists of 'openness and participation, accountability, effective coherence, efficiency (proportionality) and greater sensitivity to the immediate context' (Kemp, Parto & Gibson, 2005, p. 18).

The delivery of good governance is driven by a number of factors including an understanding of public needs, political decision-making, integrated policy packages and implementation solutions on the background of multi-levelled cooperation between the different interested stakeholders (Meadowcroft, 2007, p. 299). The governance of sustainability, however, faces the challenges of being over reliant on traditional (and government-led) decision-making processes and so, become 'static' i.e. not being able to develop new modes or instruments of governing (Adger & Jordan, 2009).

## GOVERNANCE MODELS

Government refers broadly to the structure or institutional arrangement for the governing of an area (Lefèvre, 2003) and has traditionally been seen as the main form of governing in society at the local, regional and national level. Ideally, the government makes policy following four hierarchical steps. It first sets policy objectives, which are then formulated in guidance and plans (policy formulation), implemented in practice (policy implementation) and, finally, assessed/measured (policy monitoring).

However, government decision-making rarely follows this model. Policy objectives are often reformulated during implementation; policy formulation has significant cognitive limits and policy monitoring is often resource intensive and thus rarely conducted. Hence, it is argued that a government-centred perspective is insufficient to understand governing and decision making in the city. Modern conceptualisations of governing have diverged from a traditional focus on government and hierarchical lines of power to emphasise the formulation and implementation of policy through dynamic lines of power and networks of actors inside and outside the government (Bulkeley & Kern, 2006).

Rawls (2009) has famously framed this as moving 'from government to governance'

whereby governing takes place as network governance in the context of links between various actors at various levels. Governance is seen as the 'intersection of power, politics and institutions' (Leach Stirling & Scoones, 2011) and characterised by 'a complex set of institutions and actors that are drawn from but also beyond government' (Stoker, 1998). More recently, this has been captured by the concept of multilevel governance which recognises the importance of links across scales in urban policy making, from local to supranational, and a distribution of power across horizontal and vertical networks which do not operate in a hierarchical manner (Bulkeley & Betsill, 2005). This is particularly relevant to sustainable urban development.

Newly emerging governance models include democratic governance and reflexive governance. The first is aimed at empowering the public in order to foster an inclusive civil society, 'based on social capital and partnerships' (Bevir, 2010); an example of democratic governance is the Occupy movement in Europe and North America in 2011. Meanwhile, the reflexive governance is aimed at the continuous production of knowledge consequently used to reassess policy strategies, the 'concepts, practices and institutions by which societal development is governed' (Voss, Bauknecht & Kemp, 2006, p. 4) and consequently adjust initiatives.

### INDICATORS

The use of indicators is a prominent feature of the contemporary global governance model and seen as ‘technologies of governance’ (Davis, Kingsbury & Merry, 2012; Holman, 2009). Indicators are used to compare and rank performance for purposes as varied as deciding how to allocate resources throughout the urban development process and determining whether urban projects and/or cities have complied with their initial ‘promises’ and targets.

Sustainability Indicators (SIs) are individual credit-scoring variables that provide specific measurements, but also are seen as defining and operationalising sustainability. They play an important role in formulating local and national sustainability policy and have been widely employed by urban policy makers to ensure progress of their city work (Turcu, 2013; 2018).

Examples here include:

- the European Green Capital Award (by the European Commission);
- Urban Ecosystem Europe (by ICLEI and Ambiente Italia);
- European Metabolism Framework (by the European Environmental Agency);
- Urban Sustainability Indicators (by the European Foundation for the Improvement of Living and Working Conditions);
- Urban Audit indicators (by Eurostat);
- Global City Indicators Programme (by the World Bank);
- City Blueprints (by Waternet Amsterdam and KWR Water Cycle Research Institute);
- China Urban Sustainability Index (by Urban China Initiative).

## KEY REFERENCE: SIEMENS GREEN CITY INDEX

The 30 indicators from the European Green City Index developed by Siemens and the Economist's Intelligence Unit (see below) is used to measure the current environmental performance of major European cities, as well as their commitment to reducing their future environmental impact (Siemens AG, 2009).



Siemens' Green Index. Source: Adapted from Turcu (2018) on the basis of Siemens (2009)

## GOVERNANCE MECHANISMS

The new collaborative and participatory models of governance together with the underlining sustainable goal of equity have led to a need for structures which facilitate multi-stakeholder decision-making under the overall principles of 'good governance'. Some examples are discussed below.

### City networks

These are usually agreements and/or partnerships between/across cities which aim to tackle common issues across administrative boundaries and in a concerted manner. Examples here include the European Covenant of Mayors for City Change, C40 Cities Climate Leadership Group, 100 Resilient Cities, Climate-KIC Pioneer Cities, ICLEI, EuroCities, United Cities and Local Government etc.

### Partnerships

These refer to 'joined-up' or 'multi-agency' agreements and illustrate a distinctive 'mode of urban governance' not just 'networked governance' (Davies, 2002). They involve a range of actors and can work at different scales. Some examples here include Private Public Partnerships (PPPs) but also partnerships to deliver specific urban initiatives/programmes such as Business Improvement Districts (BIDs), Urban Priority Areas (UPIs) and Urban Development Corporations (UDCs).

### Citizen-based bodies

These represent formalised representations of voluntary/citizen action including resident associations and other civil society organisations such as NGOs. They are important for demanding improved quality of urban services, addressing the 'democratic deficit' (Maguire & Truscott, 2006) and empowering communities through acting as social capital link's (Skidmore, Bound & Lownsborough, 2006).

### Other

Some other examples of governance mechanisms include:

- Advisory groups and/or 'Task Force' groups made of, for example, design experts and decision-makers providing specific high-level advice on urban development and/or urban policy e.g.. Urban Task Force, UK, 1999
- Project control groups made of client representatives, designers and other consultants/specialists that oversee the overall direction, planning and monitoring of an urban development project.

## FROM THEORY TO APPLICATION

This section is by no means an exhaustive discussion of all theories and conceptual models/frameworks that are applied in urban sustainability debates. However, it is a fair representation of recurrent concepts across students' work. It is worth mentioning that they aim to cover all four pillars of sustainability and overlap with other relevant urban debates such as natural resources and eco-system services, empowerment and inclusiveness, health and wellbeing to only mention a few. The conceptual underpinning of student work is helpfully summarised in the diagram below.



Diagram of emerging city concepts across student project work

**In this section we showcase four examples of students work i.e. four development proposals or Strategic Sustainable Urban Plans (SSUPs) for Nacka City.**

**In total, twenty-three group projects were produced by students during the 2016-2017 and 2017-2018 academic years. Each of the examples showcased here draws on theoretical concepts introduced in the previous section and addresses challenges identified in the 'site analysis' section.**

# PROJECTS

# 4.1

## RIGHT TO NACKA CITY

This project draws on **'compact cities'**, **'just cities'**, **'cities for people'** and **'power in the city'** concepts. The main challenge identified in the project is community participation and engagement. Hence, this proposal develops three strategies to address this: Accessibility, A Bridge to Nature, and Densification Done Right. To 'govern' development over its timeframe, the project proposes a set of indicators to monitor progress and implementation.



Artist's impression by Right to Nacka City

## VISION

'Nacka, the Right Place for All' is developed from an overarching vision of a just, sustainable and attractive urban environment which builds upon the existing strengths of Nacka City, where all inhabitants share the right to the city and the right to nature. This means the creation of an equitable and democratic city where growth is not a source of tension, but an opportunity for vibrancy, resilience and community cohesion.

The project is set within a framework of Community Governance where the evaluation and flexibility of governance structures aim to facilitate strong communities that thrive and have a voice.

Figure 1.1 illustrates the proposed vision where three major strategies are developed that continuously 'feed back' into the phases of development of Nacka City through the Community Governance framework. The three strategies set out by the project ( i.e. Accessibility, A Bridge to Nature, and Density Done Right) aim to deliver a socially just and environmentally sustainable urban development.

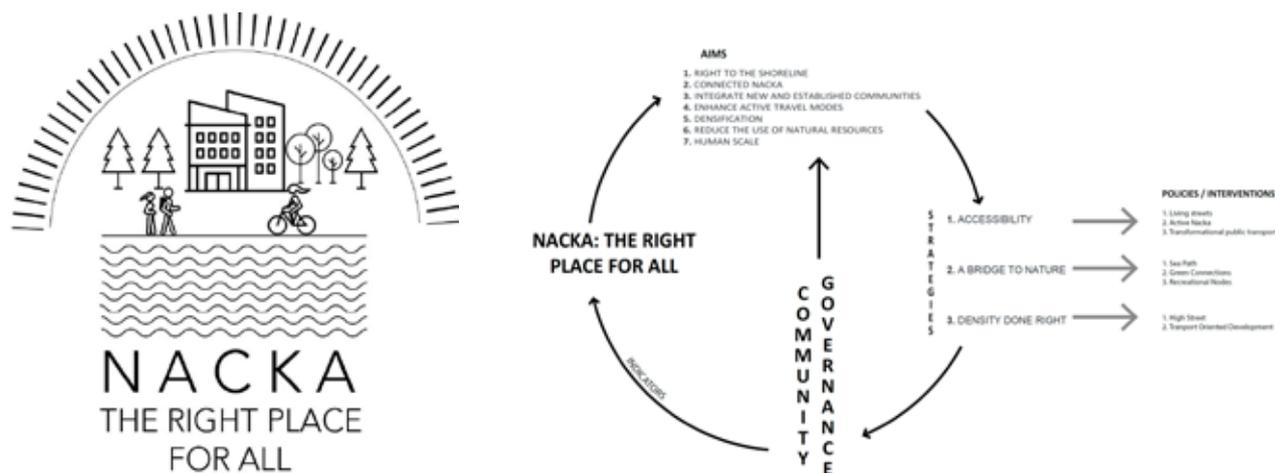


Figure 1.1. Proposed vision and framework. Source: Right to Nacka City.

## CONCEPTUAL FRAMEWORK

Drawing on Fainstein’s (2014) work, the project develops strategies for Nacka City that address the three pillars of a just city: democracy, diversity and equity. This is combined with ideas from Tactical Urbanism (Lydon et al. 2012) and the Needs Based Design framework for urban development (Haltrich, Lawton & Stack’s 2008) to propose a Community Governance framework which frames the project’s vision.

The Community Participation framework (Figure 1.2) is derived from integrating the above theories with real-life precedents of community participation interventions (e.g. urban voting, spot interviews, gamification, citizen camera survey, etc.).

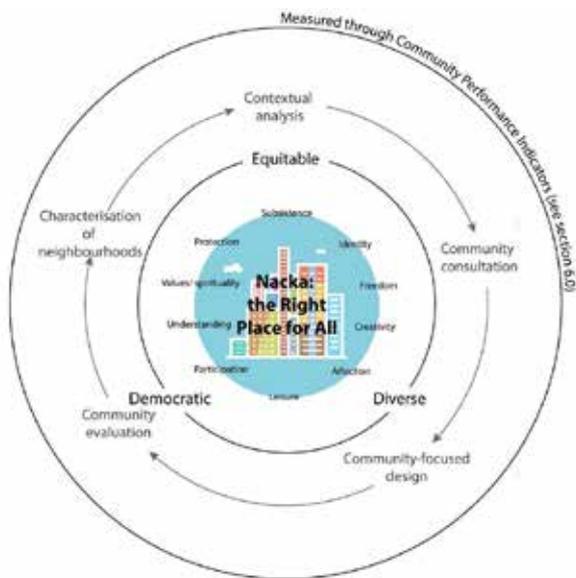


Figure 1.2. Proposed Community Governance Framework.  
Source: Right to Nacka City.

Taking into account some of these ideas, the framework proposes its own set of community governance principles:

1. Adaptive evaluation process for continuous improvement
2. Every citizen is within walking distance of a diverse range of amenities
3. Creative and engaging participation methods
4. Facilitating self-governance
5. Actively integrating education and youth development
6. Feeding into indicators to measure the extent to which interventions improve social sustainability

This framework is ‘operationalised’ by three strategies with subsequent interventions.

## MASTERPLAN

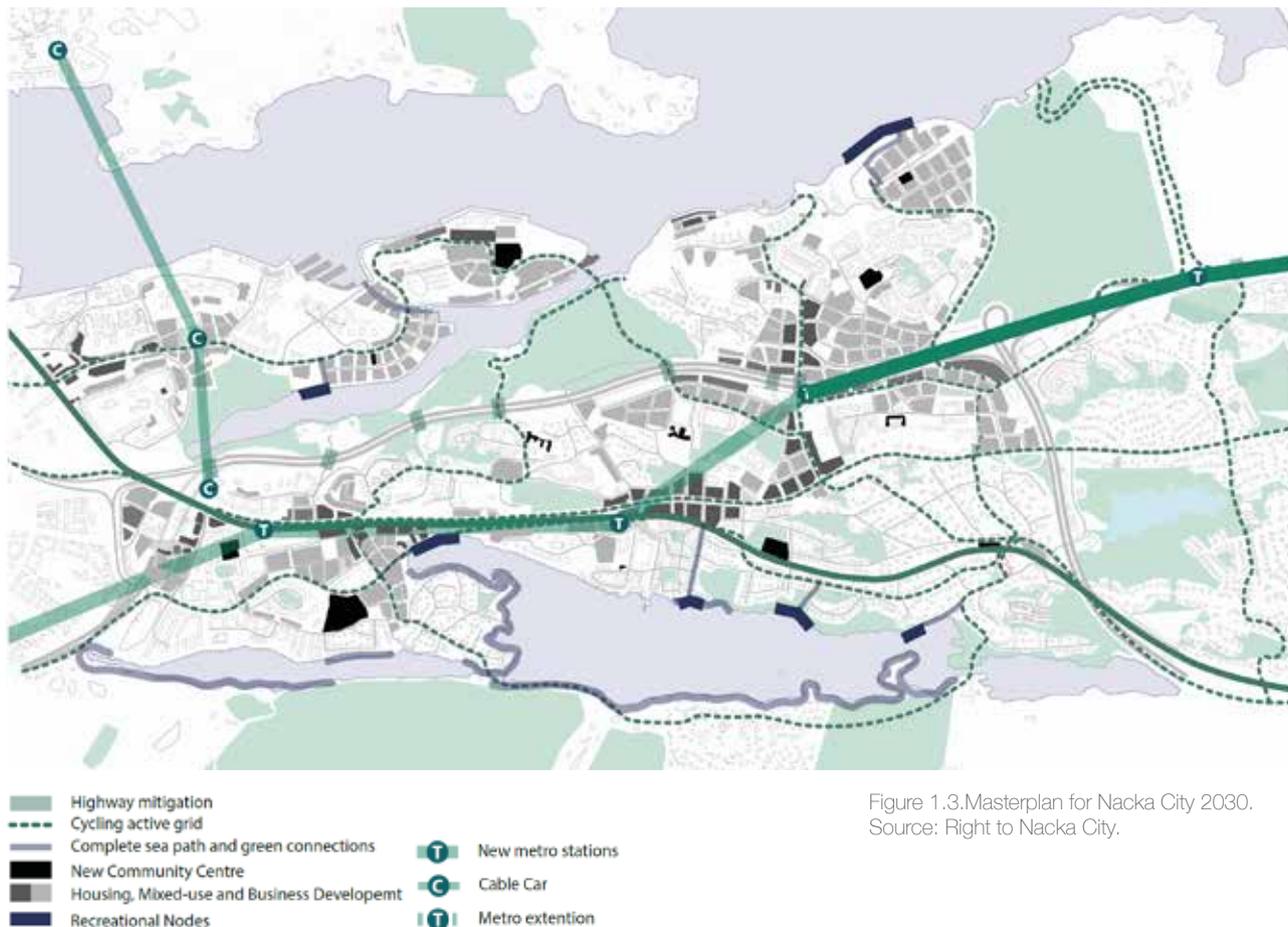


Figure 1.3. Masterplan for Nacka City 2030.  
Source: Right to Nacka City.

The proposed masterplan (Figure 1.3) integrates the three strategies by providing accessible transportation networks, within just green and blue infrastructure, and urban densification done for all and in the right locations.

## STRATEGY 1: ACCESSIBILITY

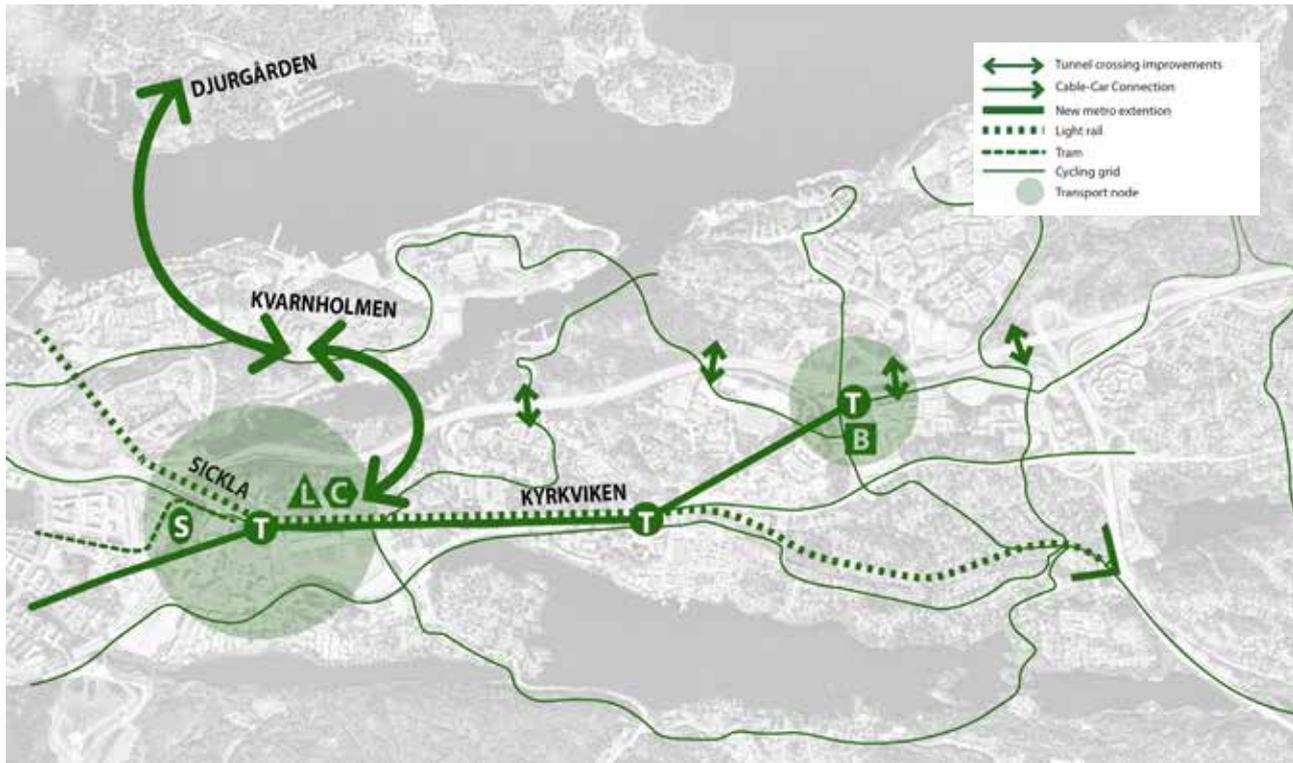


Figure 1.4. Transport and Infrastructure strategy - Accessibility. Source: Right to Nacka City.

Accessibility strategies aim to move Nacka City away from a car-dominated environment through a ‘healthy streets’ approach that promotes public health, well-being and community cohesion. This strategy responds to the site’s main challenges of car-dependency, severing physical infrastructure and disconnected communities, by promoting active travel, the improvement of existing connections and the introduction of cable car transportation.

Figure 1.4 shows the spatial implications of this proposed strategy. Living streets, public transport and active travel, as specific interventions, provide increased connectivity between different people, opportunities and communities across Nacka City and beyond.

## LIVING STREETS

The aim of this intervention is to enhance active modes of travel and integrate new and existing communities. Car-dominance is tamed and streets are designed to be ‘healthy’ and human scale.

The proposed target for this intervention is to reduce car ownership to be below 2012 levels by 2023 (i.e. less than 281 cars per thousand households). The project suggests streets with reduced speed limits to make the street environment less intimidating and safer for active travel and vulnerable road users. Most secondary streets have a 30km/h limit, and 45km/h is only available for some primary roads. Car-free parking policy is also applied to new homes with two bedrooms or less.

A diverse street use by residents is encouraged and supported. All streets of 200m or longer have one traffic calming/filter permeability measure chosen by residents such as street furniture and resident-led street activities i.e. street parties and concerts (Figure 1.5). For example, ‘Woonerfs’ or ‘home zones’ (Figure 1.6), which encourage the use of the streets for active travel and outdoor activities, is a good exemplification of this intervention.



Figure 1.5. Community street party in London, UK. Source: Photograph by A. Juangbhanich, 2018



Figure 1.6. Example of 'woonerf' in the Netherlands. Source: Wikimedia Commons/Erauch

## ACTIVE TRAVEL

A new cycle network is proposed which aims at better connecting different areas within Nacka City such as the coastline to key transport hubs, in order to support the arrival of the metro line. Cycle routes are colour-coded with the involvement of the local residents to ease travel planning and wayfinding, (Figure 1.7). Local residents are also involved in the naming of the cycling routes.

Developers will be required to contribute some 2,500kr (approx. £205) per each dwelling sold to a municipal cycle purchase fund. This fund will be used to help local residents purchase a cycle.

Severance points caused by the motorways are to be made safe through interventions that enhances the feeling of “place”. The installation of innovative lighting at Clink Street, London is one example of a way to make underpasses and bridges feel safer (Figure 1.8).

Figure 1.7. Proposed cycle routes with colour-coding. Right to Nacka City.  
 Right: Figure 1.8. Example of innovative lighting installation at Clink Street, London. Source: Flickr/Jorge Franganillo



## TRANSFORMATIONAL PUBLIC TRANSPORT

Transformational public transport serves to transform Nacka City into a diverse and sustainable transport hub. Interventions suggested include:

- the ‘metroisation’ of existing suburban rail services
- the extension of the metro to Boo
- the installation of Linbana (cable car) that connects the North and South of Nacka City.

Existing suburban rail services are ‘metroised’ as the line is re-joined to central Stockholm. The lines are double-tracked whenever possible to connect Nacka City’s central area to other suburban stations. This intervention is also supported by further expansion of the metro into Boo.

Working jointly with the adjacent municipality (Djugården), the project also proposes Linbana (cable car) that transports visitors to the heart of Nacka City (Figure 1.9; Figure 1.10). This would cement Nacka City’s reputation as a cultural centre, unlock development opportunities in the north of the site and connect to the tram.

These interventions together with those from active travel and living streets work together to make Nacka City a vibrant and accessible destination within the Stockholm metropolitan area.



Figure 1.9. New Linbana linking Nacka to Djugården. Source: Right to Nacka City.



Figure 1.10. Example of cable car TOD. Faber Peak-Sentosa, Singapore. © luluandisabelle/Adobe Stock

## STRATEGY 2: A BRIDGE TO NATURE

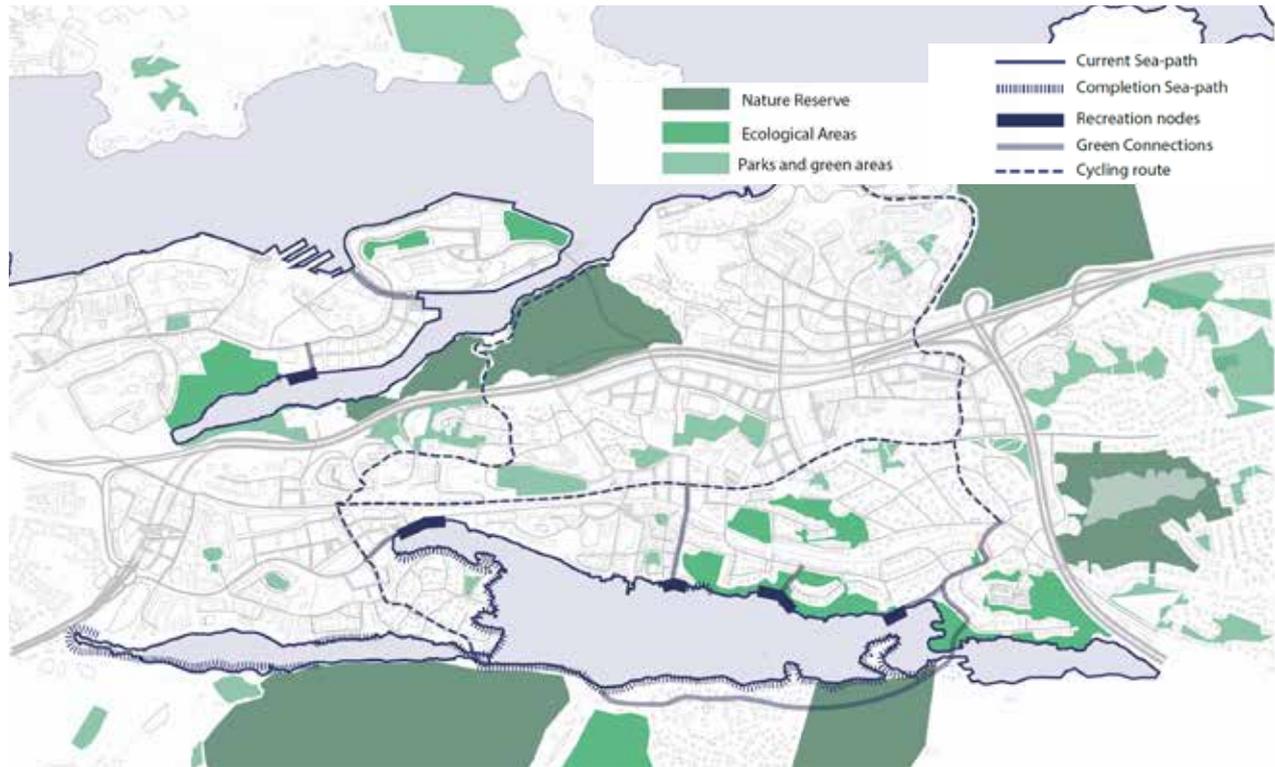


Figure 1.11. Green and blue infrastructure strategy – A bridge to nature. Source: Right to Nacka City.

This strategy builds on Nacka City’s current natural beauty and addresses the site’s transport and social challenges by improving the quality of existing green and blue infrastructure. Proposed interventions provide a built environment connected to nature which is multi- functional, responsive, flexible and accessible.

Figure 1.11 shows the spatial implications of this strategy, including the Sea Path, Green Connectors and Recreational Nodes.

## THE SEA PATH

A continuous and shared public space Sea Path, wide enough to accommodate both pedestrians, joggers and cyclists, is proposed (Figure 1.12). It connects people to water in easy and enjoyable ways and delivers ‘the right to the shoreline.’ It also builds upon municipality’s current boardwalk plans to create an unbroken pathway.

The Sea Path is also designed to be used by tourists as it connects to multiple recreational nodes. A precedent for this design is Vancouver’s Seawall which attracts tourists throughout the year (Figure 1.13). Nacka City’s Sea Path can further incentivise the creation of local businesses in the tourism industry, for example shops that provide electric-boat hires.



Figure 1.12. The Seawall in Stanley Park , downtown Vancouver, Canada. © Debbie Ann Powell/Adobe Stock



Figure 1.13. Proposed cycling network focused on multi-modal connectivity. Source: Right to Nacka City.

## GREEN CONNECTORS

The project aims for 100% of Nacka City's residents to have access to the shoreline by 2023. Green 'connectors' or connections are strategically placed in areas that connect the sea path with an active green grid in a way which is accessible to all. The locations correspond with the proposed municipal recreation through existing parks in Nacka, enhancing connections between the blue and green infrastructure to create a recreational loop.

The creation of an accessible and enjoyable environment would foster spontaneous encounters between the residents and

strengthen the bond between members of different communities in Nacka City.

Figure 1.14 visualises a section of the green connection from Sickla alongside the proposed recreational node and Sea Path.

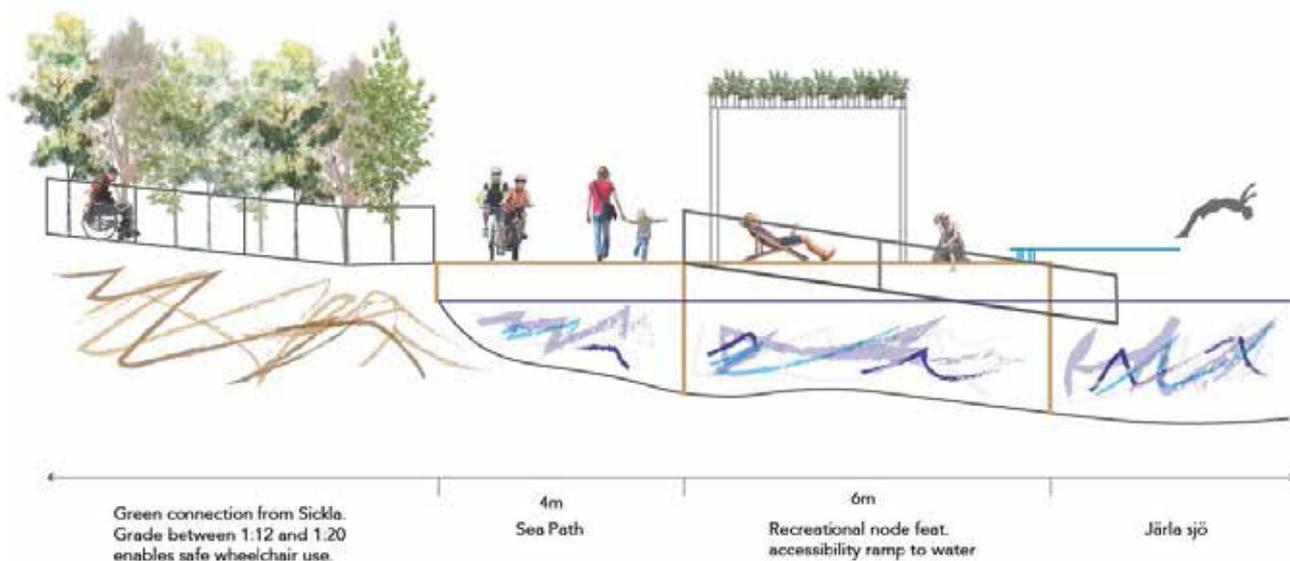


Figure 1.14. Example section of proposed green connections. Source: Right to Nacka City.

## RECREATIONAL NODES

Recreational nodes, varying in design and activity focus are placed at strategic locations along the sea path (Figure 1.15 and Figure 1.16). These are public places to signpost Nacka City as a recreational destination for all. They can be floating parks, barges and shelters and can be designed with community involvement such as events at local schools where children design their ideal recreational node using clay with the help of design/architectural students and designers/architects who specialise in educating children about design/architecture.

Six initial nodes are proposed to respond to the proximity of residential areas and site's topography. These nodes have flexible functions to ensure they are responsive to seasonal changes and remain accessible throughout the year. In the winter, they provide visual amenity and function as shelter from rain and wind chill; in summer, they become loci for BBQs and bathing. They are made of timber that is acquired from local trees cut down for new on-site developments. To this end they serve both a functional and symbolic role.



Figure 1.15. Example of recreational node being used in the summer. Source: Right to Nacka City.

Figure 1.16. Example of recreational node being used in the winter. Source: Right to Nacka City.



## STRATEGY 3: DENSIFICATION DONE RIGHT

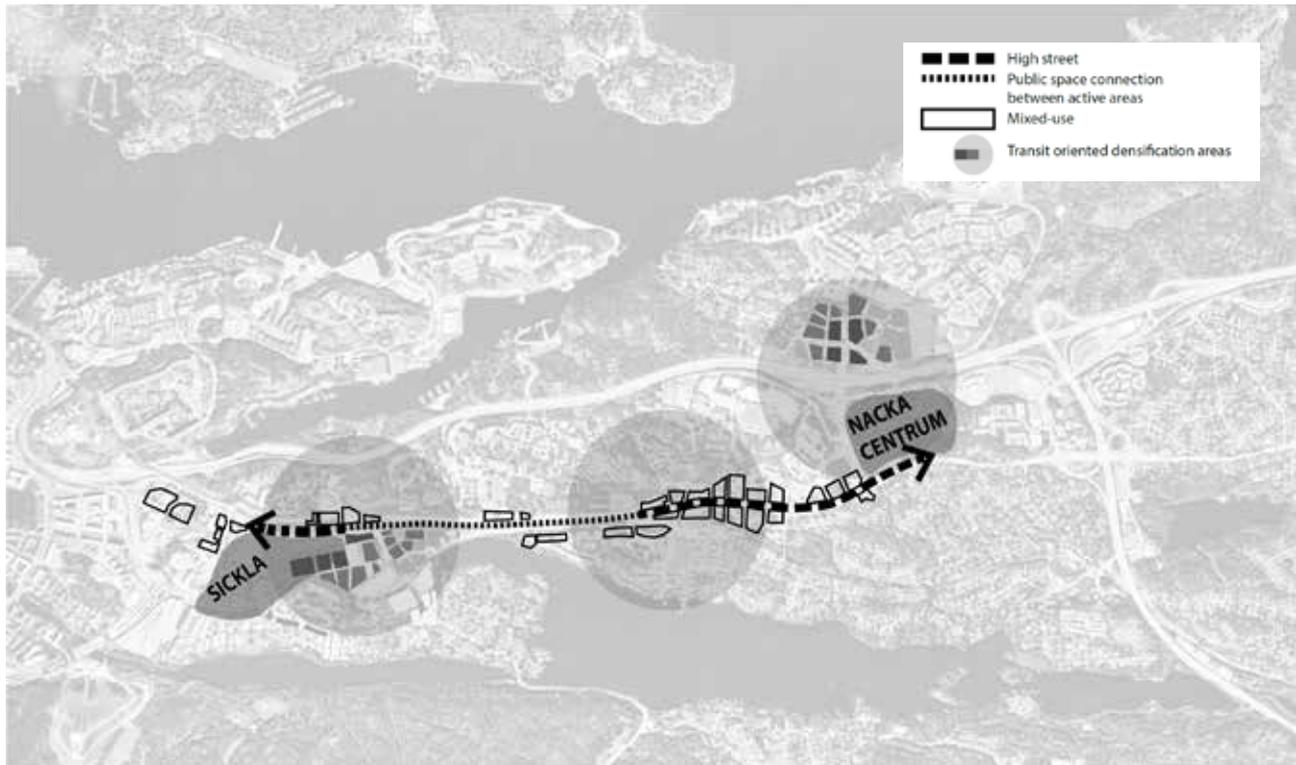


Figure 1.17. Densification strategy – Density done right. Source: Right to Nacka City.

This strategy draws on the TOD concept and aims to deliver a diverse mix of residential and non-residential land uses around transport nodes, as well as a compact redevelopment of the urban fabric to reduce the need to travel.

The mix of building types and activities alongside an affordable housing strategy is proposed to enhance accessibility and create opportunities for new and existing communities to mix. Community governance plays a pivotal role in the process where residents' feedback on the site's development phases and first developments are acquired through a participatory process. Figure 1.17 shows the spatial implications of this strategy.

## TRANSIT ORIENTED DEVELOPMENT

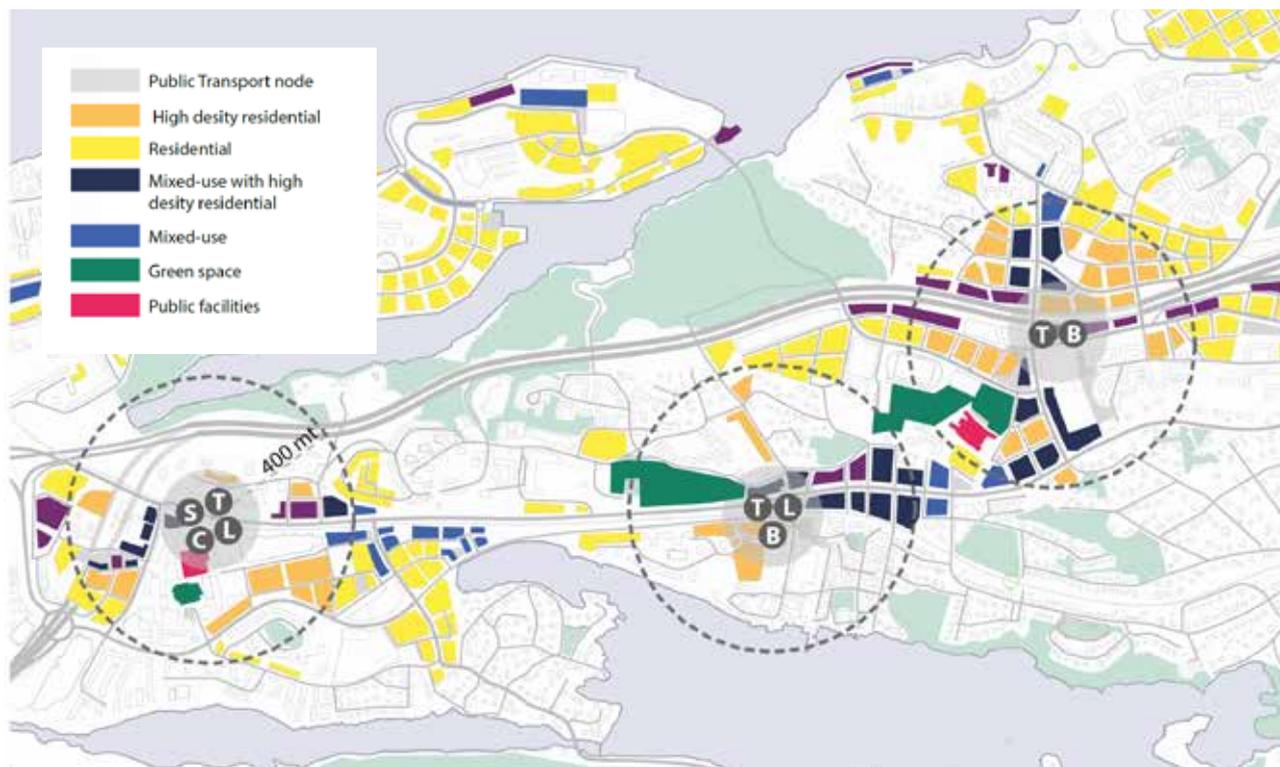


Figure 1.18. Proposed TOD strategy – Nacka Forum, Järå, and Sickla. Source: Right to NackaCity.

Three new transport nodes around Nacka City's new metro stations are proposed: Nacka Forum, Järå and Sickla. The TODs have a 400m radius of high density residential and mixed-use development. This distance takes on average 10min to travel on foot, ensuring diversity of services and a range of active and sustainable transport options. One public facility and one green area is to be established within each TOD (Figure 1.18). Construction requirements/guidance for new developments which are resource-efficient are prioritised. For example, the construction of commercial and retail buildings would comply with the BREEAM<sup>1</sup> or LEED<sup>2</sup> certification schemes. New housing is to be connected to renewable energy centres and waste management facilities.

1. The UK's green building scheme 'Building Research Establishment Environmental Assessment Method'
2. U.S. Green Building Council's green building scheme 'Leadership in Energy and Environmental Design'.

## HIGH-RISE HIGH-DENSITY

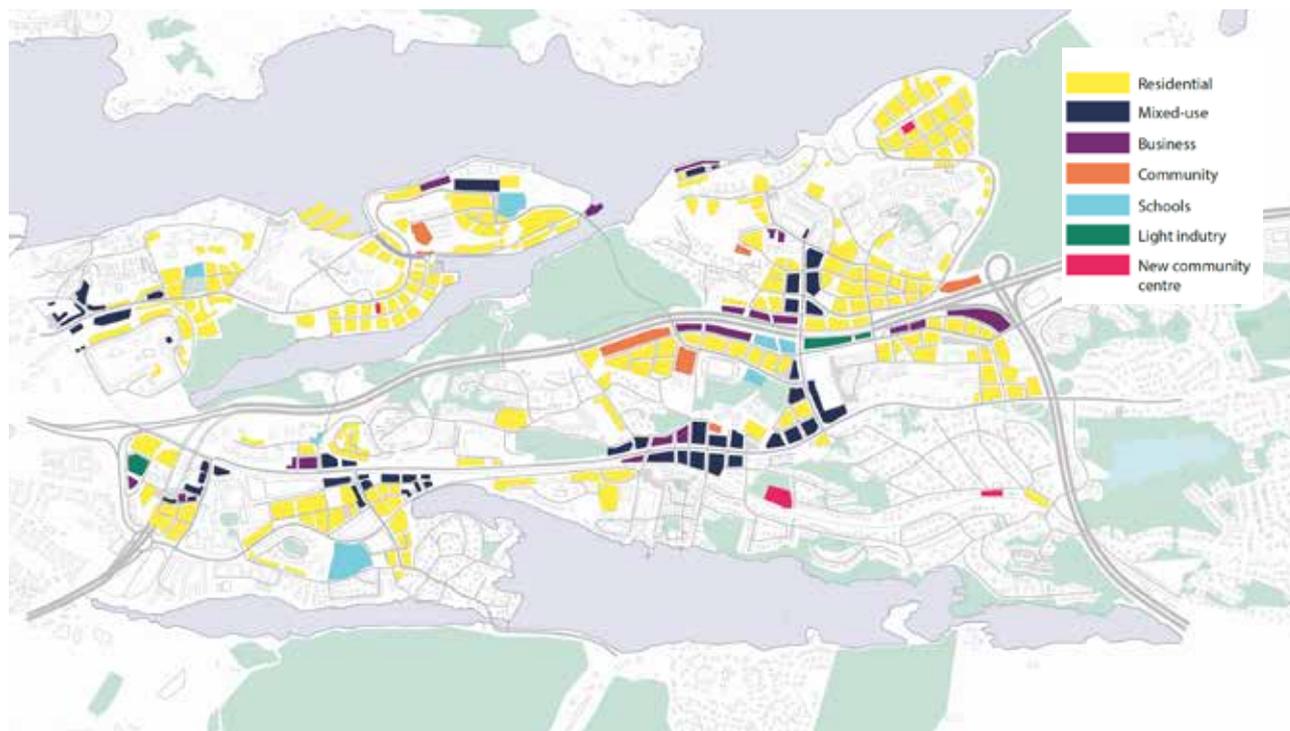


Figure 1.19 Proposed land-use typology. Source: Right to Nacka City.

Relatively high-rise high-density residential and mixed-use areas allow for buildings of 7 to 12 storey high, in comparison to medium density proposed for the rest of the proposal i.e up to 6 storey high buildings.

High-density areas cater for different types of families and incomes with its diverse housing typologies and flexibility of commercial space (Figure 1.19). Density bonuses are offered to developers for delivering larger than the standard numbers of below market rent dwellings. All residential buildings are designed tenure blind.

Maximising the mixed-use typologies increases the quality of public realm and activates public space throughout the day and night.

## THE HIGH-STREET

The project proposes the creation of public spaces, services and new jobs along a new High Street. This leads to more opportunities for people from different communities inside and outside of Nacka City to ‘cross paths’, therefore facilitating the integration of new and existing communities and achieving a human-scale public realm. To deliver this, three street typologies are proposed: the High Street, Connected Street and Local Street (Figure 1.20).

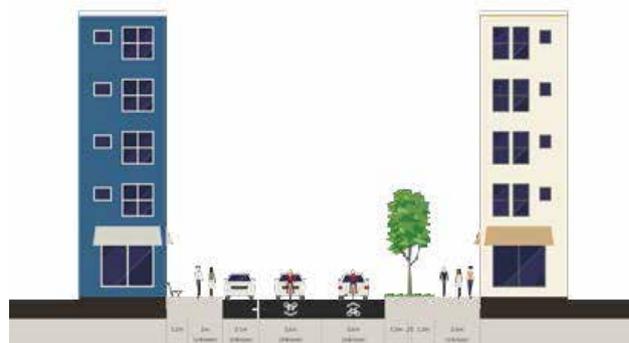


Figure 1.20. Three types of proposed street typologies. Source: Right to Nacka City.

- From top to bottom:
1. Connected Street – 26m street section
  2. Local Street – 18m street section
  3. High Street – 32m street section

## IMPLEMENTATION

### FINANCING THE LINBANA (CABLE CAR)

The new Linbana (Nacka-Djurgården cable car) is a major intervention proposed in this project. To finance it, a range of funding sources are identified (Figure 1.21) including two Swedish national funding programmes (Stadsmiljöavtal, which supports public transport investments; and Sverigeförhandlingar, which supports local and regional infrastructure); various EU funding streams such as the European Social Fund; and other national and city grants and loans.

The cost of the cable car system is estimated at approximately 840 million krona (€80million) with a payback period of 21 years. These figures are calculated on the basis of that proposed for the Gothenburg cable car (ELENA, 2017).

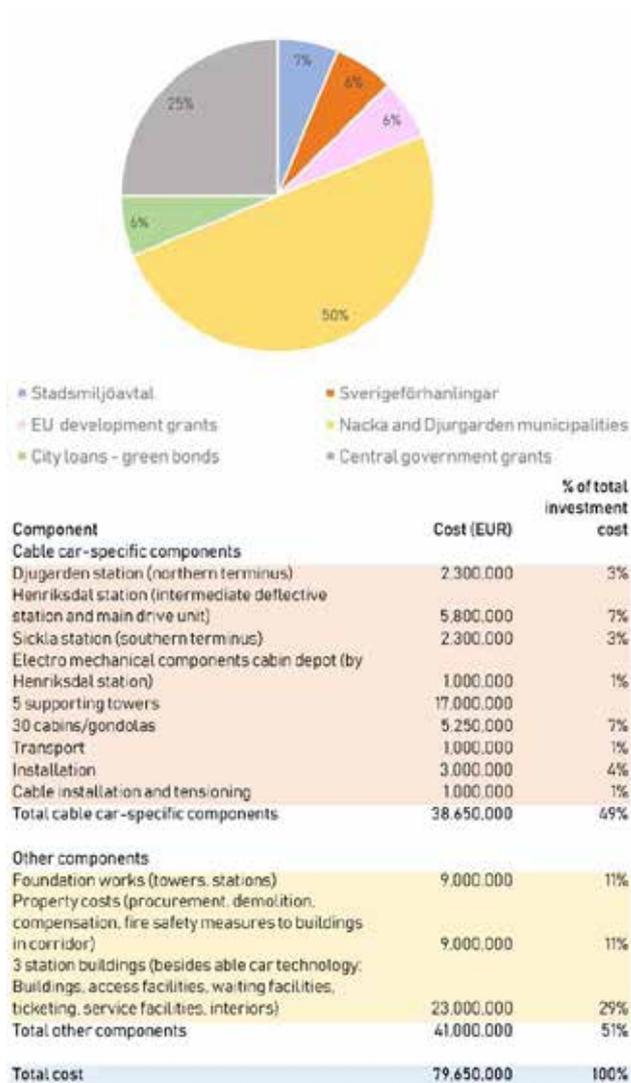


Figure 1.21. Cost estimation for the Nacka-Djurgården cable car. Source: Right to Nacka City.

## GOVERNING PERFORMANCE VIA INDICATORS

A set of Community Performance Indicators are developed that involve community participation processes with all Nacka City's community stakeholders. The example below (Figure 1.22) illustrates one set of such indicators developed for the 'right to the shoreline'.

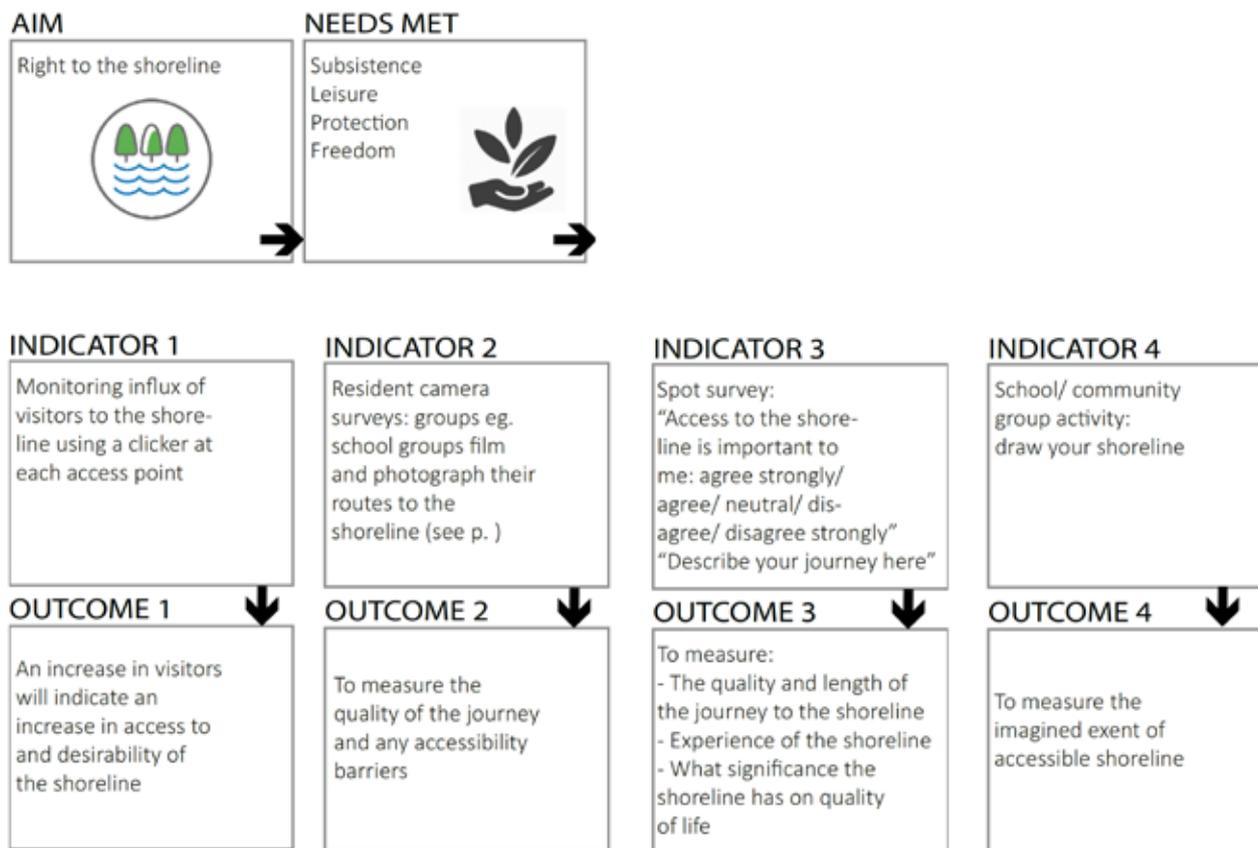


Figure 1.22. Example of Community Performance Indicators.  
Source: Right to Nacka City.

## PHASING

The delivery of the project takes place in four phases leading up to 2030 and beyond (Figure 1.23).

- Phase 1 (2015-2019) focuses on increasing permeability across Nacka City (north-south through active travel; east-west through the sea path).
- Phase 2 (2020-2024) is the opening of three metro stations, connecting Nacka City to the rest of the Stockholm Region.
- Phase 3 (2025-2030) is the installment of the Linbana or cable car system, connecting Nacka City to Djurgården in the north. Mixed use developments around transport nodes are completed in this phase, and consultation begins regarding a possible metro extension eastwards towards Boo.
- Phase 4 (beyond 2030) - As the project's framework is one that responds effectively to feedback, the outcome of the final phase is highly dependent on the outcome of consultation processes. This could mean extension of the metro eastwards towards Boo; or extension of the sea path to areas beyond the municipality.

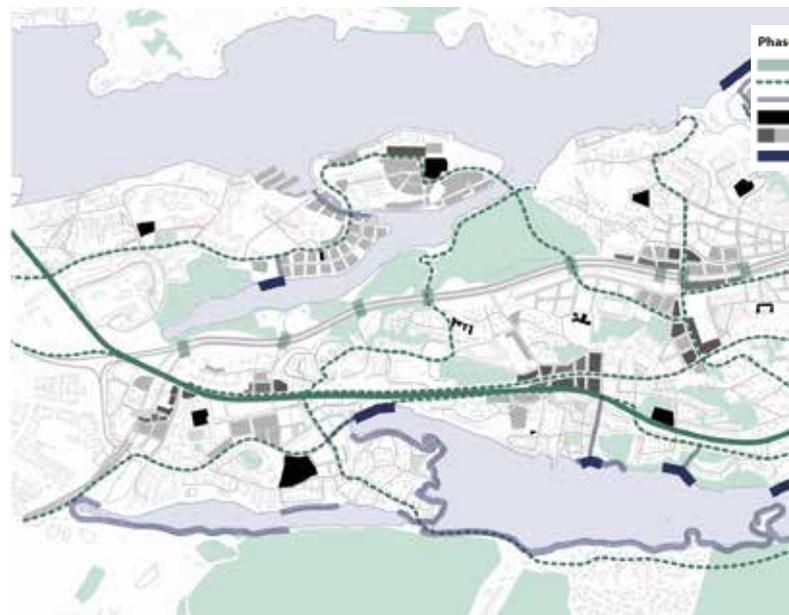


Figure 1.23. Phasing for Nacka City 2030. Source: Right to Nacka City.

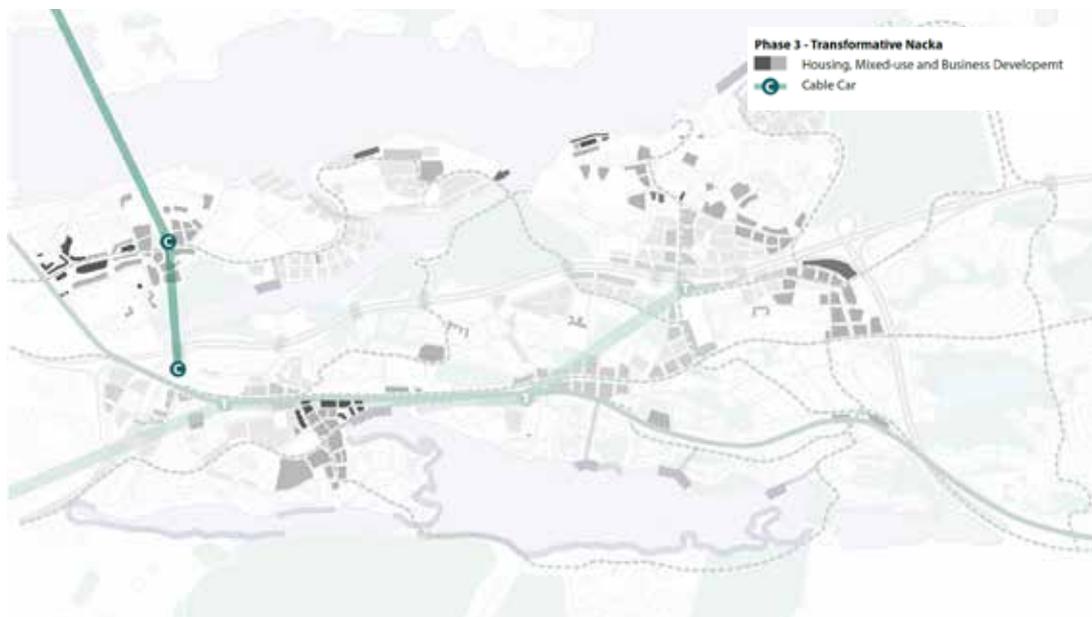
**Phase 1 - Permeable Nacka**

- Highway mitigation
- Cycling active grid
- Complete sea path and green connections
- New Community Centre
- Housing, Mixed-use and Business Development
- Recreational Nodes



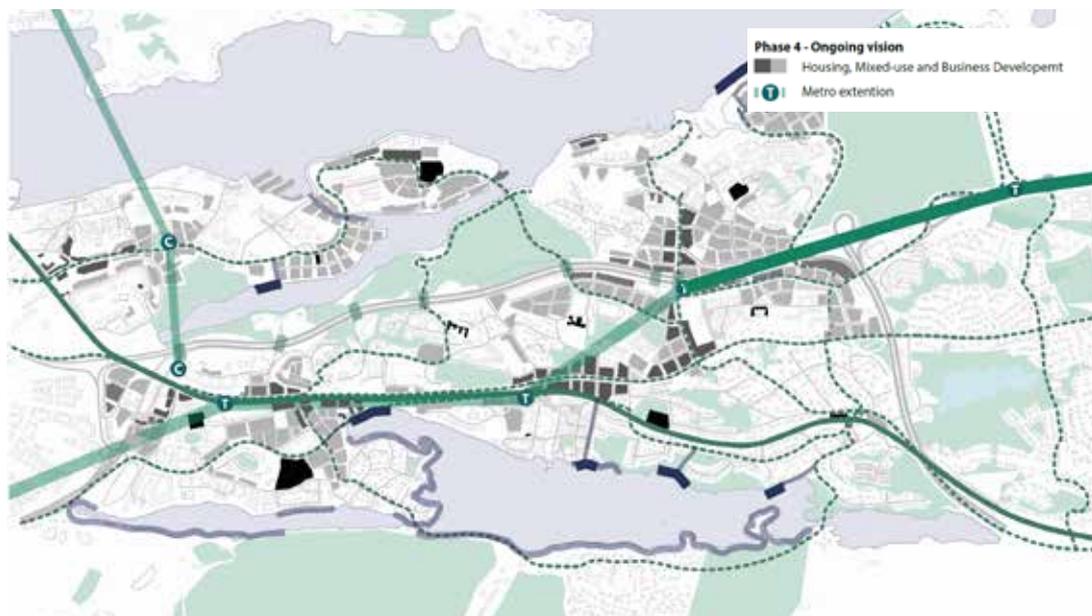
**Phase 2 - Connected Nacka**

- Housing, Mixed-use and Business Development
- New metro stations



**Phase 3 - Transformative Nacka**

- Housing, Mixed-use and Business Development
- Cable Car



**Phase 4 - Ongoing vision**

- Housing, Mixed-use and Business Development
- Metro extension

# 4.2

## WE NACKA CITY

This project draws on **'sustainable cities'**, **'just cities'** and **'cities for people'** concepts. The main challenges identified here are the internal connectivity within Nacka City, the viability of Nacka City as a "place", and the quality of commercial spaces and jobs in proximity of the motorway. Three strategies are developed to address these challenges: Transport connectivity, People-focused public realm and Circular economy.



Artist's impression by We Nacka City

WE NACKA



## VISION

'We Nacka' aspires to transform Nacka City into a memorable and attractive hub within the broader Stockholm region: 'A Place to Belong To'.

It envisions Nacka City as a place embraced by residents, workers and visitors; a desirable place to live and a place for recreation, shopping, working and education; a place with enhanced and high quality of living. We Nacka is known as a creativity hub surrounded by social enterprises and community solidarity, attracting entrepreneurial businesses with a social conscience.

## CONCEPTUAL FRAMEWORK

The project draws on concepts from the 'just cities', 'cities for people' and 'sustainable cities' theories to create a three-pronged approach for the delivery of a sustainable Nacka City:

### **Strong connectivity**

Connecting Nacka City into a strong cohesive unit where walking, cycling and public transport is embraced by residents, workers and visitors. Sustainable transport offers safety and convenience and contributes to residents' physical, social and mental well-being.

### Vibrant and diverse communities

'City of short distances' principles are integrated with Transit Oriented Developments (TODs) and densification strategies to spatially reorganise communities in Nacka City. Neighbourhoods are planned to conform with compact city principles, having basic leisure, commercial facilities and community activities close by. The concept of micro accessibility is also used to enhance internal connectivity, linking Nacka City's communities to the above-mentioned commerce and services. Public spaces are planned according to the 'happy city' principle (Montgomery, 2013) which promotes physical, social and mental wellbeing.

### Dynamic business environment

Concepts from the circular cities and sharing economy are introduced at Nacka City. A dynamic business environment also means the promotion of creativity and innovation to provide quality jobs and attract knowledge-based industry, transforming Nacka City into a world-class urban centre.

Figure 2.1 encapsulates the three areas of the framework that work together to inform the related strategies and interventions.



Figure 2.1. Proposed conceptual framework. Source: We Nacka City.

## MASTERPLAN

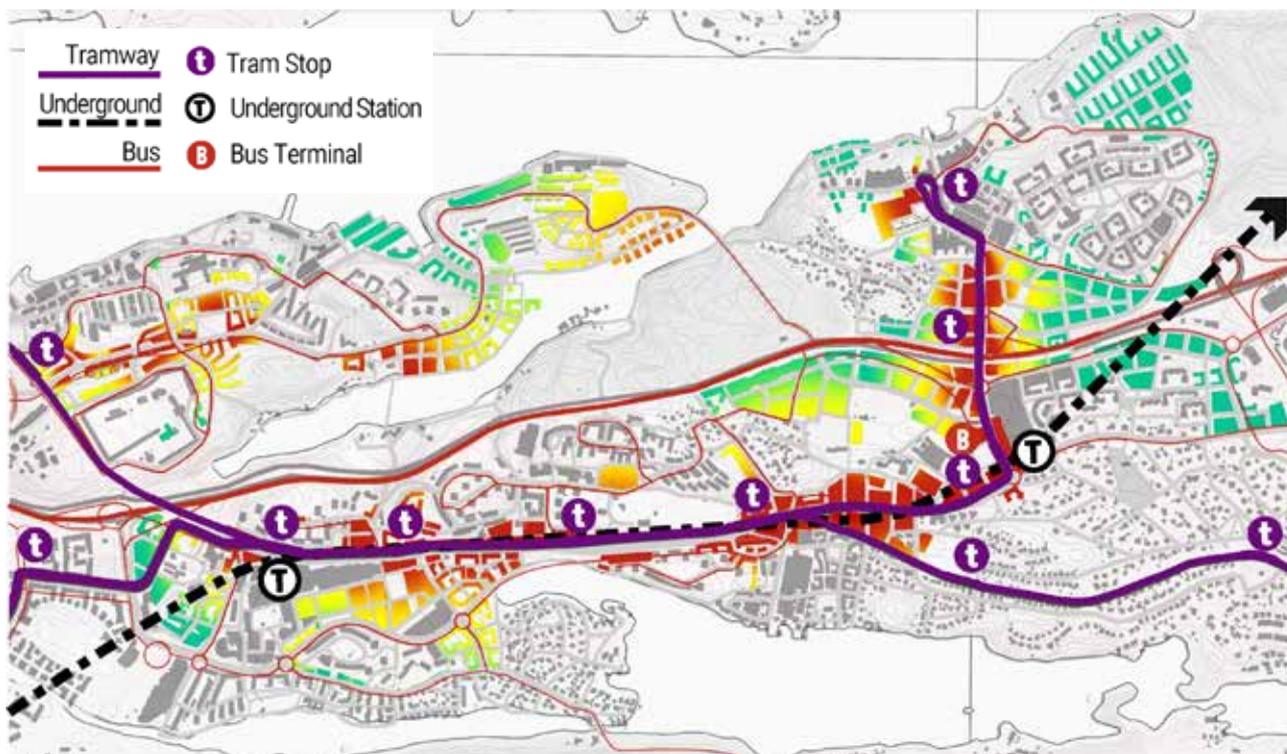


Figure 2.2. Masterplan for Nacka City 2030. Source: We Nacka City.

In line with the vision and framework proposed for Nacka City 2030, the project's masterplan (Figure 2.2) delivers compact developments and TODs via a strengthened site connectivity, enhanced public realm, and the promotion of a circular and sharing economy.

## STRATEGY 1: TRANSPORT CONNECTIVITY

The project proposes strategies to strengthen transport connectivity through the promotion of public transportation and active modes of travel.



Figure 2.3. Proposed public transport strategy. Source: We Nacka City



Figure 2.4. Proposed cycle routes. Source: We Nacka City

### ENHANCED PUBLIC TRANSPORT

Enhanced public transportation (Figure 2.3) is delivered in three ways:

1. Use of the community railway to develop a modern and reliable Light Rail Transit (LRT) network or tramway, connecting Nacka City on a human scale
2. Merge Järla and Nacka Centre stations to improve accessibility through higher densities and better connections to the above tramway
3. Provide high-frequency bus services to connect residential developments on the northern peninsular, east and south sides of the site to principle activity areas in Nacka City and Sickla and the mass transit services

### ACTIVE TRAVEL

The project introduces interventions that enhance walkability such as cycle-friendly pathways to break car-dependency. The aim is to make cycling 'a way of life' by creating cycle networks that are safe, high-quality and are well-connected to major activity centres (Figure 2.4). Cycle lanes will be separated from major roadways and shared along quieter, traffic-calmed and residential streets. As such, three types of cycle lanes are proposed (Figure 2.5).

## MULTIMODALITY

The project also promotes multimodality between bicycles and mass transit to help cycling become the ‘first mile’ and ‘last mile’ mode of travel for longer journeys (Figure 2.6). Here, active and public transport modes of travel are integrated to reduce car-dependency.



Figure 2.5. Three types of cycle lanes. Source: We Nacka City.



Figure 2.6. Multimodality. Source: We Nacka City

## STRATEGY 2: PEOPLE-FOCUSED PUBLIC REALM

Interventions proposed under this strategy aim to foster vibrant and diverse communities by creating a people-focused public realm. Local public spaces foster social interaction and promote a culture of sustainability, solidarity and social entrepreneurship. This is achieved through a number of interventions which are discussed below.

### SPATIAL REORGANISATION OF COMMUNITIES

The integration of densification, TOD, and the ‘city of short distances’ principles ensures best practice in TOD rather than TAD (Transit Adjacent Development). The following interventions are proposed:

1. Nacka Center and Sickla are connected through the introduction of a new “Nacka Boulevard” (Figure 2.7) – a mixed-use development with a green tramway running through the middle and infrastructure that facilitates walking and other active modes of travel.
2. Nacka centre is moved south to the end of the Boulevard away from the highway to create a quieter urban core that is within closer proximity to the proposed new metro station. Sickla remains a major commercial area.
3. Nacka Strand is the new creative centre that is connected by the new tramway.
4. In the north, there is the new Hendriksdal Centre that brings together developments in the area.
5. Kvarnholmen remains a residential

neighbourhood connected by rapid bus services with its own leisure and commercial attractions.

6. Svindersviken encompasses residential areas to the north with its community centre at the northern end of a bridge that links it to Sickla.



Figure 2.7. Spatial reorganisation of communities. Source: We Nacka City

## IMPROVED MICRO-ACCESSIBILITY

Micro accessibility refers to ease of access within a spatial area. Three interventions are proposed for Nacka City that are in line with this concept (Figure 2.8):

1. The Svindersviken Rotating Bridge that connects the Svindersviken neighbourhood to leisure opportunities in the south of Nacka City.
2. Covered escalators in Kvarnholmen that ease access of steep cuttings that prevent Kvarnholmenvagen to be (Kvarnholmen's main road) functioning a walkable local high street.
3. The joining up of streets in Nacka Strand and other areas through well-lit footpaths and cycle paths to promote use of local facilities and public transport.

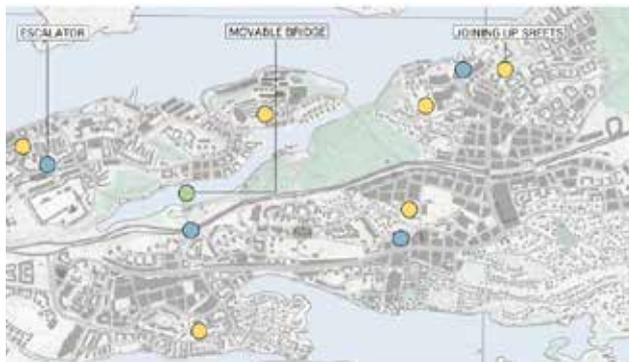


Figure 2.8. Micro accessibility improvements. Source: We Nacka City.

## ATTRACTIVE PUBLIC SPACES

The intervention focuses on increasing the amount of green and community spaces in Nacka City. This ensures that Nacka City's residents have an easy access (through walking and cycling) to green and public spaces where social, commercial, leisure and recreational activities are taking place. Figure 2.9 illustrates the various mixes of green and public spaces that are introduced into the neighbourhoods.

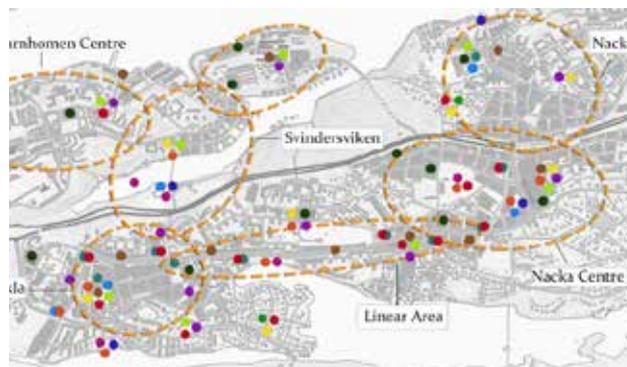


Figure 2.9. Proposed community spaces. Source: We Nacka City.

## STRATEGY 3: CIRCULAR ECONOMY

The project introduces three interventions to support a circular and sharing economy in Nacka City.

### NACKA CENTRE

The project identifies the challenges that Nacka Centre faces from the visual, noise and air pollution caused by the motorway. It proposes that commercial buildings are to be moved down along the Boulevard. The Boulevard (Figure 2.10) is designed with a combination of mixed-use buildings (commercial and residential) and a Linear Park (Figure 2.12). Green walls, public roof gardens, and cultural activities are promoted to create a memorable and distinctive business destination. A precedent to this proposal is Milan's Vertical Forest that features two high-rise towers that combined host more than 900 trees on 8,900 sq.m. of terraces (Figure 2.11).



Figure 2.11. Milan Vertical Forest, Milan, Italy. © Arcansél/Adobe Stock



Figure 2.10. We Nacka: Artist's impression of Nacka Boulevard. Source: We Nacka City.

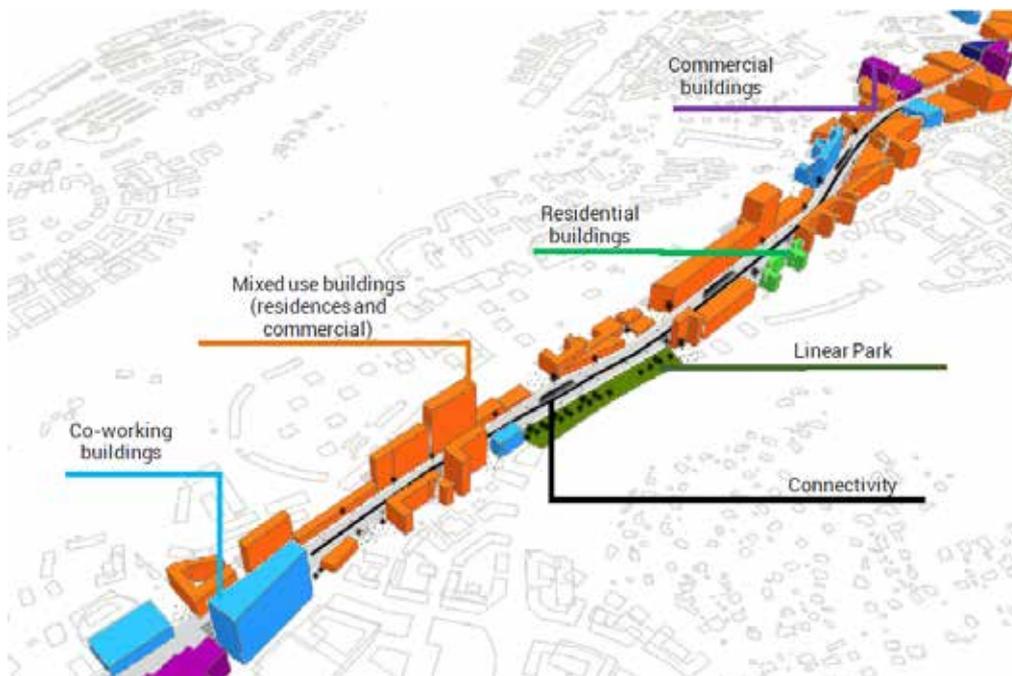


Figure 2.12. Aerial view of proposed Nacka Boulevard. Source: We Nacka City.

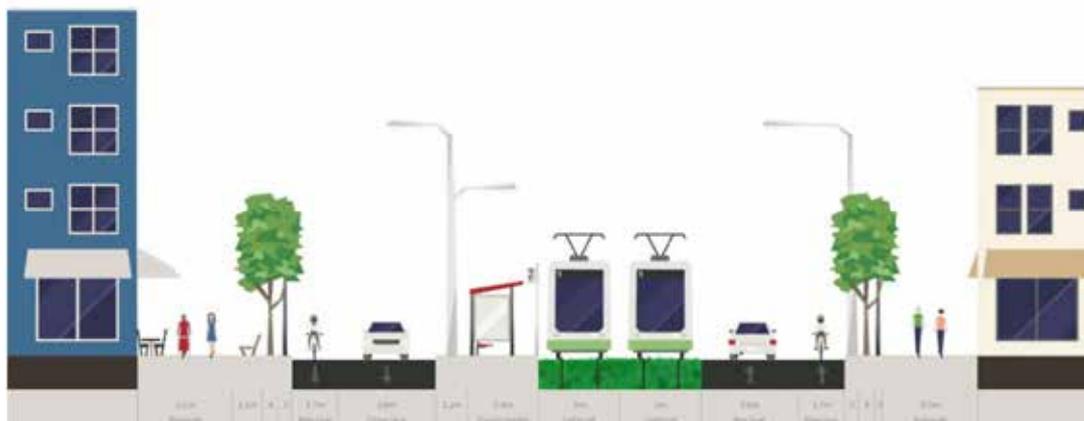


Figure 2.13. Schematic section through the boulevard. Source: We Nacka City.

### CIRCULAR AND SHARING ECONOMY

The circular economy principle is used to develop business strategies that achieves economic growth and job-creation while reducing waste production and resource consumption via activities such as clothes-recycling, electric bike-sharing and car-pooling. More specifically, this will include:

- the use of recycled materials for the construction of new buildings in the city;
- the reuse of clothing by providing clothes-recycling facilities in local community centres;
- upcycling the deposited clothes at recycling facilities to Fashion College students or designers from local start-ups;
- upcycling unused clothing by turning them into rags or spools of thread that can be used for building insulation;
- collaborating with big retailers to participate in clothes-recycling;
- electric bike sharing programmes to make cycling more attractive in areas with hilly terrains;
- car-pooling programmes that enhance sustainable modes of travel while creating opportunities for interaction among residents

Figure 2.14. Artist's impression of Nacka Strand.  
Source: We Nacka City.

### CREATIVITY AND INNOVATION

Suggested for this intervention is the set-up of innovation clusters in Nacka Centre and Nacka Boulevard to complement the above (Figure 2.14). Innovation clusters comprise of start-up incubators that support innovation companies through funding and networking opportunities. Co-working spaces are provided and by independent professionals, creating opportunities for business synergies and a creative social environment.

A Fashion College is also proposed in Nacka Strand to strengthen the current Fashion District as a destination for fashion business and start-ups in Stockholm. This is joint partnership effort between public universities of Stockholm and private companies in the sector.



# IMPLEMENTATION

## FINANCE

### Transport infrastructure

In order to determine the financial viability of major interventions proposed in the project, cost estimates are calculated for the tramway extension to Nacka Centre and Nacka Strand; the conversion of the commuter railway (CR) to a light rail transit (LRT) (or tramway); and the creation and transformation of Nacka Boulevard (Figure 2.15).

### Social infrastructure

In delivering social infrastructure, the project envisions the financing of Nacka City’s Fashion College through a public sector-led co-funding agreement between universities and private companies within the local fashion industry.

Identified as part of this collaboration are academic institutions such as Konstfack University College of Arts, Crafts and Design; the Association of Swedish Fashion Brands; Stockholm University (Figure 2.16).

Innovation clusters located along Nacka Boulevard and in Nacka Centre would be delivered through concession or partnership models with existing start-up operators such as the Fab Lab (Fabrication Laboratory) – a small workshop offering digital fabrication (Fab Labs, 2017) – or the Impact Hub – an organisation offering start-up incubators in cities around the world (Impact Hub, 2017). The presence of these institutions will help small local companies in the area to set up their businesses, enabling Nacka City to establish its own network of start-ups and innovation hub.



	SEK/km	km	Cost (SEK)
Conversion of CR to LRT	400,000.00	1.2	480,000.00
Tramway extension	600,000.00	2.2	1,320,000.00
Boulevard	150,000.00	2.3	345,000.00
other			250,000.00
<b>Total projected expenses</b>			<b>2,395,000.00</b>



Figure 2.15 (top). Cost estimation for transport infrastructure  
 Figure 2.16 (bottom). Potential institutions for collaboration and partnership  
 Source: We Nacka City.

### GOVERNANCE

The project proposes that governance mechanisms are in place and structured across three key processes:

1. Urban development processes – overseen by a newly formed urban development corporation to be known as the Nacka City Development Agency (NCDA). Being an executive agency for the municipality, the NCDA will be responsible for planning strategy, negotiation, decision-making and enforcement, fiduciary responsibilities to developer contributions and disbursement of funding for agreed public projects (Figure 46). Most importantly, the NCDA is responsible for arranging community consultation processes via the Nacka City Forum (NCF). The NCDA board will be comprised of representatives from the municipality, Stockholm Region, Stockholm Transit Authority, together with consultative groups from communities, businesses and developers.
2. Community management processes – to be delivered via a newly formed Community Management Unit (CMU) within the municipality. Working closely with the NCF, the CMU will be responsible for mediating use of public space and promoting the community activities within the strategic plan. The CMU will operate throughout the period of construction and delivery of Nacka City 2030. Thereafter, within three years of completion, responsibilities are transferred over to other actors such as building owner committees, business groups and associations, and other municipal departments. The CMU will work closely with the NCF.
3. Community participation processes. The project identifies community participation as a key process in governance to deliver the proposal’s aspiration for Nacka City to become ‘a place to belong’. The project recognises the importance of incorporating participation of Nacka City’s citizens, businesses and civil society in decision-making and planning activities. The NCF (hosted and funded by the municipality) will serve as a platform to provide consultative recommendations and voice citizens’ concerns back to the NCDA and CMU for further consideration (Figure 2.17). Thus, the NCF will lead urban development processes via community participation and consultation; the NCDA and CMU, informed by the NCF, will operate and oversee the delivery of Nacka City to 2030 and, possibly, beyond.



Nacka Municipality



Figure 2.17. Proposed community participation process. Source: We Nacka City.

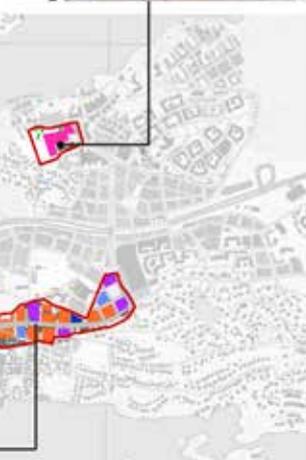
## PHASING

The project proposes implementation across three 4-year phases. Priority is given to transport, followed by economic activities and, finally, by residential development and green areas. The project identifies each phase to be a catalyst for the next one. As such, the project's strategic areas are delivered as follows (Figure 2.18):

- Nacka Boulevard is developed in the first phase, with only minor additions and improvements during later phases
- Nacka Centre is developed across all three phases. This will start with high density housing and office buildings, before moving to areas with lower density and the extension of mass transit
- Nacka Strand is completed in the second phase in time for the planned tramway services
- Henriksdal, Svindersviken and Kvarnholmen are completed during the second and third phases. This takes place after the implementation of improved bus connections with the rest of the city



Figure 2.18. Phasing for Nacka City 2030. Source: We Nacka City.



# 4.3

## COMPACT NACKA CITY

This project draws on concepts of **'compact cities'**, **'power in the city'** and **'cities for people'**. It identifies car-dependency, internal connectivity and social integration as the main challenges for the future of Nacka City. The project uses densification and transport strategies to strengthen accessibility, community engagement and equity while maintaining environmental protection. Interventions include car-free districts and green space standards to make sure that by 2030, Nacka City has an average of 90 sq.m. of green space per inhabitant.



Image by Author on the basis of proposals  
by Compact Nacka City. Photo credits:  
Images ©/Adobe Stock

## VISION

Compact Nacka builds on a twofold understanding of compactness:

1. Compact urban form which builds on walkability, affective connections, sustainable transportation and low energy consumption
2. Compact society that builds on a 'new social contract' that protects the quality of life of current and future residents, securing intergenerational environmental, social and spatial equity.

## CONCEPTUAL FRAMEWORK

The project draws on principles of 'compact cities', 'power in the city' and 'cities for people'. A twofold interpretation of compactness is derived from here (Figure 3.1).

First, compactness is understood as dense built form which supports the creation of a walkable city, spatially accessible to all. This understanding of compact is reflected in land use, transport, and green and blue spaces, with the focus on how to create better connections in a more sustainable way.

Second, compactness is understood as an agreement, treaty or contract, which branches into two types of responsibilities that generate a new social contract: on the one hand, the responsibilities of the municipality to its current inhabitants such as maintaining high standards of living and the culture of wider Nacka, whilst providing more houses and jobs; and, on the other hand, responsibilities towards future residents' quality of life and the wider environment, securing intergenerational spatial and social equity.

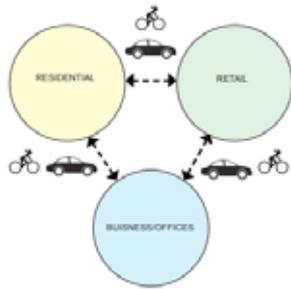
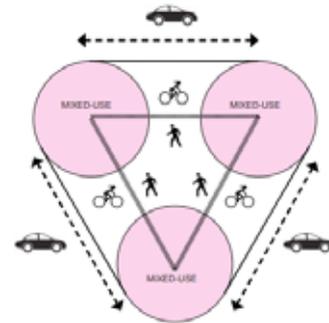


Diagram of Fragmented Land Use with Heavy Car Infrastructure



Proposed Diagram of Compact Neighbourhoods



Illustrative Section of Existing Disconnected Layout



Proposed Densification and Activation of Nacka



Divided neighbourhoods, dominated by multi-lane roads, little room for community activities



Mixed-use areas accessible by public transport, enjoyed by diverse communities.

Figure 3.1. Visualisation of the project's proposed 'activation' of Nacka City. Source: Compact Nacka City.

## MASTERPLAN

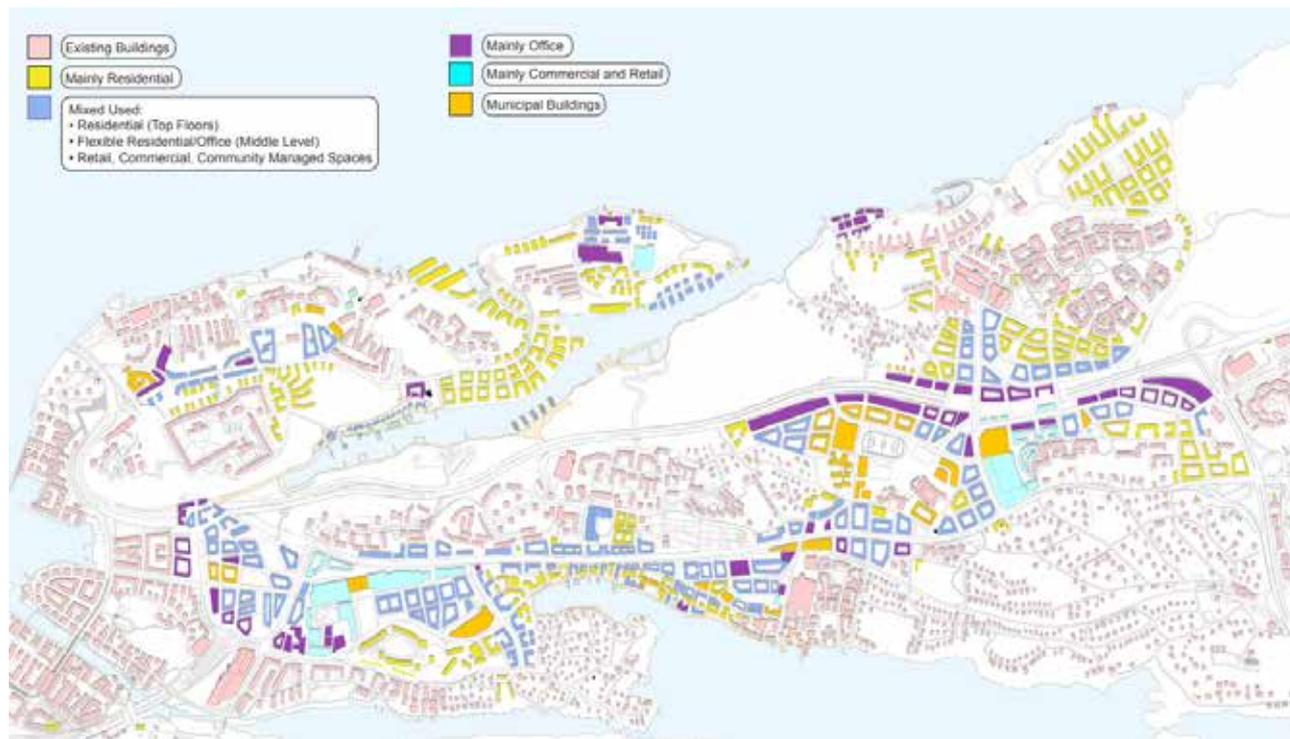


Figure 3.2. Masterplan for Nacka City 2030. Source: Compact Nacka City.

The project proposes to add to the current municipal plans for Nacka City by increasing the diversity and mix of uses throughout the densification process. Kvarnholmen, Henriksdal, and Bergs Gärd remain largely residential areas with increase community facilities and commercial buildings (Figure 3.2). Nacka Centrum sees an increase in office buildings and municipal buildings; while areas in between Nacka Centrum and Sickla are largely transformed via the introduction of mixed-use buildings along the high street.

The project proposes three strategies for Nacka City: urban layout and typology, sustainable transport, and green and blue infrastructure.

## STRATEGY 1: URBAN LAYOUT AND TYPOLOGY

	Estimated Units per Floor (50 sq m block)	Development Footprint	Low Density Block = 3 Storeys (51 Units)	Medium Density Block = 6 Storeys (102 Units)	High Density Block = 9 Storeys (153 Units)
Mostly Residential Blocks	90 sq m Blocks = 17 Residential Units per Floor	Estimate 100 90 sq m Res Blocks = 8,000 sq m of Residential Footprint	Estimate 100 x 51 units per Block = 8,000 units	Estimate 100 x 102 units per Block = 10,200 units	Estimate 100 x 153 units per Block = 15,300 units
Mixed Use	80 sq m Mixed Use Blocks = 8 Residential Units per Floor	Estimate 100 80 sq m Mixed Use Blocks = 6,000 sq m	Estimate (100 x 81 units per Block) x 2 = 3,000 units	Estimate (100 x 102 units per Block) x 2 = 6,120 units	Estimate (100 x 153 units per Block) x 0.6 = 9,180 units
<b>TOTAL</b>		Total Residential & Mixed Use Development Footprint = 14,000 sq m	<b>11,000 units</b>	<b>16,320 units</b>	<b>24,480 units</b>

Disclaimer: All calculations are based on an average number of 80 sq. m. blocks and may vary significantly depending on the planning and development negotiation process. The density of development above is guidance only and the final result will depend on the development negotiations.

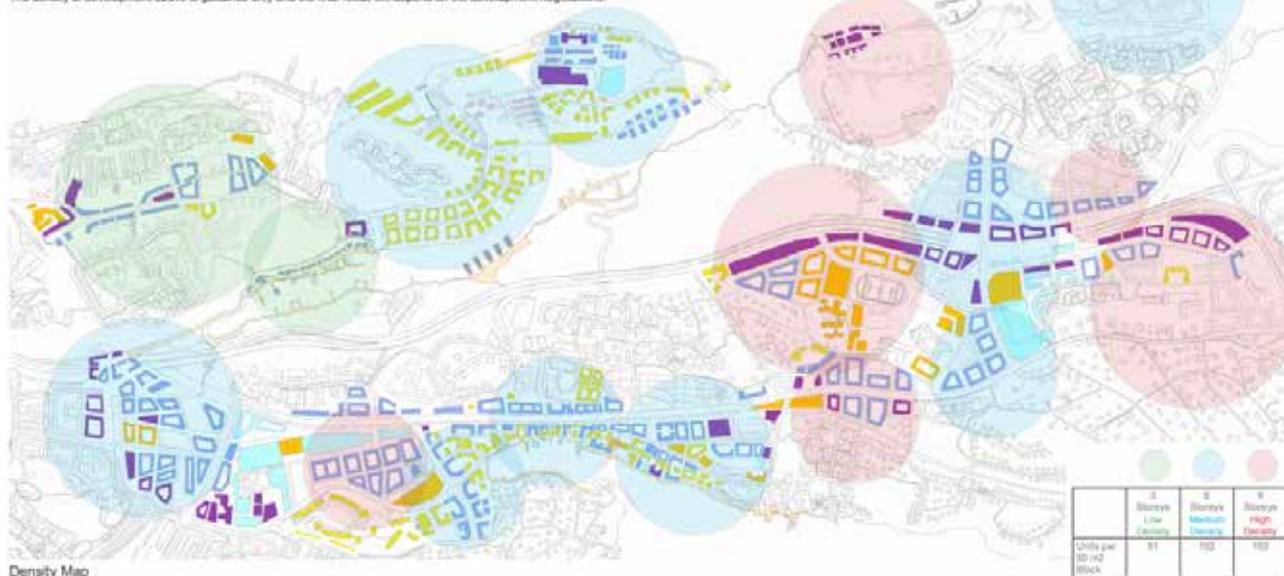


Figure 3.3. Proposed densification calculations. Source: Compact Nacka City.

The project identifies affordable housing in Nacka City as one of its main challenges. Thus, densification strategies are proposed to provide more affordable units within a mix of typologies and building heights; this is done through consultation with residents so that their needs are met. Density calculations are provided as planning guidance outlining the number of residential and mixed-used blocks that are proposed for each area (Figure 3.3). The project proposes high density blocks of 9-storeys for Nacka Centrum, Nacka Strand and in Sickla; medium density blocks of 6-storeys in Kvarnholmen, Finntorp and Järla; and low density blocks of 3-storeys in Henriskdal.

## BLOCK TYPOLOGIES

Figure 3.4 illustrates the various building typologies for Compact Nacka. Blocks are designed to maximise density while leaving sufficient space for green areas. The design ensures that all units receive a maximum of day light throughout the year. Each floor provides different size residential units in order to enable the social mix of residents (Figure 3.5).

Upper floors of each block are reserved for residential units, while the lower floors are designed to be more flexible and can accommodate residential, offices, or live-work spaces. The ground floor of each building is intended to be used for retail, local business services or community-managed spaces.

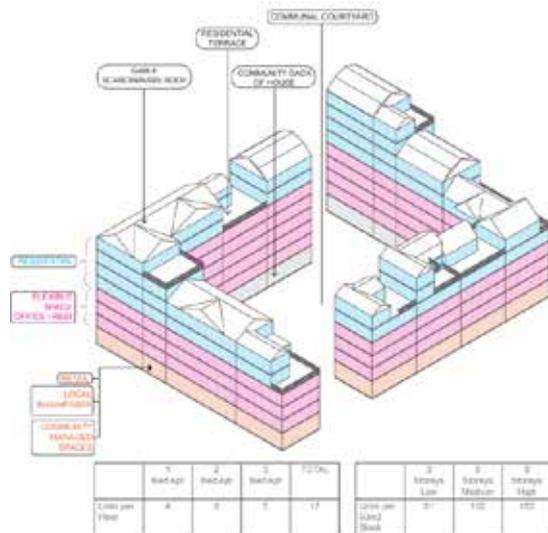


Figure 3.4. Proposed block typology. Source: Compact Nacka City.

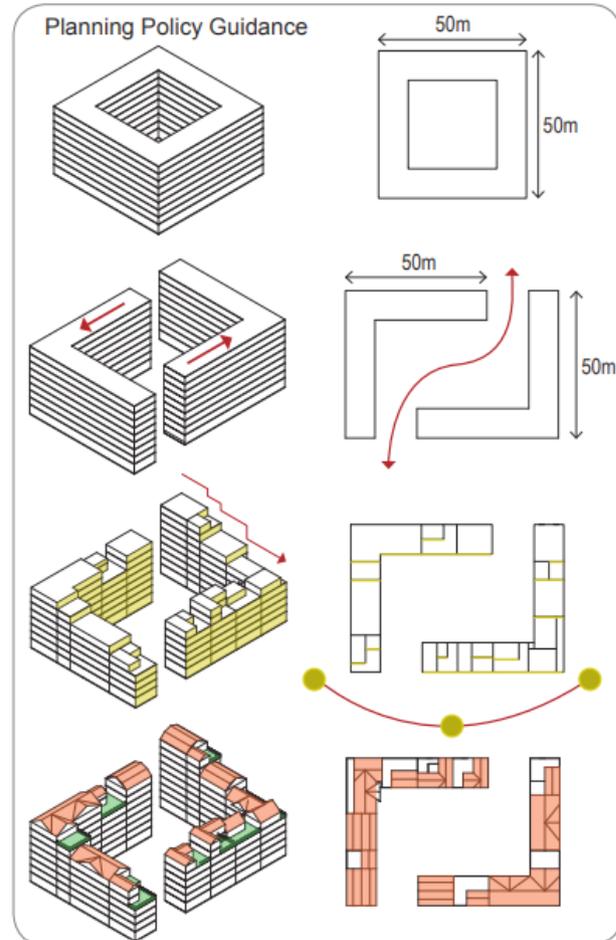


Figure 3.5. Design for daylighting and social mix. Source: Compact Nacka City.

## PLANNING GUIDANCE

Planning guidance is envisaged to further specify the arrangement and orientation of the different blocks according to geographical location or topography (Figure 3.6). Not limited to these are the arrangement of the blocks to maximize views of the waterfront and the creation of courtyard type spaces that can be used by residents as public and/or community spaces.

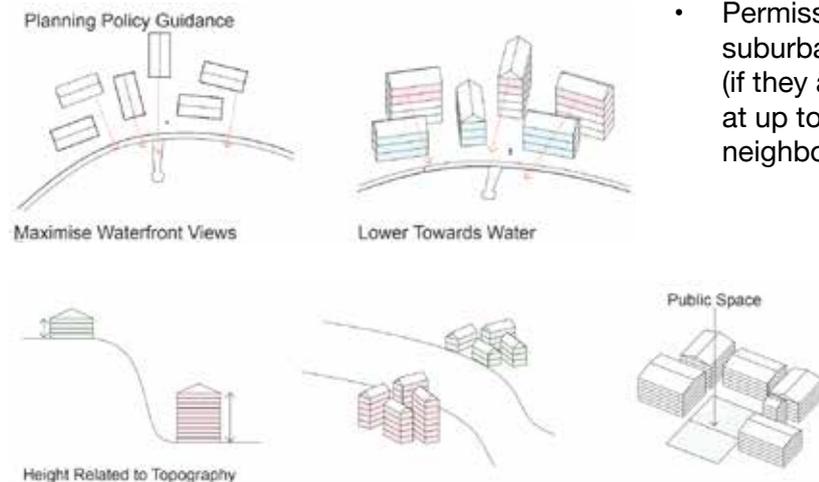


Figure 3.6. Proposed arrangement and orientation of the block typology. Source: Compact Nacka City.

## SOFT DENSIFICATION OF SUBURNAN AREAS

The project suggests a ‘soft densification’ strategy for Nacka City’s suburban areas to increase the supply of rental/affordable units and so, alleviate some of affordable housing shortage. This includes:

- The permission for suburban homeowners to ‘infill’ their gardens, flat roof areas and garages with/as additional living space in order to encourage densification as long as the development is dedicated to rental housing
- Permission for private landowners to sell areas of empty land (i.e. gardens, garages, agricultural etc.) land to the municipality (minimum sizes apply)
- Permission for private landowners in suburban areas to tear down their properties (if they are of inadequate size) and rebuild at up to twice the existing storeys in their neighbourhood (height to be negotiated).

## PROVISION OF PUBLIC SERVICES

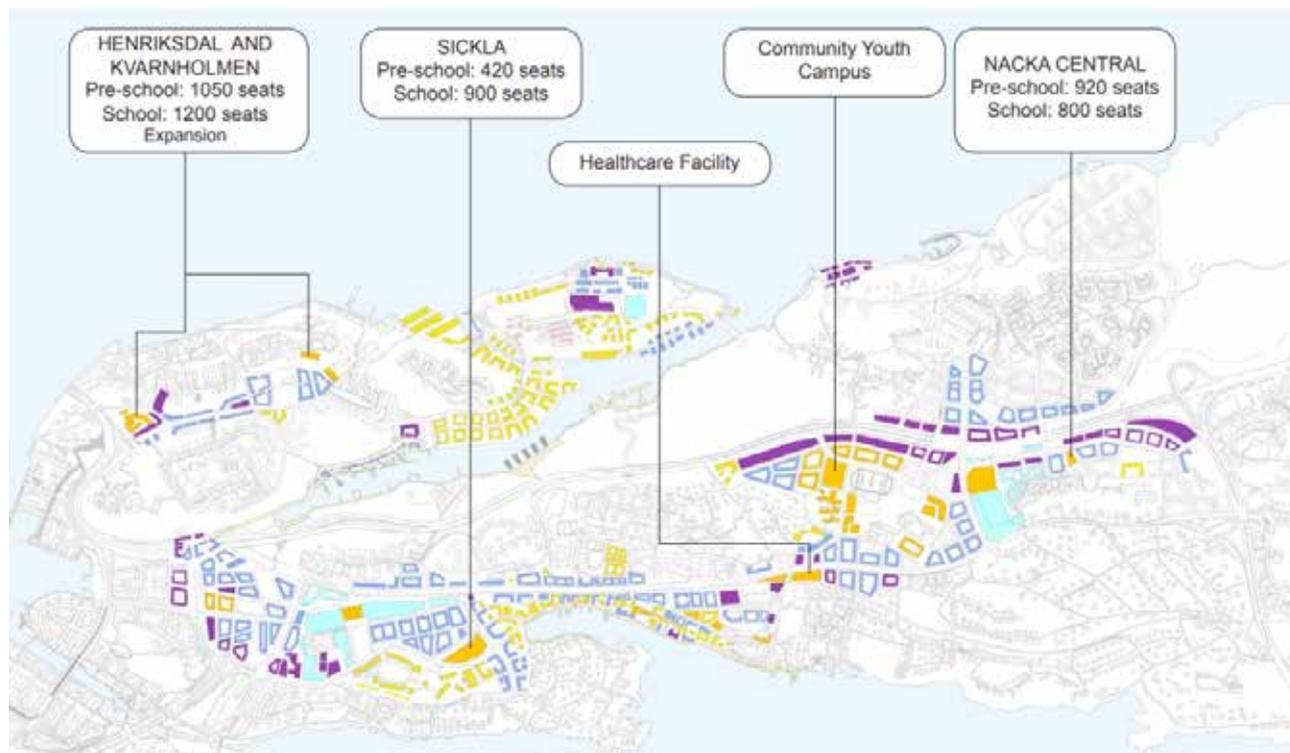


Figure 3.7. Provision of public services. Source: Compact Nacka City.

To ensure equal access to the public services in Nacka City, additional healthcare and education facilities are added to existing municipal plans (Figure 3.7) to match the number of facilities needed once Nacka City reaches its development capacity of 14,000 new homes. The healthcare facilities proposed include child health services, midwifery clinics, dental care, hospitals as well as elderly accommodation and social care services. Pre-schools are integrated into the ground floors of the blocks. Development sites below are chosen strategically so that schools have good access to green space and public transport.

## STRATEGY 2: SUSTAINABLE TRANSPORT

This strategy aims to make Nacka City walkable and accessible via public and active modes of transportation, which are prioritised over the use of private cars.

### PUBLIC AND SHARED TRANSPORT

In order to achieve this, the project proposes a comprehensive system of public and shared transport networks (Figure 3.8). This includes the provision of electric bus stations and shared electric bicycle stations that are connected with existing bus routes. New pedestrian and

cycle connections are created at different intersections to enhance internal connectivity. Pedestrian and cycle broadwalks are also added to waterfront areas throughout Nacka City to promote active modes of transportation.

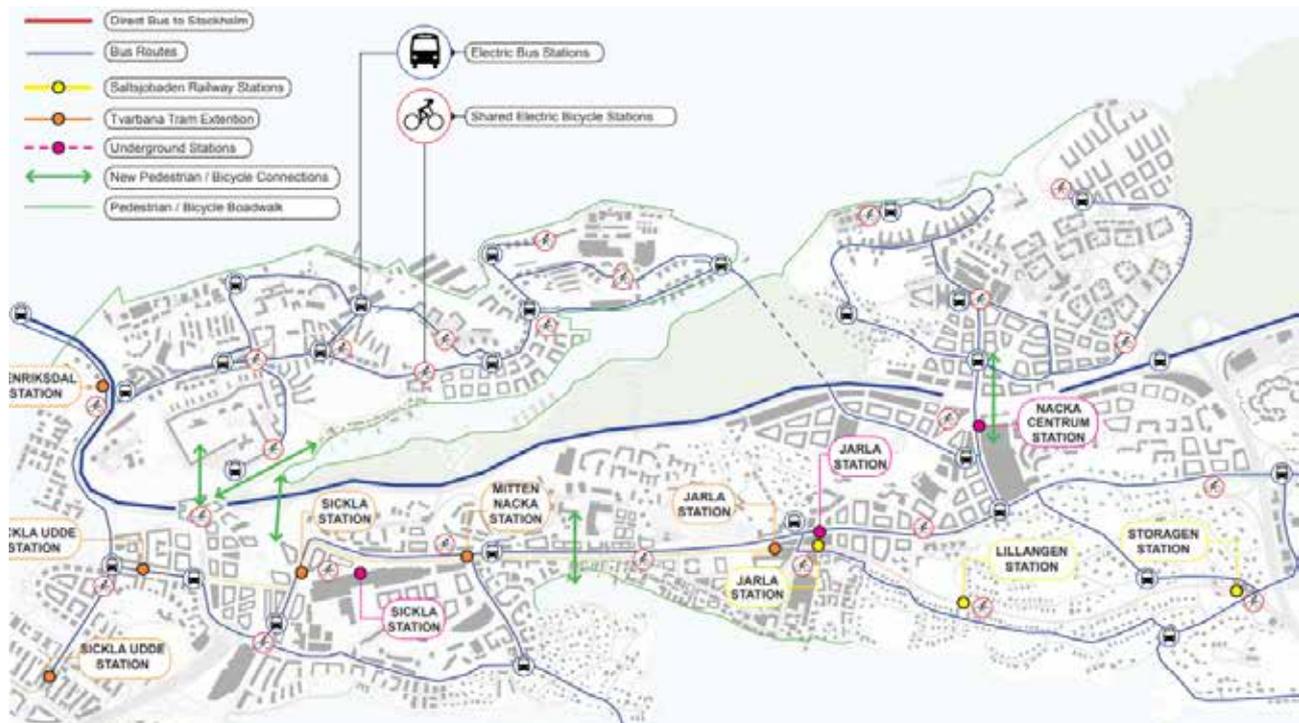


Figure 3.8. Proposed network of public and shared transport. Source: Compact Nacka City.

## TVÄRBANAN TRAM EXTENSION

The tramline is also extended to combat traffic congestion in Nacka City. The tram is a low-carbon mode of transportation which reduces noise and air pollution hence, improving the residents' quality of life. Through this intervention, the project aims to reduce levels of car-use in Nacka City by 41% within 10 years. Figure 3.9 is an example section of the proposed tramline. The tramline reduces the dominance of the car with major arterial roads now limited to one lane and so, it creates a more vibrant and people-centred urban environment.

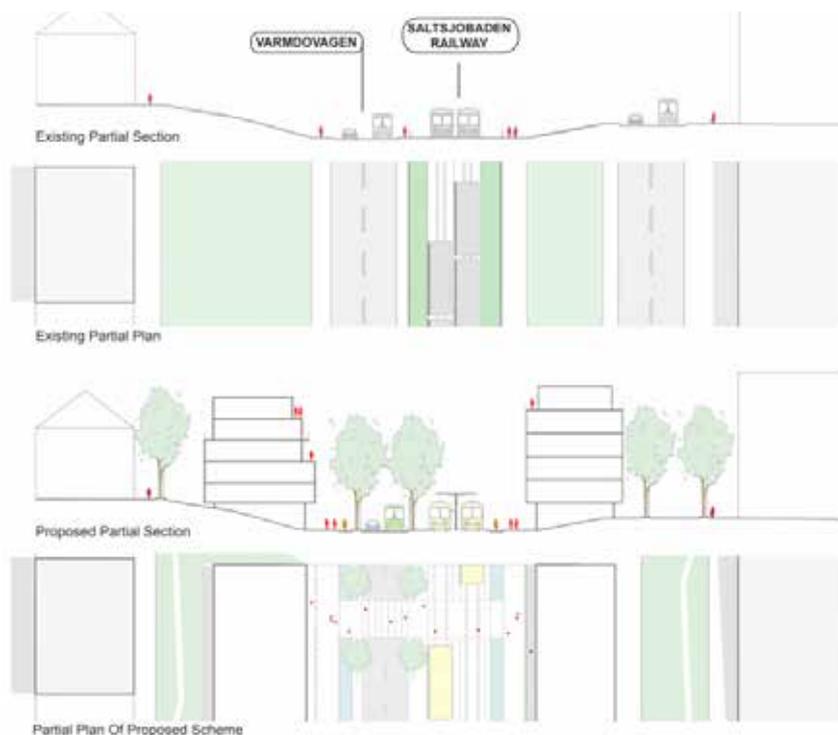


Figure 3.9. Example section of the proposed Tvärbanan tram extension.  
Source: Compact Nacka City.

## CAR-FREE DISTRICTS

The project envisions a car-free city centre with extensive modes of environmentally-friendly public transport for Nacka City. Three car-free areas are proposed in areas around Sickla, Järla and Nacka Centrum (Figure 3.10). The intervention introduces some 500km of cycle paths, 5,000 new parking spaces and a car-sharing system that offers discount on sustainable mobility services. Parking-free residential streets and expensive peripheral parking buildings are also part of the intervention. Cars are only allowed access for emergencies, deliveries, pick-ups and drop-offs at walking speed. The precedent for this intervention is the success of car-free districts in Vauban and Freiburg, Germany, which have

lowered private car-use by 50% (ITDP (2011); DAC (2008)). Figure 3.11 is an aerial view of the car-free district neighbourhood envisioned for Sickla.

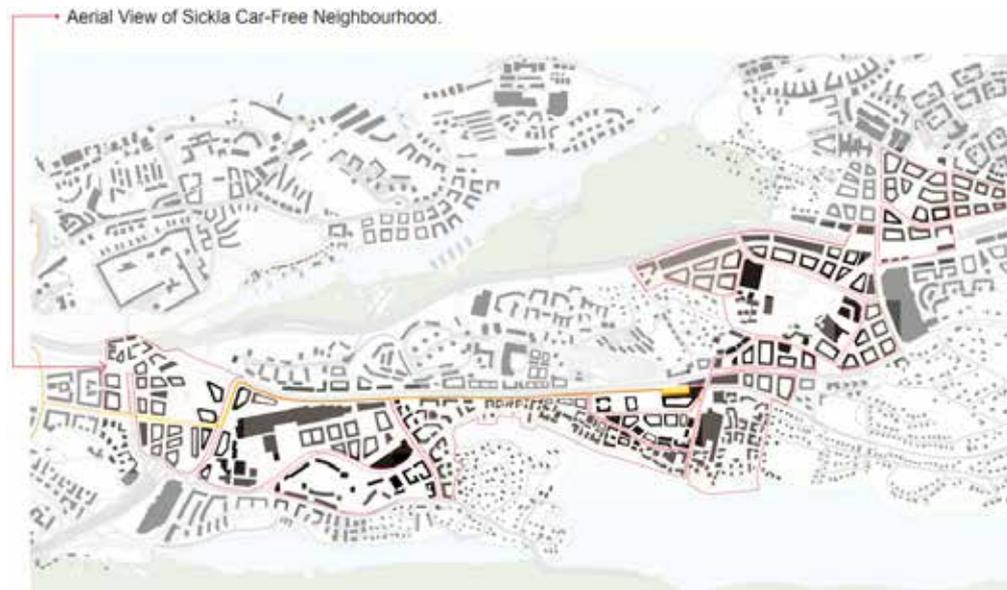
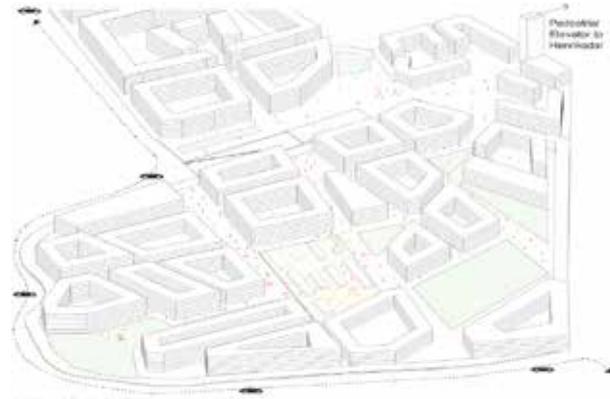
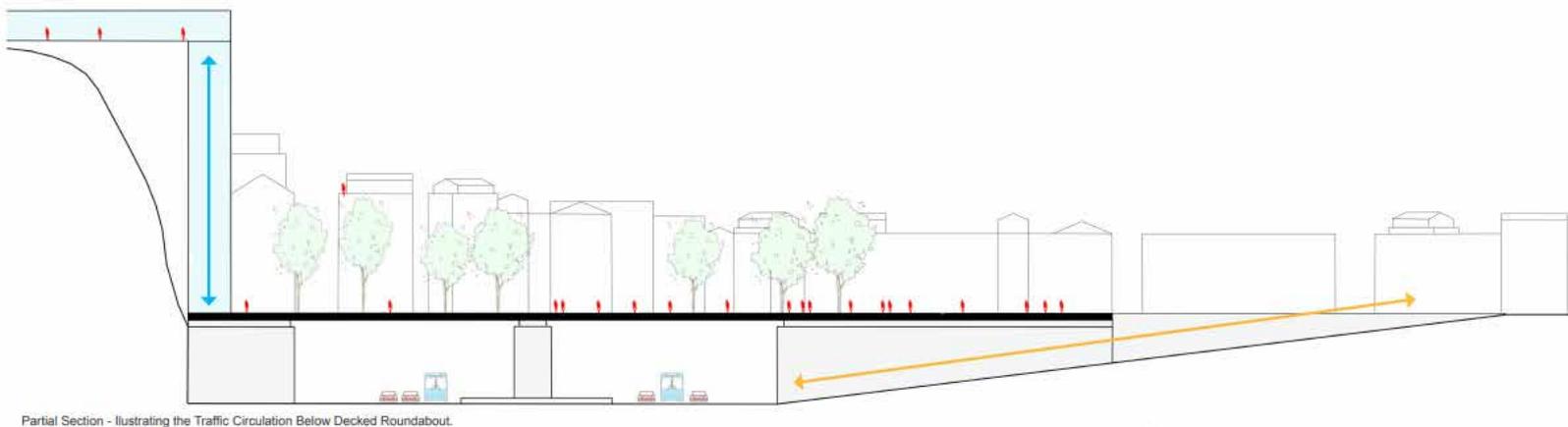


Figure 3.10. Proposed car-free districts. Source: Compact Nacka City (bottom).

Figure 3.11. Aerial view of the car-free district neighbourhood. Source: Compact Nacka City (top)



Partial Section - Illustrating the Traffic Circulation Below Decked Roundabout.

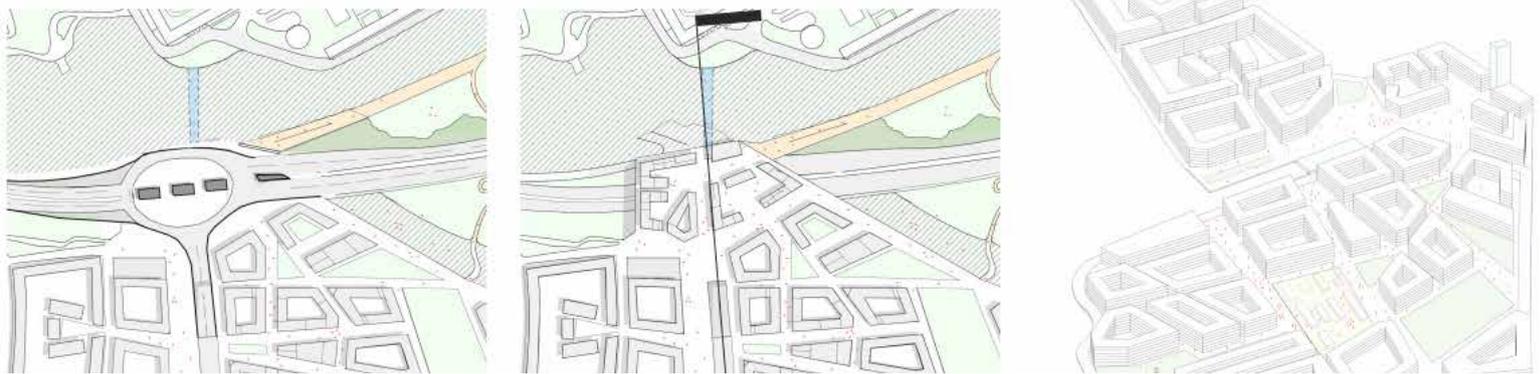


Figure 3.12. Plan, section, and aerial view of the proposed motorway decking in Sickla. Source: Compact Nacka City.

## MOTORWAY DECKING

Decking of the motorway in Sickla and Nacka Centrum is proposed. This intervention complements the plan for car-free districts, enhancing internal connectivity and social activities. In Sickla, the motorway roundabout is decked over to prioritise pedestrian traffic (Figure 3.12). In Nacka Centrum, the decking is turned into a new urban park ('Nacka Centrum Park') with a market place (Figure 3.13). Environmental quality and permeability between the north and south sides of the city are enhanced through these interventions.



Figure 3.13 Artist's impression of the decking and market in Nacka Centrum. Source: Compact Nacka City.

## STRATEGY 3: GREEN AND BLUE INFRASTRUCTURE

The project identifies the natural beauty of Nacka City as an asset that sets it apart from the rest of the Stockholm region. It also identifies the positive impact that access to nature has on the residents' quality of life and wider health. The project ensures that residents

have equal access to green space in Nacka City through the use of the 'green ratio'. It also suggests appropriate management of Nacka City's green and blue infrastructure as a means to meet long-term development and sustainability goals.



Figure 3.14. Accessible green areas. Source: Compact Nacka City

## ACCESSIBLE GREEN AREAS

Figure 3.15 illustrates the project's illustration of the different type of green areas envisioned for Nacka City. On the one hand, there are protected ecological areas which seek to preserve Nacka's natural environment where resident activity is not allowed. On the other hand, there is a variety of types of accessible green space such as gateway residential green spaces, urban parks, recreational green spaces, and nature walks.

## GREEN RATIO

The project draws on World Health Organisation (WHO) guidelines to provide 9 sq.m. of green space per resident (Figure 3.16). It acknowledges that due to the construction of new developments, Nacka city runs the risk of losing its green areas. Through this policy, it is able to safeguard natural areas in Nacka City. Developments and large-scale infrastructure is required to consider the protection and enhancement of green space and biodiversity.

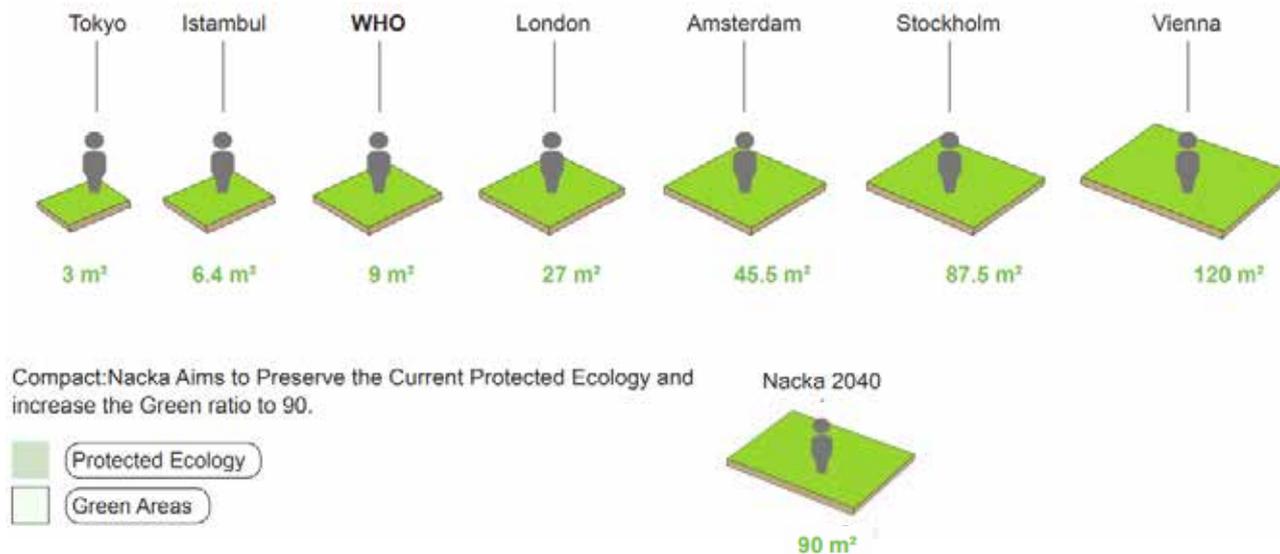
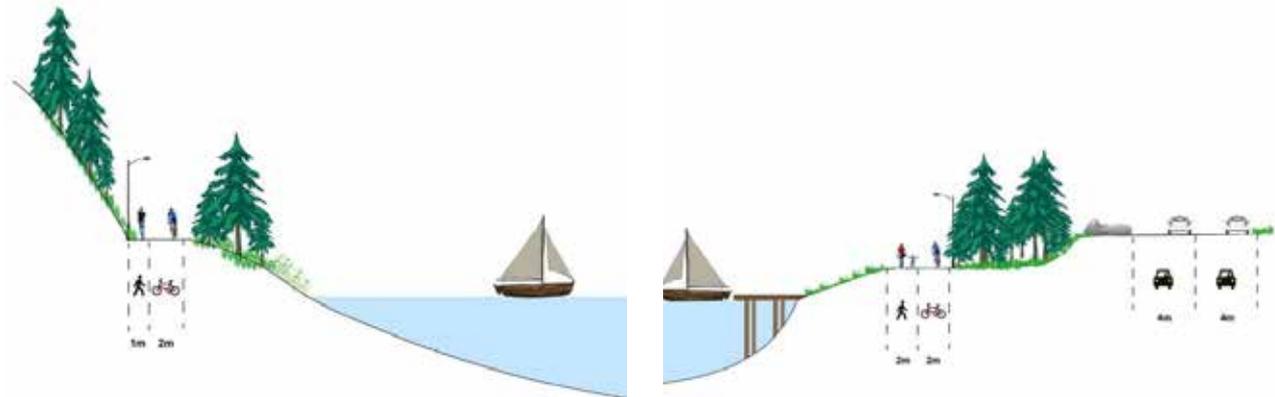


Figure 3.15. Green ratio. Source: Compact Nacka City.

## WATERFRONTS

Water is an abundant and important resource for Nacka City hence, the project suggests strengthening connections to the site's waterfront. This includes the expansion of pedestrian and cycle broadwalks along the site's waterfront (Figure 3.16) and the activation of these areas into commercial areas that cater for locals and tourists. Järlaleden road in the south

is removed to prioritise active and public modes of transport and open up Järå's access to the waterfront (Figure 3.17). Henriksdal waterfront is also opened up (Figure 3.18). Restaurants, bars and shops are added as well as pop up activities that take place during summer/winter such as swimming, boating, and ice-skating.



Pedestrian Boardwalk      Mixed Used, Medium Size Block      Commercial, Retail Facilities



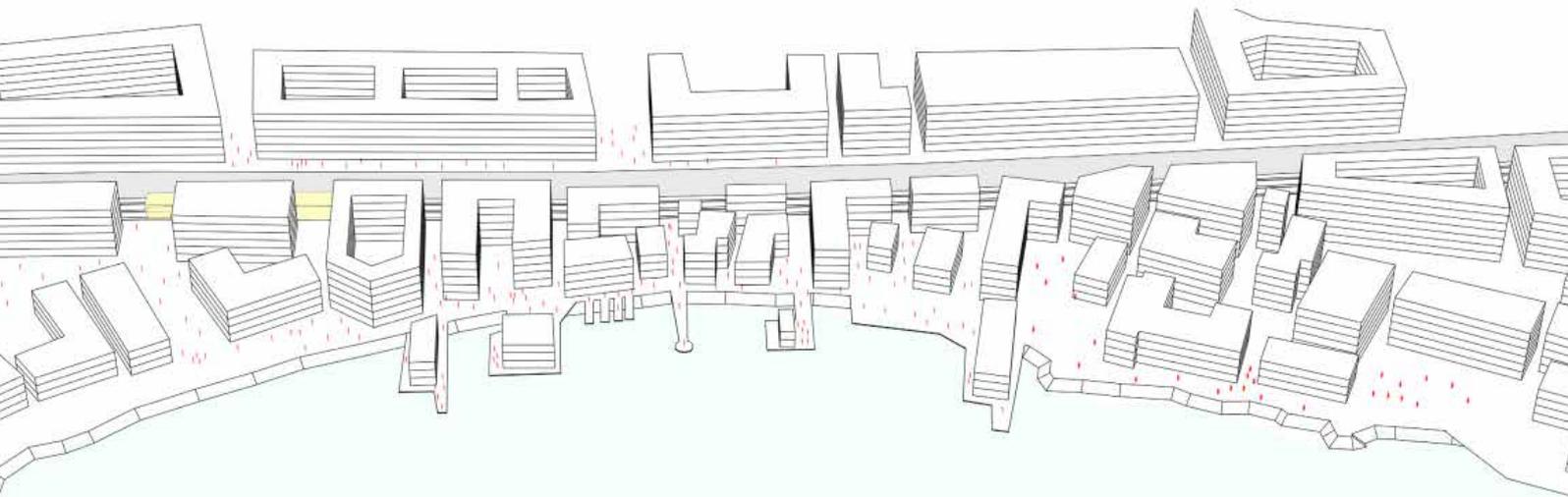


Figure 3.16. Example section of envisioned waterfront for Henriskdal. Source: Compact Nacka City (left).

Figure 3.17. Aerial view of opened waterfront in Järila. Source: Compact Nacka City (top right).

Figure 3.18. Example of active waterfront envisioned for the project. Source: Wiberg (2017) (bottom right).



# IMPLEMENTATION

## FINANCE

### Tvårbanan tram extension

Costing for the tramline is estimated at €17 million per km of tramline (The Prince’s Foundation, 2008). At 2.3km, it is expected the extension would cost the municipality €43,987,500 of capital investment. It is further calculated that the scheme would be paid-off within 6years of normal operating profits (€43,987,500/€7,592,000). These figures draw on the financing of the tramline in Strasbourg as its precedent (see calculations on the right hand side).

This is financed by the municipality, in conjunction with the National Government, private companies and travel fares generated by its users (Figure 3.19). The investment seeks to lessen the municipality’s financial burden by incorporating funding from the 2016 Infrastructure Bill and a business transport levy of 1% of total wages paid by private companies in the area (SKOL, 2017). The Infrastructure Bill increases government expenditure on development by and operation and maintenance of public transport by 20% and 47% to co-finance sustainable transport solutions from 2018 until 2029 (Ministry of Enterprise and Innovation, 2016).

**Tramline capital investment cost**  
 €17 million/km (Strasbourg) x 2.3 km x 1.125 (Difference in construction PLI) = €43,987,500 capital investment\*

\*Capital cost adapted from cost of implementing tram system in Strasbourg (industry rate), adjusted for length (2.3 km) and difference in Price Level Index (PLI) for civil engineering construction between Sweden (144) and France (128) (Eurostat, 2017).

**Tramline Revenue**  
 80,000 (daily users) x €2.6 (average ticket fare) x 365 = 75,920,000 x 10% (normal profit) = €7,592,000 annual normal profit\*\*

\*\*Assuming 10% normal profit for public development projects (Kue et al., 2016) and an increase of 30,000 daily users of the Tvårbana tram (from 50,000 daily users) (ITDP, 2011) due to the three-stop extension into Nacka, at an average ticket fare of €2.60 (SL, 2017).

The capital investment of the tramline extension can be paid off within approximately 6 years from normal operating profits (€43,987,500/€7,592,000). However, the introduction of a business transport levy and funding from the infrastructure Bill will spread the cost between the public and private sector, and lessen the Municipality’s financial burden by contributing to initial investment, operation and maintenance costs.

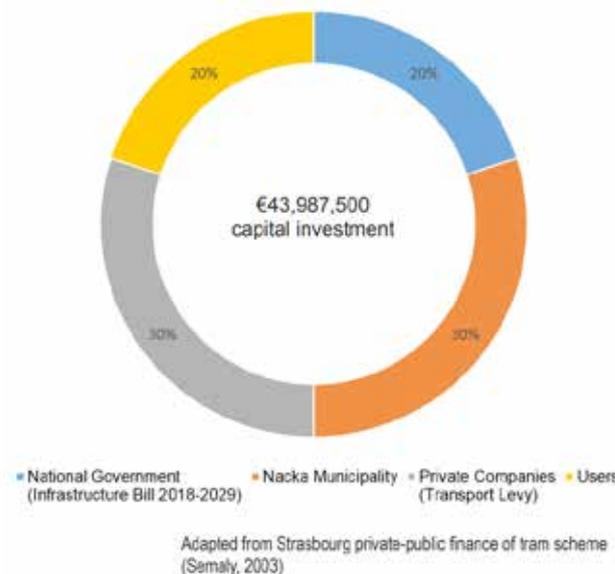


Figure 3.19. Proposed financing mechanism – Tvårbanan tram extension. Source: Compact Nacka City.

## Motorway decking

The proposed motorway decking scheme in Sickla is estimated to cost the municipality some €800 million for 3.5 km of landscaped decks over the A7 motorway with 1,700 new homes and elevated public parks (Petrov, 2014). The project draws on the case study of Hamburg's Hamburger Deckel (Figure 3.20) as its precedent in financing the scheme. The decking in Hamburg was successfully funded by the German Federal Transport Infrastructure Plan together with the City of Hamburg by selling land at the edge of the development and gaining contributions from private residential developers (Petrov, 2014).



Figure 3.20. Hamburger Deckel in Hamburg Source: City of Hamburg (n.d.)

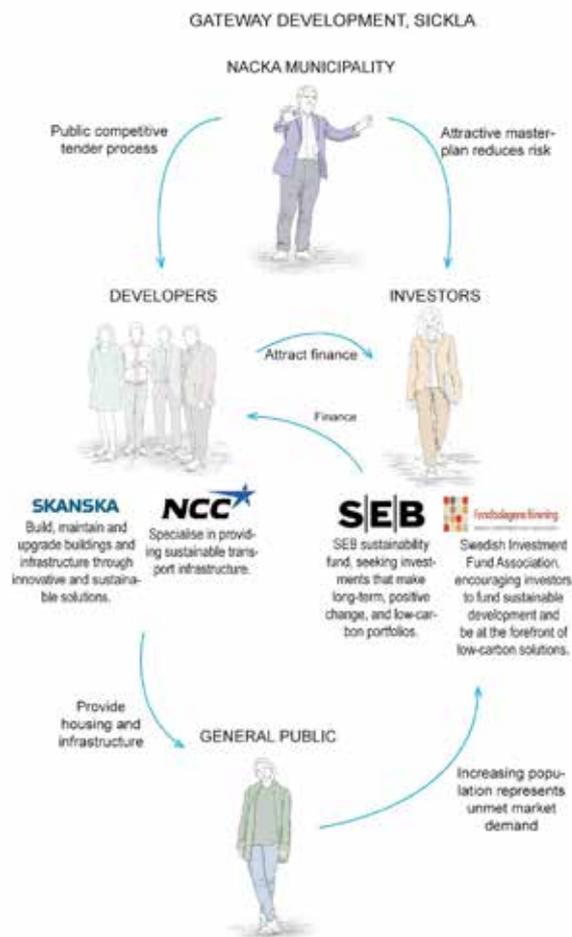
In a similar manner, the project proposes for Nacka City to sell a portion of the land adjacent to the decking at the north-western edge of Sickla to private developers to raise funds and planning gain contributions to pay for the decking. The introduction of work-space parking levy is also considered. The municipality charges private companies that provide workplace parking in the area and utilises this fund towards the motorway decking.

## GOVERNANCE

The project identifies the municipality, the national government, private developers, investors, the civil society and the general public as key actors in the development of Nacka City. The Actor Network diagram (Figure 3.21) further illustrates the governance mechanism the project envisions for the transformation of Nacka City by 2030. At large, this entails the municipality's role in attracting, selecting and monitoring the work of private developers. The project proposes the selection of developers to take place via a competitive public tender process that warrants negotiations with the municipality in relation to achieving Nacka City's sustainable urban development goals and long-term interests. Private developers are primarily responsible for the provision of housing/affordable housing while the municipality-owned developers will work on public projects, focusing on social inclusion and justice.

Discussions and negotiations take place over arrangement of seminars, roundtable discussions and civic dialogues between the municipality and representatives from Nacka City's civil society. All developments are delivered per consultation with the city's civil organisations to enable 'grassroot' development and public engagement. Developments will comply with the Planning and Building Act and Swedish Environmental Code; this will be monitored by the Swedish Central Government.

The governance scenario below is an example of what the project foresees as the governance mechanism behind the delivery of the proposed motorway decking in Sickla.



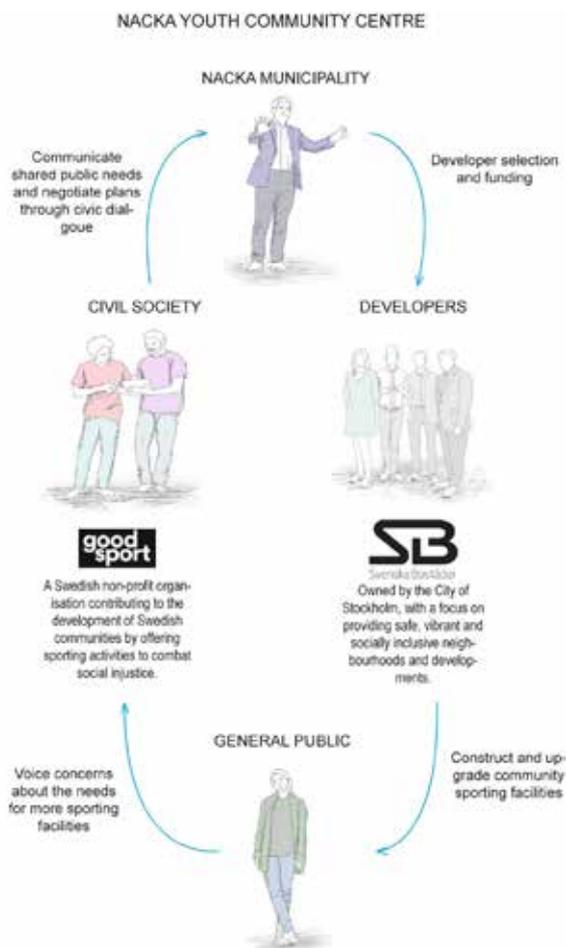
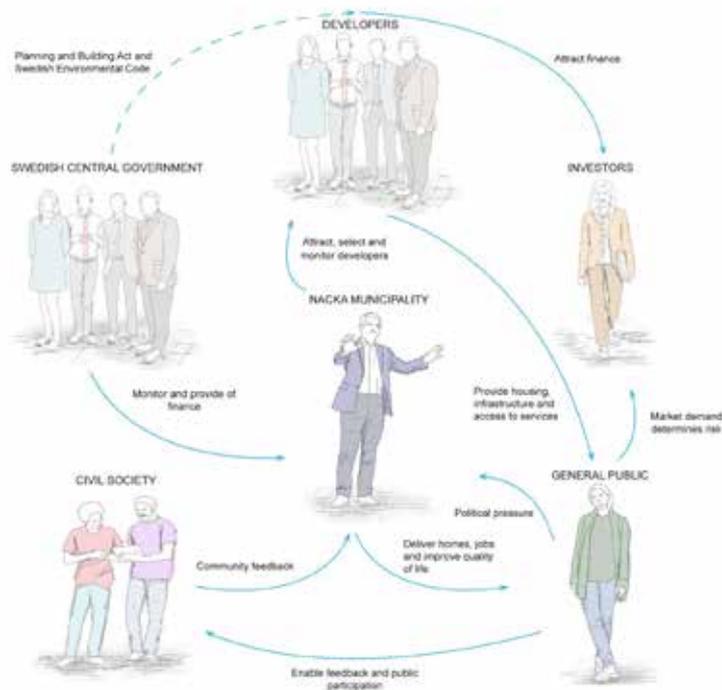


Figure 3.21. Proposed governance actor network diagram and example governance scenario for proposed motorway decking in Sickla



## INDICATORS

The project proposes a series of 6 indicators to monitor the progress of the proposal and compliance with sustainable development goals in relation to public transport, affordable housing, self-sufficiency, business rates, environmental building codes, and the amount of green space in the city (Figure 3.22). The percentages identified are set as targets for Nacka City in 2030.

## PHASING

Compact Nacka is phased alongside the completion of Sickla, Järla and Nacka Centrum metro stations (Figure 3.23). That is, it begins with the development of Henriksdal concurrently with areas around Sickla; followed by the development of Järla and Nacka Centrum once their respective metro stations are completed.

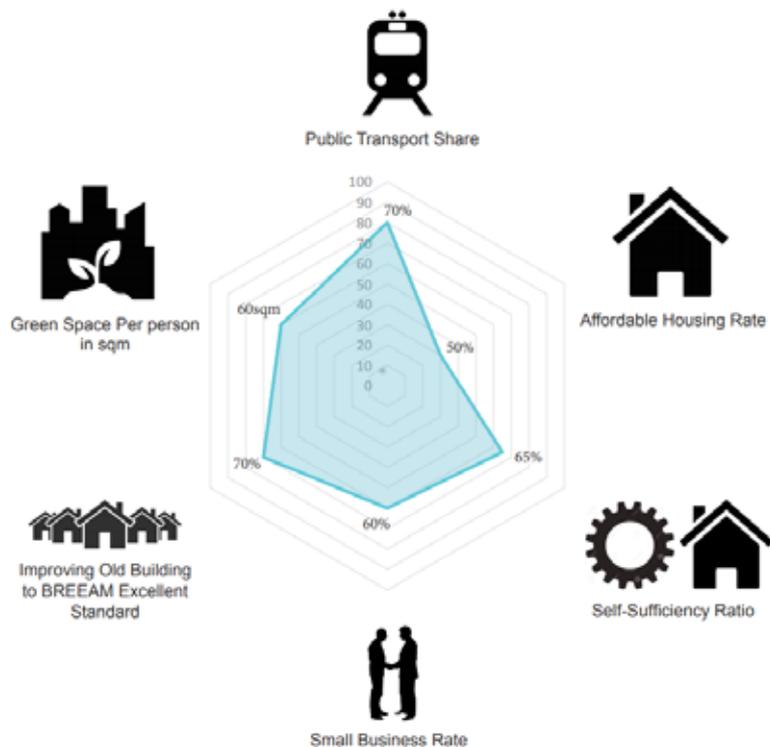


Figure 3.22. Proposed governance indicators. Source: Compact Nacka City.

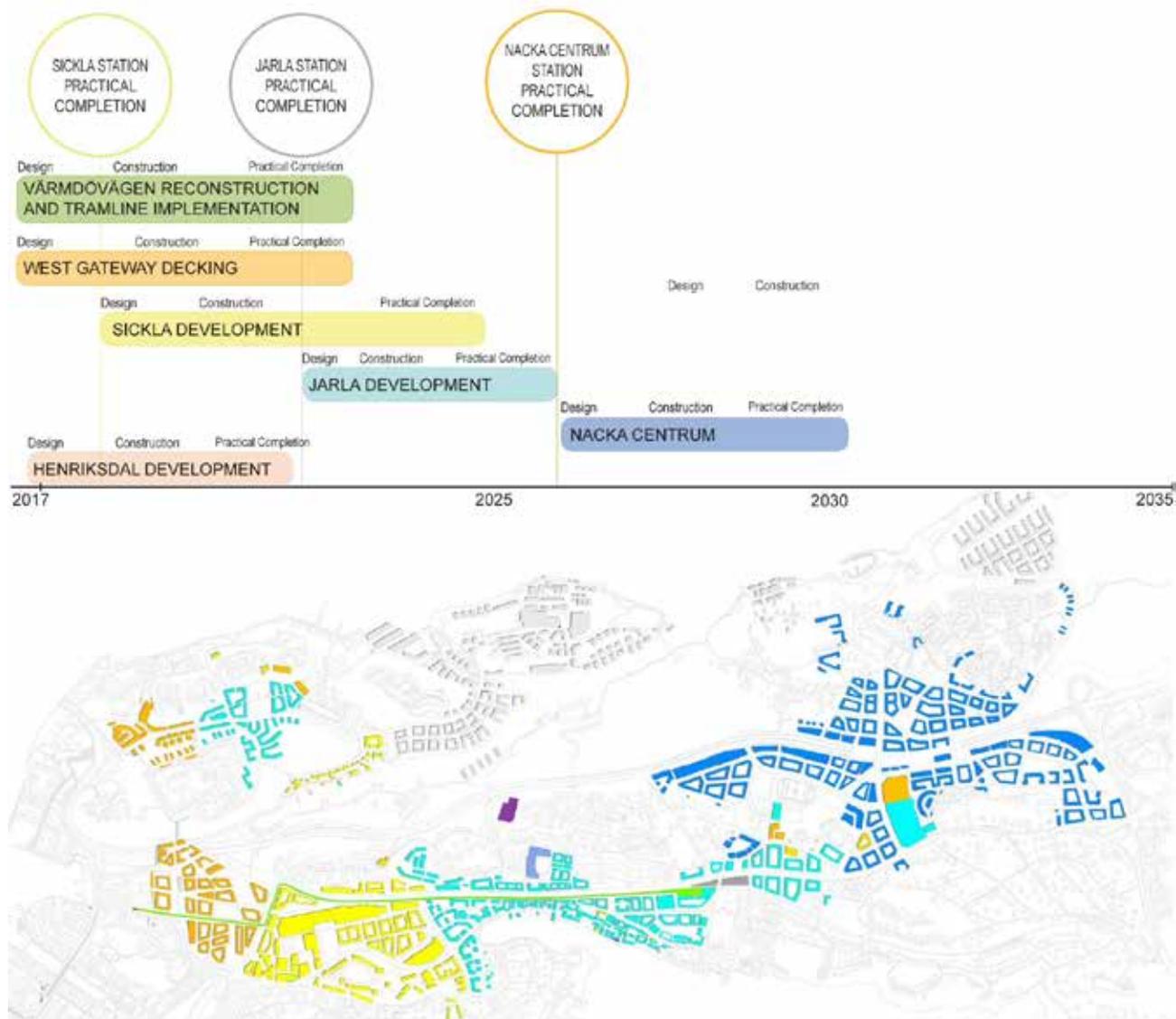


Figure 3.23. Phasing for Nacka City 2030. Source: Compact Nacka City.

# 4.4

## ACCESS NACKA CITY

This project draws on **'just cities'**, **'sustainable cities'** and **'cities for people'** concepts. It identifies transport, social diversity and local identity as main challenges for Nacka City. To address them, four strategies connected around the concept of accessibility (social, environmental and economic) at various spatial levels (micro, meso and macro) are envisioned: Transport, Housing, Urban Form and Local Identity. Key spatial interventions include two new cable car lines that respond to Nacka City's topography and the transformation of Kvarnholmen area into a cultural hub to support local industries and activities.



Image by Author on the basis of proposals by Access Nacka City. Photo credits: Images ©/Adobe Stock

## VISION

Access Nacka's vision envisages of building a connected, equitable and vibrant city, while increasing accessibility for all at all levels.

The project identifies the following as the main challenges for Nacka City: segregation, poor connectivity, limited opportunities and employment; lack of availability and affordability of housing; poor quality local streets and public spaces; and low levels of attractiveness and local identity. To address these, the project aims to increase 'accessibility' to build a city with high levels of connectivity that tackles current segregation; increases social equity and community interaction by improving transit modes and provides transport alternatives accessible to all social groups; and enhances the quality of public space and local identity, to ensure better quality of life for all (Figure 4.1).



Figure 4.1. Concept diagram. Source: Access Nacka City.

# CONCEPTUAL FRAMEWORK

The project draws on principles of ‘just cities’, ‘sustainable cities’ and ‘cities for people’ to enhance accessibility and connections in Nacka City at three levels (Figure 4.2):

**Macro level** – accessibility related to regional land use and the wider transit network to facilitate and ease travel between different regional destinations/areas of interest/job markets

**Meso level** – accessibility related to movement at the neighborhood scale

**Micro level** – accessibility related to street movement and specific physical features of the urban form to allow residents to access various activities

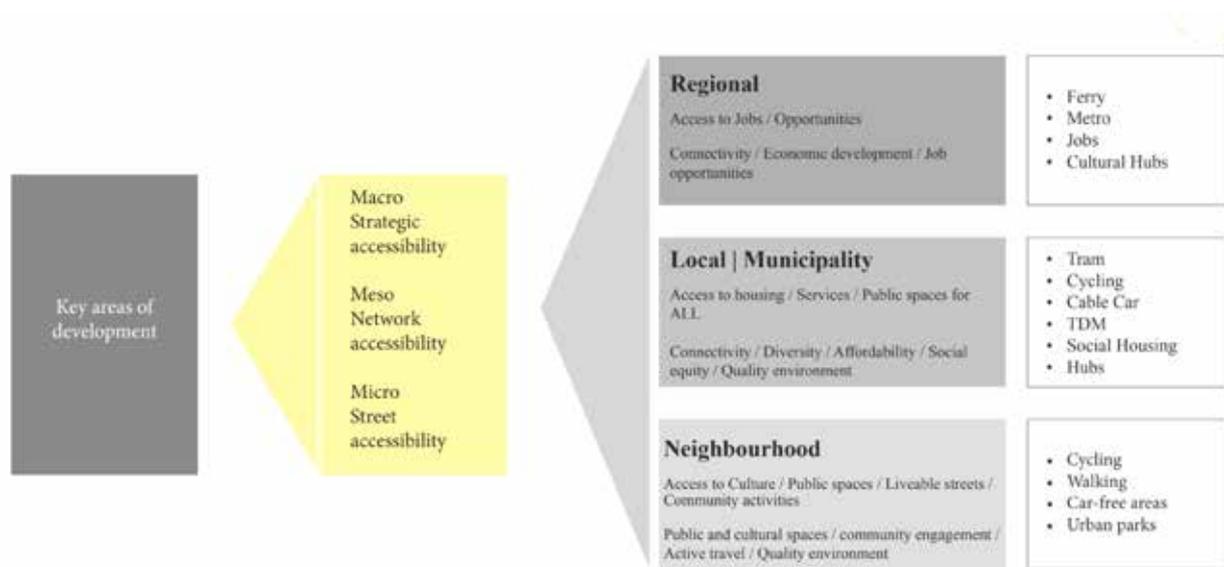


Figure 4.2.. Planning Strategy. Source: Access Nacka City.

## MASTERPLAN

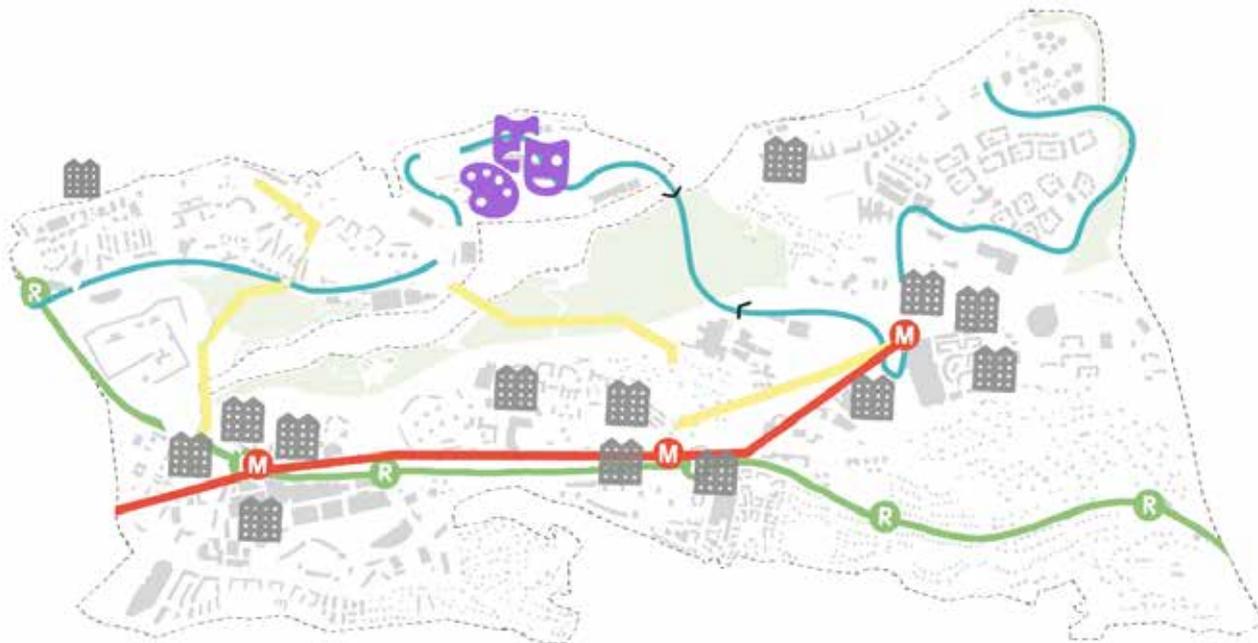


Figure 4.3. Masterplan for Nacka City 2030. Source: Adapted from Access Nacka City.

Figure 4.3 introduces Access Nacka's masterplan with densification taking place in areas around Sickla, Jarla, Nacka Centrum and Nacka Strand. Four main strategies are proposed in support of this plan addressing interventions that facilitate transport connectivity, active streets, affordable housing, and the fostering of Nacka City's local identity.

## STRATEGY 1: TRANSPORT



Figure 4.4. Proposed transport strategy. Source: Access Nacka City.

Access Nacka proposes a new transport strategy which aims to improve the site's internal connectivity and severance. The strategy draws on accessibility and connectivity principles and provides modal options that improve existing connections as well as journeys to work and local services.

With these goals in mind, the project envisages a public transport network centred around a tram line, cable car service, metro and rail systems, and ferry transportation (Figure 4.4). Aside from these public transport interventions, the project also promotes active modes of transport such as walking and cycling.

## TRAMLINE AND STATIONS



Figure 4.5. Proposed tramline and stations. Source: Access Nacka City.

An extension of Stockholm's existing tram system is proposed to run from Hammarby to the northern neighbourhoods of Henriksdal and Kvarnholmen in Nacka City; continuing on to Nacka Centrum, Nacka Strand and finally ending in Jarlaberg (as shown in Figure 4.5). The proposed tram creates a loop of high capacity (metro and rail) and connects the new residential developments to the business and commercial areas of Sickla and Nacka Centrum.

## CABLE CAR LINES



Figure 4.6. Proposed cable car system. Source: Access Nacka City.

Two new cable car lines are proposed in Nacka City (Figure 4.6). The north-south line runs for 1.4km from Sickla to Finnboda's shopping/commercial centre and the ferry hub/waterfront. In between Sickla and Finnboda, the cable car stops at Henriksdal and Kvarnholmsvägen – two residential areas with tram stations close by.

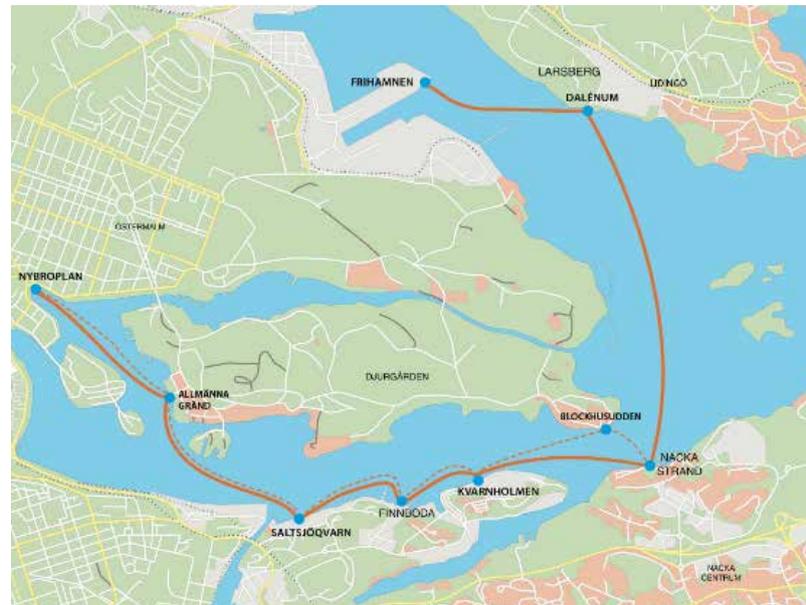
The west-east line runs for 2.1 km from Svindersviken to Nacka Centrum, making an additional stop at Järla metro station. The line serves to connect the rest of Nacka City's residential areas to metro stations and to Nacka Centrum.

## FERRY SYSTEM

As Figure 4.7 illustrates, three lines are proposed for the new ferry system: two local lines that run all day; and one express line which runs during summers. The three lines are designed on the basis of the existing public ferry system in Stockholm City (Figure 4.8) and the concentration of workplaces in Östermalm, Norrmalm, and areas south of Södermalm.

Figure 4.7. Proposed ferry system. Source: Access Nacka City (left top).

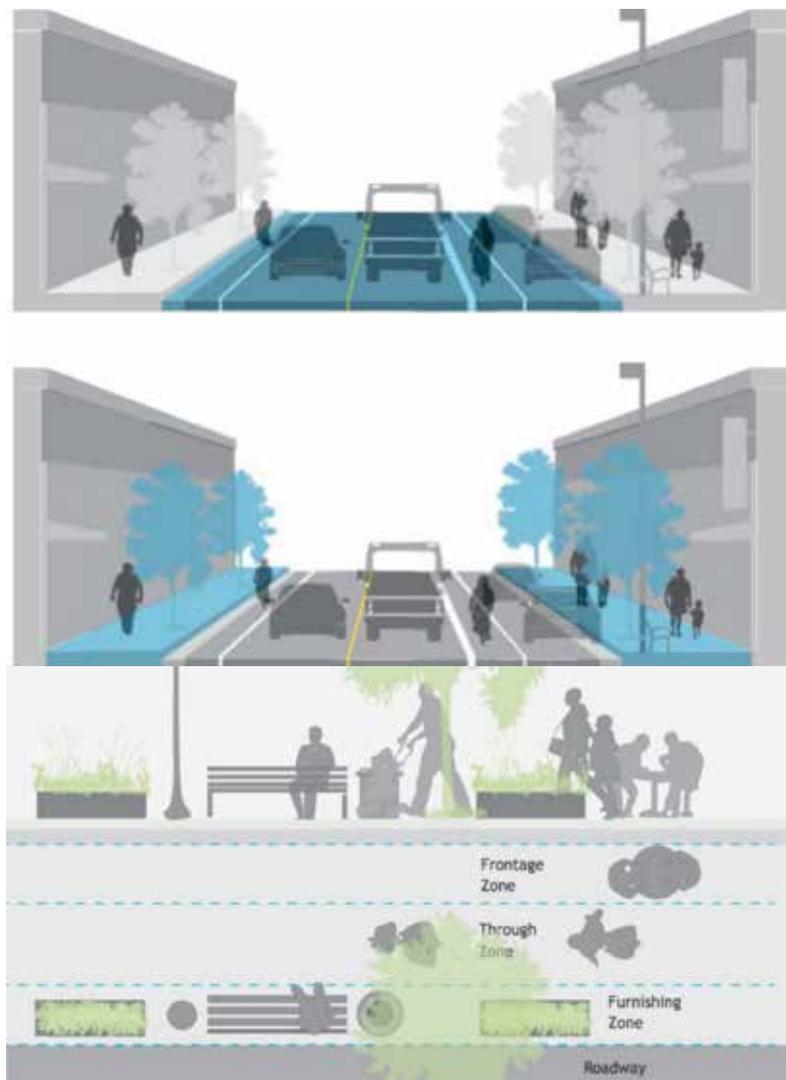
Figure 4.8. Existing ferry system (Sjövägen) in Stockholm City. Source: Sjövägen (2013) (left bottom).



## COMPLETE STREETS

The project uses the 'Complete Streets' concept to design the streets of Nacka City. The resulting streetscape enhances safe pedestrian accessibility and attractive built environment. A precedent for this is the street design in Edmonton, the capital of Alberta, Canada (Figure 4.9)

Figure 4.9. Complete Streets design - principles and amenities. Source: Adapted from City of Edmonton (2013)



### TRAFFIC MANAGEMENT

The project's traffic management strategy focuses on three interventions: the implementation of Electronic Road Pricing (ERP) along Värmdöleden and Värmdövägen, the delimitation of Parking Policy Zones in Sickla and Nacka Centrum and the declaration of a car-free zone in Kvarnholmen (see Figure 4.10).

These interventions have a number of benefits: they serve to increase in equity in public space, they incentivise the use of active modes, they increase in municipality's revenue from parking and road pricing, and they increase activity in Nacka City's commercial areas due to higher amount of footfall.

### CYCLING NETWORK

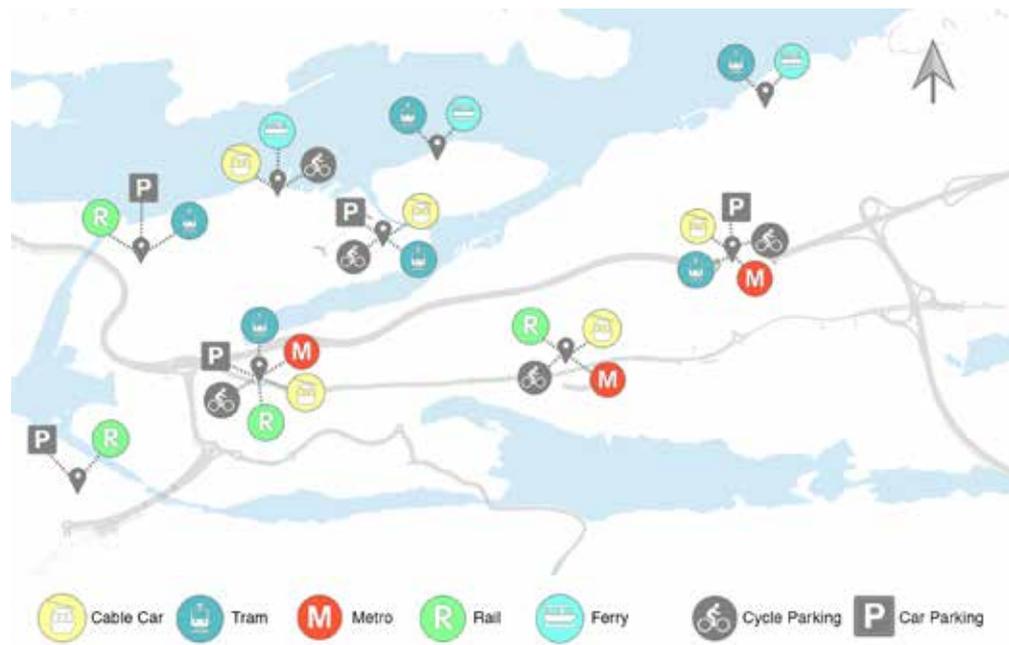
The cycle path network is an already well-developed network within the municipality, however, it is disconnected in places. The project proposes to add new links to strengthen the existing cycle network (see Figure 4.11). Cycling routes in the northern part of Nacka City are transformed into an 8km-long leisure cycling network.

As an incentive to engage with active modes of travel, the project also proposes the addition of four cycling parking lots across the site.



## INTERCHANGE POINTS

Intermodality is a key element for accessibility in Nacka City as well as within the site's wider context, and can contribute to enhance social equity. As such, nine interchange points are created within Nacka City, combining cable car, tram, metro, rail, car and cycling (see Figure 4.12).



Left to right:

Figure 4.10. Proposed traffic management strategy

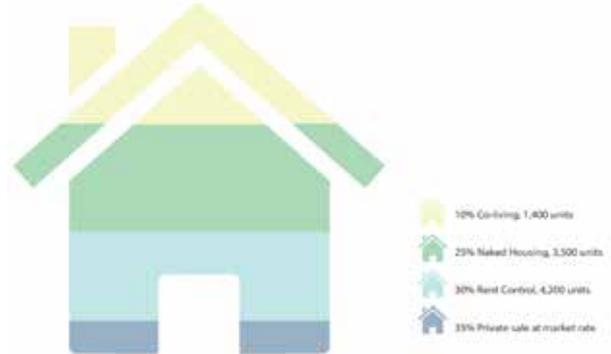
Figure 4.11. Proposed cycling network

Figure 4.12. Proposed interchange nodes

Source: Access Nacka City

## STRATEGY 2: HOUSING

The aim of this strategy is to facilitate strong community cohesion and improve access to good quality housing for all population groups. In order to achieve this, four types of housing are proposed: housing sold at market rate; naked housing; co-living housing; and rental housing (see Figure 4.13 and Figure 4.14).



- Shared garden space
- Private rooms with en-suite bathroom
- Shared kitchen and dining areas
- Library and reading rooms
- Quiet living rooms
- Large open plan bar/cafe open to the public
- Amenities gym, laundry etc

		Units		
		14,000	14,500	14,750
Private sale at market rate	35%	4,900	5,075	5,163
Naked Housing	25%	3,500	3,625	3,688
Student/co-living rental	10%	1,400	1,450	1,475
Rent controlled	30%	4,200	4,350	4,425

Figure 4.13. Proposed housing policies. Source: Access Nacka City.

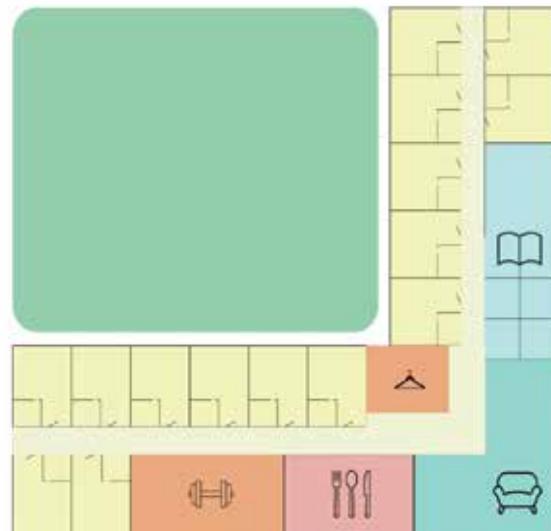


Figure 4.14. Proposed internal housing layout to accommodate co-living. Source: Access Nacka City.

## NAKED HOUSING

The proposed ‘naked housing’ model aims to facilitate access to home ownership to lower socio-economic groups. In collaboration with the municipality, new high quality housing is provided with all basic amenities to ensure safe and comfortable living standards. Homeowners are then supported to finish the interior of their housing little by little and in line with their needs, incomes and municipal sustainability standards. This housing model draws inspiration from the ‘incremental’ housing projects by Chilean architect Alejandro Aravena (see e.g. Aravena, 2013; Vale et al., 2014).

The model attracts residents who are committed to making a long-term personal investment in their homes and local area. What’s more, it generates a diverse range of architectural styles and is less costly to develop than other housing types (Wassenburg, 2015).

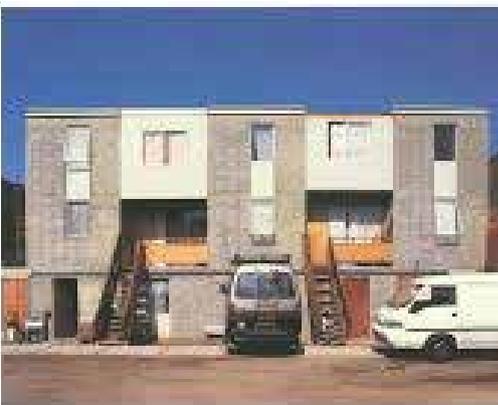


## CO-LIVING HOUSING

The co-living housing model is targeting young people and aims to prevent transience. Purpose built housing with communal living spaces is rented to residents/students at a rate agreed with the municipality. In a co-living housing arrangement, residents will have a private bedroom and bathroom but will share other spaces such as kitchens, living rooms, gym areas, laundry facilities and gardens.

Students living for more than one year in this type of housing have the option to continue to live in such accommodation for up to two years after graduation, in order to make sure that they are not priced out of the area whilst starting their professional careers.

Figures 4.15 and 4.16. Example of incremental housing - Quinta Monroy Housing before and after homeowners extensions. Source: Aravena (2010)



## STRATEGY 3: LOCAL IDENTITY



Figure 4.17. Artist's impression of Kvarnholmen cultural hub. Source: Access Nacka City

To strengthen Nacka City's attractiveness and local identity, the project proposes to transform Kvarnholmen area in a cultural hub. Only a ferry ride away from Gamla Stan, Stockholm City's historical centre, Kvarnholmen's waterfront becomes the new destination for both locals and visitors. The proposals for Kvarnholmen cultural hub include an opera house, a museum and new spaces for leisure and social activities as shown on the map below (Figure 4.17).

## OPERA HOUSE

A new Opera House is built since the local musical theatre (Gäddviken Dekorverkstad) is replaced by housing. This is equipped with a traditional amphitheatre and multiple recording and practice studios to support the area's growing music industry. The new Opera House is located on top of the hill, a flexible multi-purpose building for event use, galleries and exhibitions, and library uses.

## OLD MILL

The Old Mill is repurposed into a hotel and pays tribute to area's industrial heritage through an industrial inspired architectural design and dedicating a section of the building to an industrial museum. This addresses the wider Stockholm region's growing need for hospitality venues.

## OLD GAS DEPOT

Right below Finnberget (Figure 4.19), the Old Gas Depot is repurposed into a 10,000 space car parking facility (Figure 4.20). The two existing underground tunnels are reused for leisure and social activities. Inspired by the repurposing of disused Romanian salt mines and Gwangmyeong mining cave in South Korea (Figures 4.18 and 4.20), these accommodate attractions such as aquariums, light shows, theaters, mini golf, mini bowling, billiard and table tennis activities, wineries etc.



Figure 4.18. Interior of Romanian salt mine Salina Turda. Source: Behance/Marcel Neberich

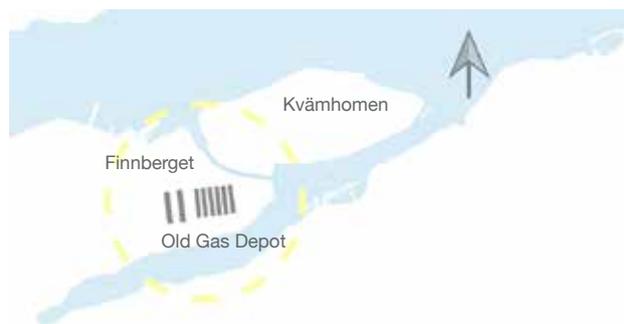


Figure 4.19. Location of Old Gas Depot. Source: Access Nacka City

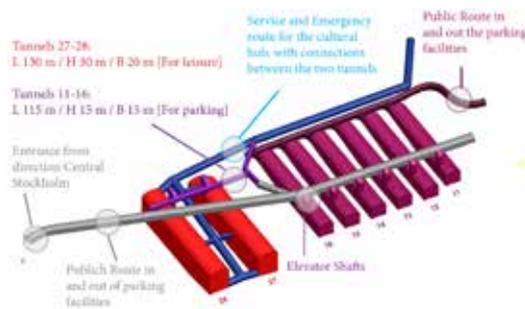


Figure 4.20. Proposed configuration of the Old Gas Depot. Source: Access Nacka City, adapted from Backfjard et al. (2016)

## IMPLEMENTATION

### FINANCE

The project suggest broad costing estimates for its major interventions (Figure 4.21): tram extension, cable car system, ferry system, cycling facilities, and the transformation of Kvarnholmen's cultural hub. Together with additional costs of waterfront regeneration and other transport facilities, the total implementation cost of the project is estimated at £218.9 million. Costing estimates were guided by similar projects elsewhere (see Figure 4.21).

Financing streams are of two types: 'initial funding' coming from a combination of public, private and international sources, used primarily towards the initial capital investment of an intervention; and 'complementary funding' generated later by development revenue that is used to re-invest back into the project.

#### **Initial funding**

This class of funding sources is made of public funds from the municipality, private funds from private institutions and international funds secured from the European Regional Development. Private funding is to be sourced via Public Private Partnership models (PPPs). They are used towards the tram extension, waterfront regeneration, the Electronic Road Pricing (ERP), and the transformation of the cultural hub in Kvarnholmen.

The European Regional Development fund consists of funding schemes offered by the European Union with regards to projects that seek to promote economic and social cohesion in the region (see European Union, n.d.). Nacka City may consider itself as an eligible candidate for this source of fund.

#### **Complementary funding**

This is funding generated by the project's own revenue through completed interventions and can be re-invested in future/ongoing schemes. It includes revenue generated by commercial advertisement on tram and metro lines/stations; land value capture; and income generated from public transport fares, ERP, and parking schemes.

Major intervention	Precedents	Total cost estimated (£ million)
Tram Extension	Manchester Metrolink, UK Sheffield Supertram, UK Leeds Supertram, UK Lund Tram, Sweden European Investment Bank	106.4
Cable Car	Montenegro - Kotor to Cetinje Medellin, Colombia Taiwan, China Rio de Janeiro, Brazil New Delhi and Jammu & Kashmir, India	24.1
Ferry System	NYCEDC Ferry, New York, US Sjövägen, Nacka, Sweden Ressel Rederi, Stockholm, Sweden	26.4
Cycling Network & Facilities	Berlin, Germany German government's National Cycling Plan, Germany	5.9
Kvarnholmen cultural hub	Salina Turda, Romania	15.5
<b>Waterfront regeneration</b>	Hammarby, Sweden Piers 62/63/64, New York, US Hudson River park, New York, US	49.5
<b>Transport facilities</b>		
Street design	Klyde Warren Park, Dallas - TX, US	14.7
Park & Ride	European Parking Association	12.5
Electronic Road Pricing	Singapore	19.4
Car-free Zones	European Parking Association	4.5
<b>Total implementation cost* (£m)</b> *Price is for 2017		<b>278.9</b>

Figure 4.21. Costing estimates for the proposed major interventions. Source: Access Nacka City

### FINANCE

The project's governance framework is shown in Figure 4.22. Policies are first defined by the municipality and its committees. These policies are then led and executed by the Municipal Boards and Chief Executive Units that are supported by the municipal Support Units (e.g. financial, legal, etc.). All processes are overseen and controlled by the City Management Offices. The project proposes a new Nacka Plan Control Office (NPCO) located alongside the City Management Offices. The NPCO's task is to ensure that the planned objectives, policies and interventions for this project are met and delivered according to requirements. The NPCO will also serve as a representative for the municipality to connect to various project stakeholders (i.e. other public institutions, private organisations, and local citizens).

### Participatory planning

The project proposes for Nacka City to be delivered via a collaborative process. A multi-actor multi-criteria analysis (MAMCA) is used as a tool to support this process. This enables the municipality to garner insight from various stakeholders and their support on the various policies and interventions that are proposed (see e.g. MAMCA, ca. 2018). In fact, this would only be an extension of an ongoing effort as the municipality has previously used MAMCA in the delivery of a new water/sewage system and road plan in 2004 (Danielson et al., 2008).

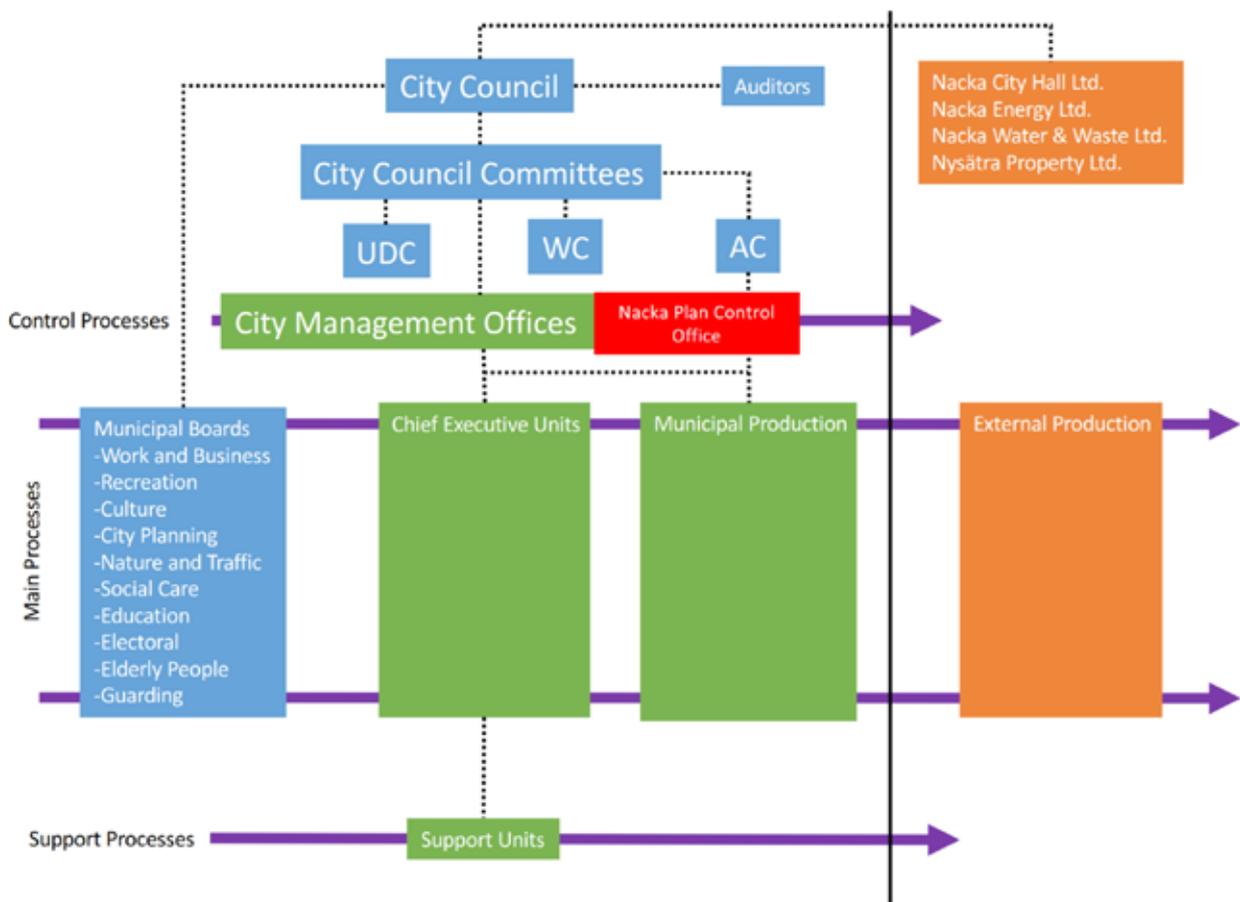


Figure 4.22. Proposed governance structure. Source: Access Nacka City

### PHASING

The project draws on past precedents to develop a phasing timeline that matches with the municipality's existing plans. Phasing for the project takes place across three stages: the first ending in 2020, the second in 2025 when the metro line is completed (Nacka Kommun, 2016), and the third ending in 2030.

The Gantt chart (Figure 4.23) illustrates the proposed phasing for each project, providing a clear estimation of start date, duration, subtasks and its relation with other interventions.

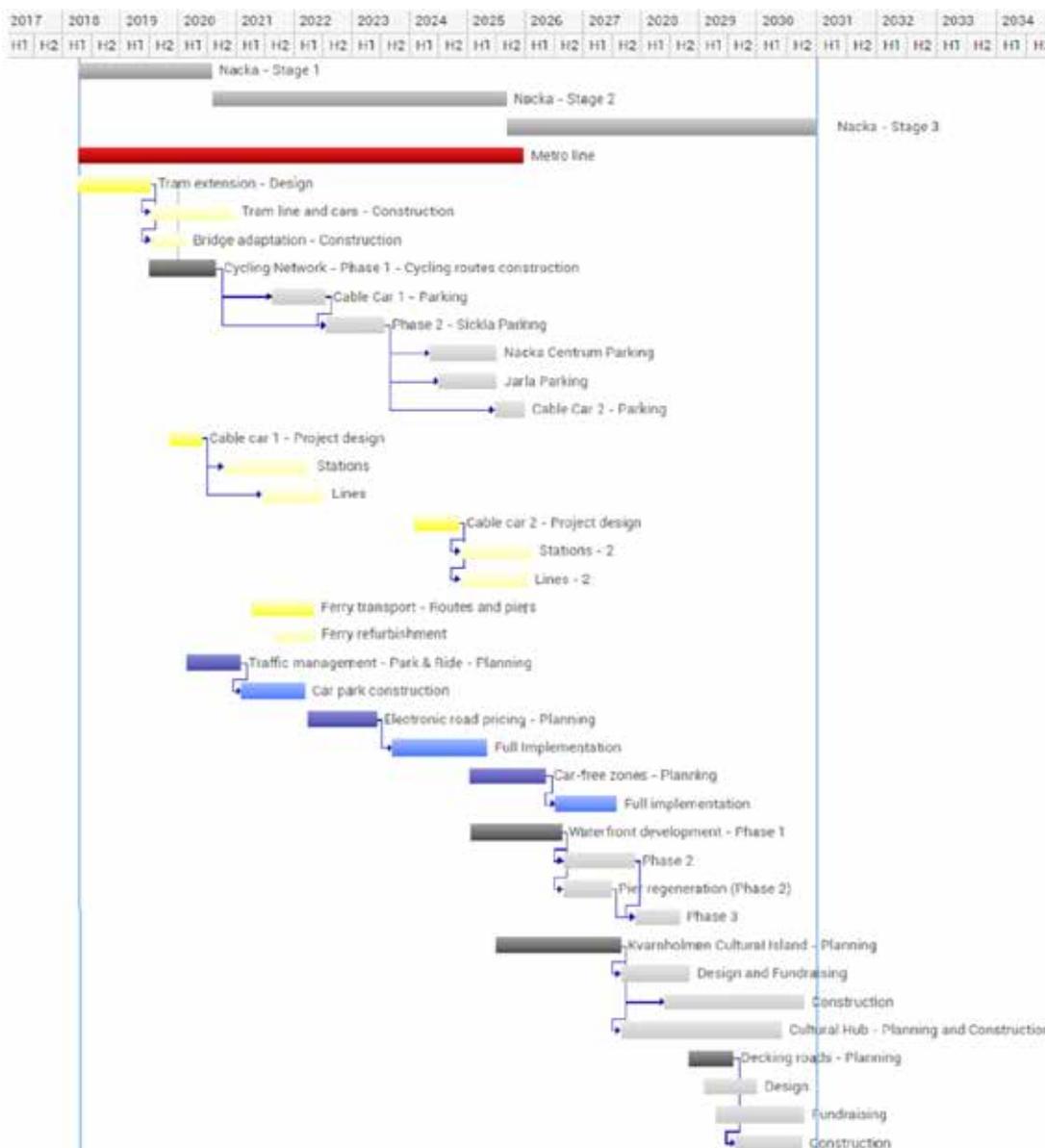


Figure 4.23. Phasing for Nacka City 2030. Source: Access Nacka City

**The student work presented here is not a mere academic journey. It is built on a foundation of urban sustainability and sustainable urbanism theories and an in-depth understanding of the site of application, a visit to its location, and close cooperation and knowledge co-production with relevant local city stakeholders and policy makers. These give students the opportunity to deal with and propose solutions to a range of local and regional urban development and sustainability issues.**

**The result is a series of comprehensive Strategic Sustainable Urban Development Plans (SSUPs) that use informed and context relevant information and tools to respond to current sustainable urban development opportunities and challenges. We hope you have enjoyed the journey!**

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#### Theory

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Figure 1.6 Example of 'woonerf' in the Netherlands. (Wikimedia Commons/Erauch)

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Figure 1.8. Example of innovative lighting installation at Clink Street, London. (Flickr/Jorge Franganillo)

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Figure 3.15. (from left to right)

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Recreational green space. (Behance/Söhne&Partner architects)

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Nature walk. (Flickr/Clover\_1)

Walking with Daddy by Clover\_1 is licensed under CC BY-NC 2.0

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Figure 4.18. Interior of Romanian salt mine Salina Turda. (Be-

hance/Marcel Neberich)

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