

A. REVISION PAPER

The revision paper on the opposite side was the result of a discussion with postgraduate students Märta Helander and Amanda Dahl of the Royal Danish Academy of Fine Arts School of Architecture about the scope and content of the tentative model of social sustainability presented on page 73.

Eksempel: "Blankekarer" Trace tilbage gennem skabellen
 Vigtigt!: mulighed for at "vægt" specifik indsats Overview | 41

T 4.2 Model of social sustainability.

Level 1	Level 2	Level 3	Level 4
		Affordability	Demographic data Socio-economic everyday life situation Rent level Fuel poverty - heating costs Well maintained heating system
	Equity	Solidarity	Equal opportunities No discrimination Tenure
		Freedom of choice	New electric equipment (fridge/ stove etc.)
		Transportation	Public transport - pattern and quality Carpool Garbage collection Entrances 17: car to the area Possibility to stay in your own home
	Connection/Accessibility	Disabled accessibility	Presence of services Distance to service Range of service (and who besides residents rely on local service)
		Public Access to services/jobs	Tone and frequency Name of streets Regular maintenance and care
	Pride and sense of place	Public image	Social mix Poor households
		Residents image of area	Volunteers Societies Ability to re-decorate
	Social cohesion	Stability	Communities Residents association Ability to shape own space
Social		Social networks	Indoor climate Acoustics Distance to hospital Life expectancy Assessment of own health Chronically sick people
		Lifestyle choices	Satisfaction with shops Real Estate value Population development Early school leavers Real-time to diploma Graduation rate Education level population
	Quality of life	Living conditions	Housing deficit Distance to supermarket Satisfaction with living environment Youth unemployment Number of elementary schools Number of secondary education schools
		Education	Violent crimes Crimes against property Youth crime Turnout municipal elections Turnout national elections Long lasting unemployment
		Safety	Vandalism Flood safety Feeling of insecurity Long lasting social assistance Informal care
	Democracy	Participation	Performing arts Museums
		Communication	Monuments landmarks
	Culture	Culture	
		Cultural heritage	

Connection/Accessibility

Street network

Public Access to services/jobs

Pride and sense of place

Public image

Comfort outdoor comfort

Landmarks

Meeting places including residents in processes

Ability to express oneself

visibility natural surveillance

Public Spaces

Protection
Comfort
Enjoyment

- 1 Bumm mellem huse
- 2 Skulpturer
- 3 Børneopgangene

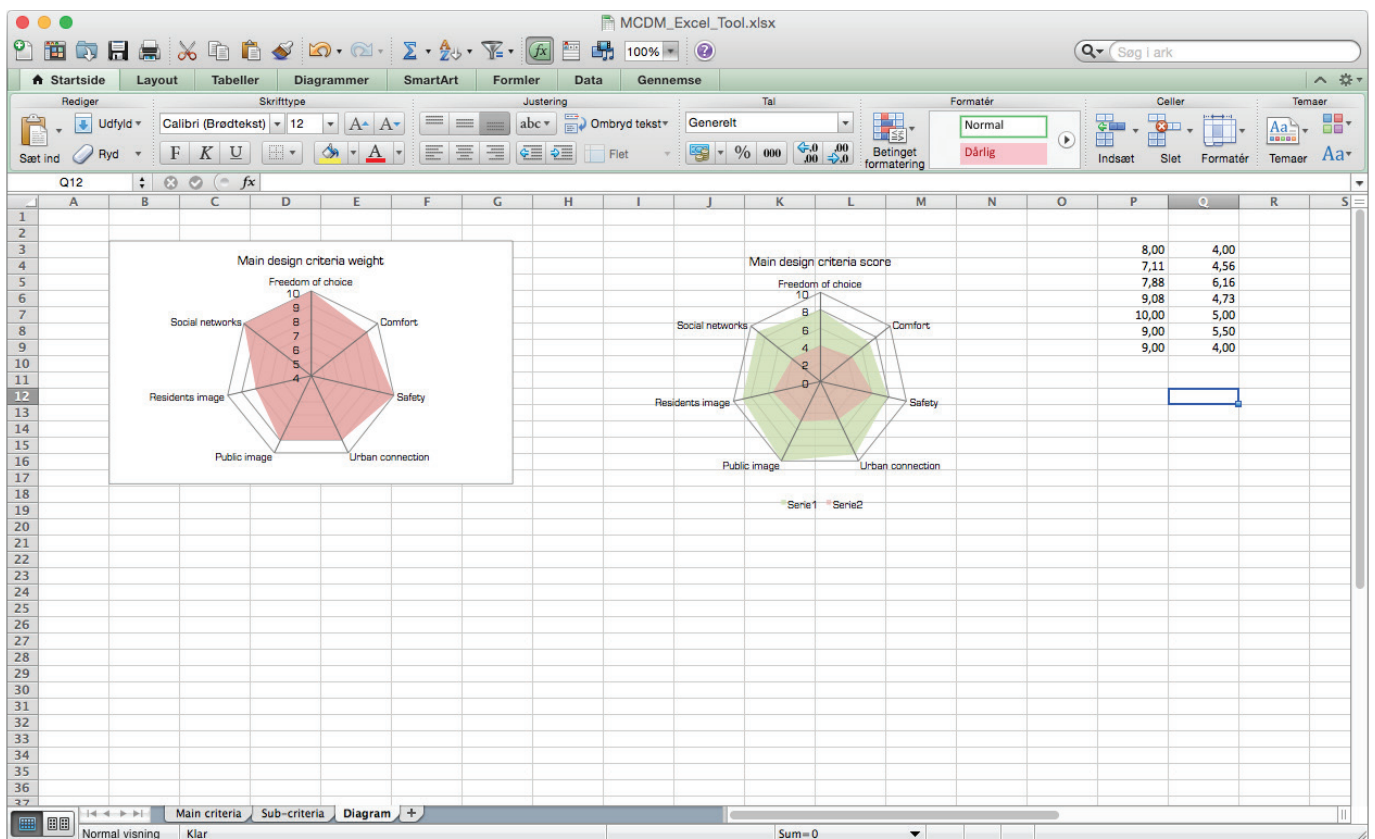
Gehl: 12 quality criteria

Skala = menneskelig skala

1. Weighting and scoring of indicators

Sub-criteria	Weight	Norm. weight	Score	Main criteria score
Freedom of choice	10	1,00	4	4,00
Ability to shape own space	7	0,70	4	2,80
Public image	9	1,00	5	5,00
Differentiation of private/public	9	1,00	5	5,00
Comfort	8	0,44	4	1,78
Daylight	8	0,44	4	1,78
Human scale	10	0,56	5	2,78
Residents image	8	0,50	5	2,50
Maintenance and care	8	0,50	5	2,50
Local landmarks	8	0,50	6	3,00
Safety	10	0,40	7	2,80
Feeling of security	10	0,40	7	2,80
Natural surveillance	7	0,28	4	1,12
Visibility	8	0,32	7	2,24
Social networks	6	1,00	4	4,00
Local societies/communities	6	1,00	4	4,00
Urban connection	8	0,16	4	0,65
Connection to city	8	0,16	4	0,65
Entrances	9	0,18	5	0,92
Public meeting places	9	0,18	4	0,73
Foot traffic to and through area	7	0,14	7	1,00
Area used by non-residents	6	0,12	5	0,61
Private meeting places	10	0,20	4	0,82

3. Visualisation of results



C. MEASUREMENT SCALES

Measurement scales used in the case study to convert quantitative and qualitative results to a common qualitative scale. Numbers in red and green denote the score of the **existing condition** and **design proposal**, respectively.

Score	Judgement	Ability to shape own space
10	Excellent	Abundant options in apartment and on building and neighbourhood level
9	Good to excellent	Many options in apartment and on building and neighbourhood level
8	Good	Some options in apartment and on building and neighbourhood level
7	Fair to good	Some options in apartment and on building level
6	Fair	Limited options in apartment and on building level
5	Acceptable to fair	Few options in apartment and on building level
4	Marginally acceptable	Few options in apartment

Score	Judgement	Daylight factor in centre of living room
10	Excellent	3,5–4%
9	Good to excellent	3–3,5%
8	Good	2,5–3%
7	Fair to good	2–2,5%
6	Fair	1,5–2%
5	Acceptable to fair	1–1,5%
4	Marginally acceptable	0,5–1%

Score	Judgement	Human scale is observed in
10	Excellent	Neighbourhood plan, building size, plan, façades and outdoor spaces
9	Good to excellent	Building size, plan, façades and outdoor spaces
8	Good	Building plan, façades and outdoor spaces
7	Fair to good	Building plan and façades
6	Fair	Building plan and ground floor
5	Acceptable to fair	Building plan and entrances
4	Marginally acceptable	Building plan

Score	Judgement	Feeling of security (lighting)
10	Excellent	Lighting in all areas
9	Good to excellent	
8	Good	Lighting in all main paths
7	Fair to good	
6	Fair	Lighting at main access path
5	Acceptable to fair	
4	Marginally acceptable	Lighting at entrances

Score	Judgement	Natural surveillance of
10	Excellent	All areas + no narrow, enclosed spaces
9	Good to excellent	Most areas + no narrow, enclosed spaces
8	Good	Most areas + only few narrow, enclosed spaces
7	Fair to good	Some areas + only few narrow, enclosed spaces
6	Fair	Some areas + some narrow, enclosed spaces
5	Acceptable to fair	Only few areas + some narrow, enclosed spaces
4	Marginally acceptable	Only few areas + a considerable amount of narrow, enclosed spaces

Score	Judgement	Good visibility in
10	Excellent	All areas
9	Good to excellent	All but few areas
8	Good	Most areas
7	Fair to good	Half of the area
6	Fair	Some areas
5	Acceptable to fair	Few areas
4	Marginally acceptable	Main access route only

Score	Judgement	Connection to city
10	Excellent	Good, level-less connection by roads, pedestrian and bike paths.
9	Good to excellent	Good connection by roads, pedestrian and bike paths.
8	Good	Connection by roads, pedestrian and bike paths.
7	Fair to good	Good connection by roads and pedestrian paths
6	Fair	Connection by roads and pedestrian paths
5	Acceptable to fair	Good connection by pedestrian paths
4	Marginally acceptable	Connection by pedestrian paths

Score	Judgement	Entrances
10	Excellent	Distinctive, open, light, connect through building, towards public area
9	Good to excellent	
8	Good	Distinctive, connect through building, towards public area
7	Fair to good	
6	Fair	Towards public area, open
5	Acceptable to fair	Withdrawn
4	Marginally acceptable	Door

Score	Judgement	Meeting places
10	Excellent	Abundance of highly varied meeting places
9	Good to excellent	More than one per building, highly varied types
8	Good	More than one per building, varied types
7	Fair to good	One per building, varied types
6	Fair	One per building
5	Acceptable to fair	Less than one per building
4	Marginally acceptable	One meeting place available

Score	Judgement	Foot traffic to and through area
10	Excellent	High volumes effectively attracted and facilitated
9	Good to excellent	
8	Good	Moderate volumes attracted and facilitated
7	Fair to good	
6	Fair	Low volumes attracted and facilitated
5	Acceptable to fair	
4	Marginally acceptable	Very small volumes

Score	Judgement	Area used by non-residents
10	Excellent	High volumes effectively attracted and facilitated
9	Good to excellent	
8	Good	Moderate volumes attracted and facilitated
7	Fair to good	
6	Fair	Low volumes attracted and facilitated
5	Acceptable to fair	
4	Marginally acceptable	Very small volumes

Score	Judgement	Common facilities
10	Excellent	Several easy-access multi-use common spaces per building
9	Good to excellent	Several easy-access common spaces per building
8	Good	One easy-access common space per building
7	Fair to good	One common space per building
6	Fair	Less than one common space per building
5	Acceptable to fair	One common space
4	Marginally acceptable	One restricted-access common space

Score	Judgement	Differentiation of private and public
10	Excellent	Graduated transition between private, semi-private and public outdoor spaces
9	Good to excellent	Transition between private, semi-private and public outdoor spaces
8	Good	Graduated transition between private and public outdoor spaces
7	Fair to good	Transition between private and public outdoor spaces
6	Fair	Graduated transition between private indoor and public outdoor
5	Acceptable to fair	Transition between private indoor and public outdoor
4	Marginally acceptable	Sharp transition between private indoor and public outdoor

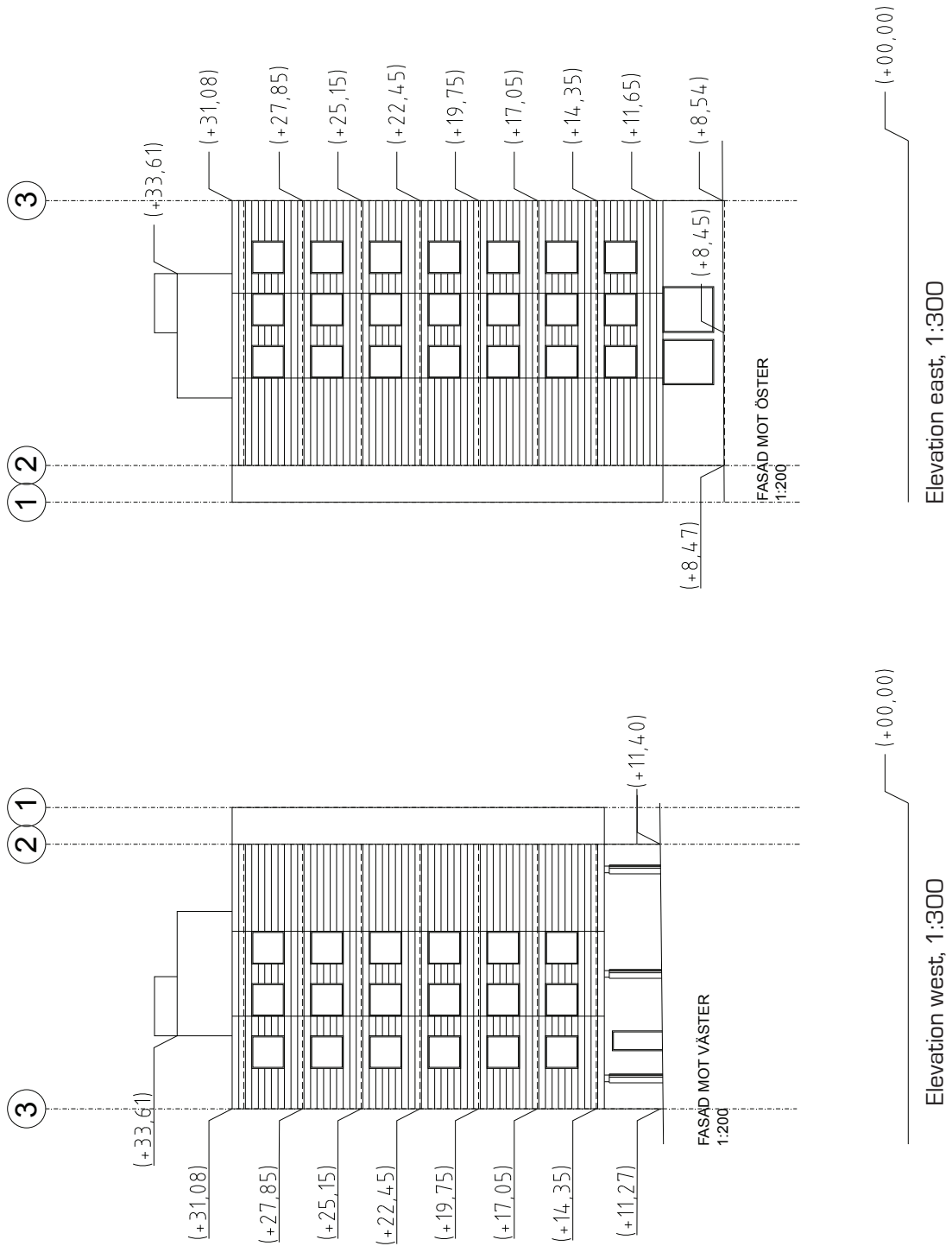
Score	Judgement	Qual. of maintenance and care
10	Excellent	< -
9	Good to excellent	< -
8	Good	< -
7	Fair to good	< -
6	Fair	< -
5	Acceptable to fair	< -
4	Marginally acceptable	< -

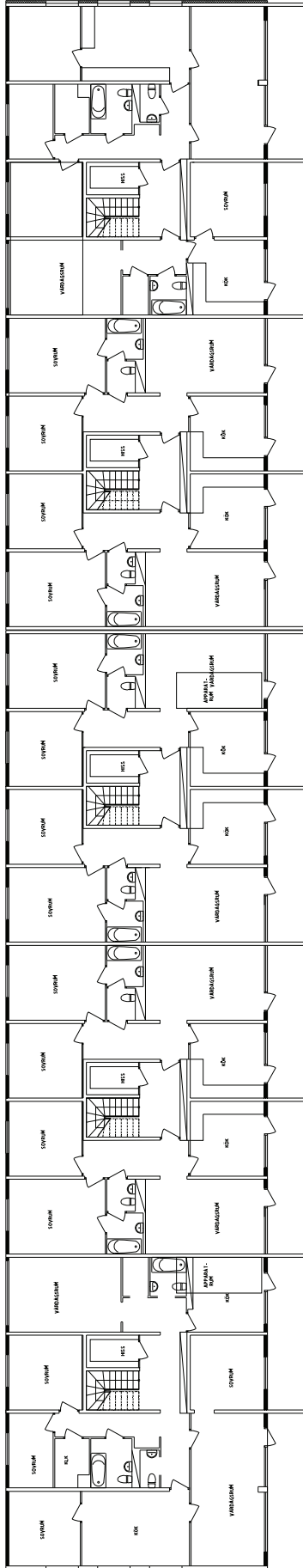
Score	Judgement	Local landmarks
10	Excellent	Abundance
9	Good to excellent	More than one per building
8	Good	One per building
7	Fair to good	Few
6	Fair	More than one
5	Acceptable to fair	One
4	Marginally acceptable	None

Score	Judgement	Local societies / communities
10	Excellent	Capacity to support high number of formal and informal groups and activities
9	Good to excellent	
8	Good	Capacity to support moderate number of formal and informal groups and activities
7	Fair to good	
6	Fair	Capacity to support low number of formal and informal groups
5	Acceptable to fair	
4	Marginally acceptable	Capacity for resident's association only

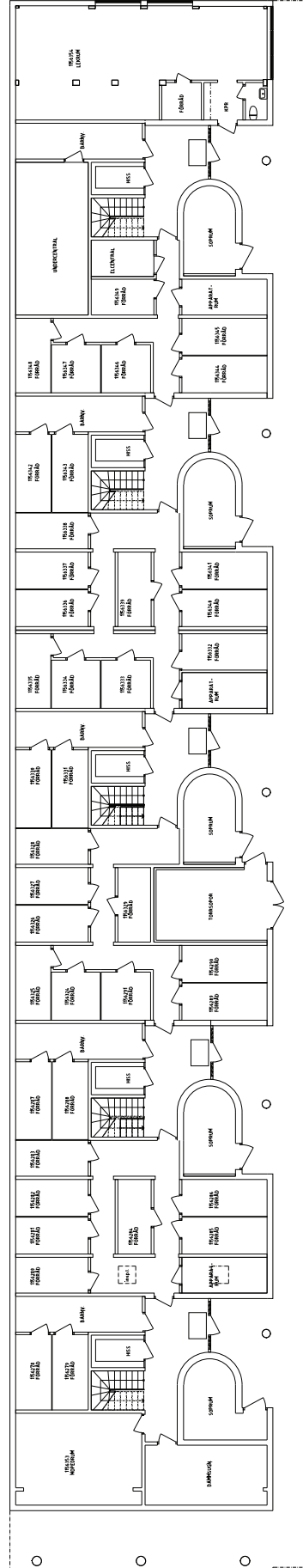
D. CASE STUDY EXISTING DRAWING MATERIAL

Plans and elevations of the blue houses in Fyrklövern, Upplands Väsby.

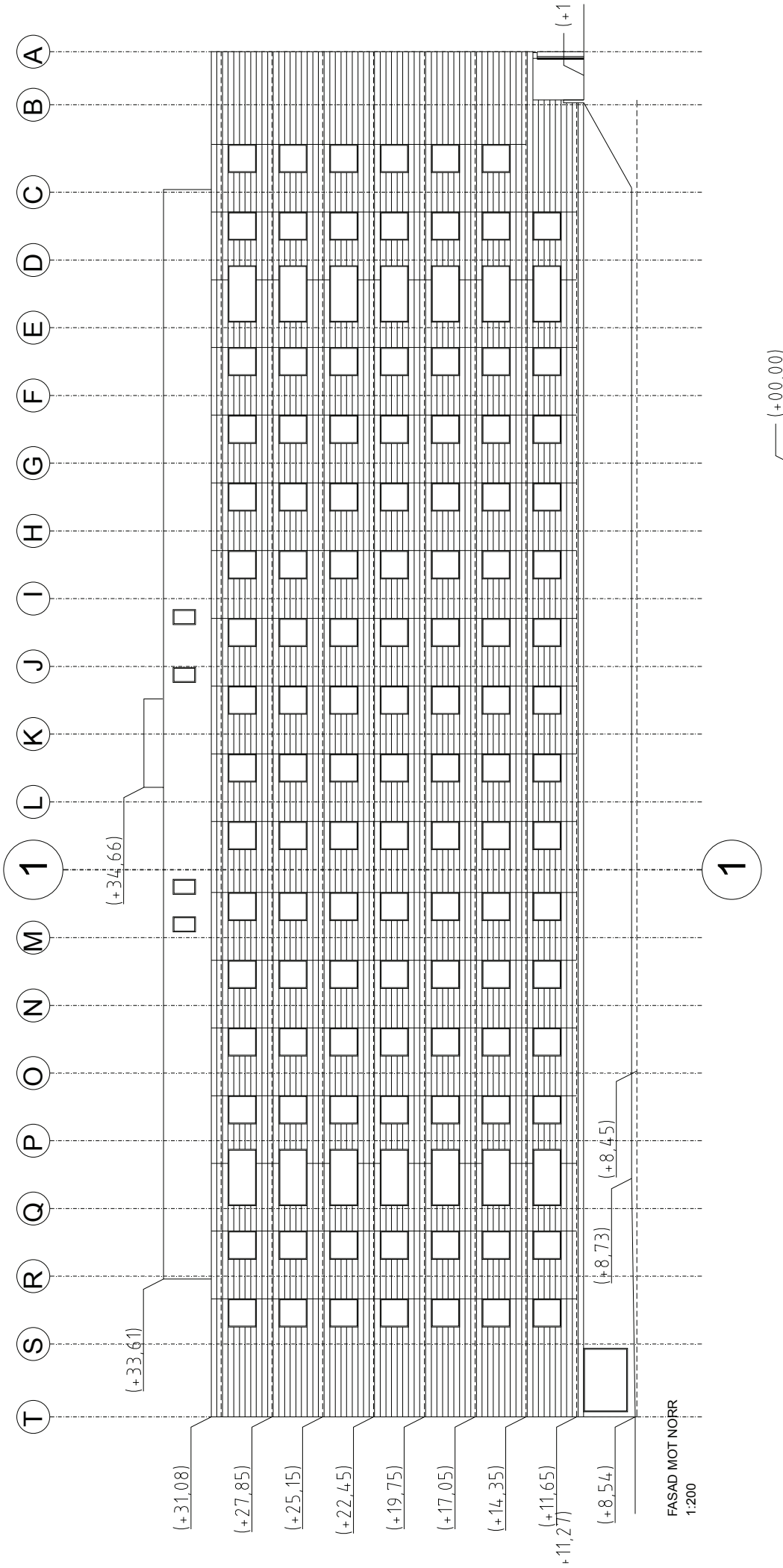




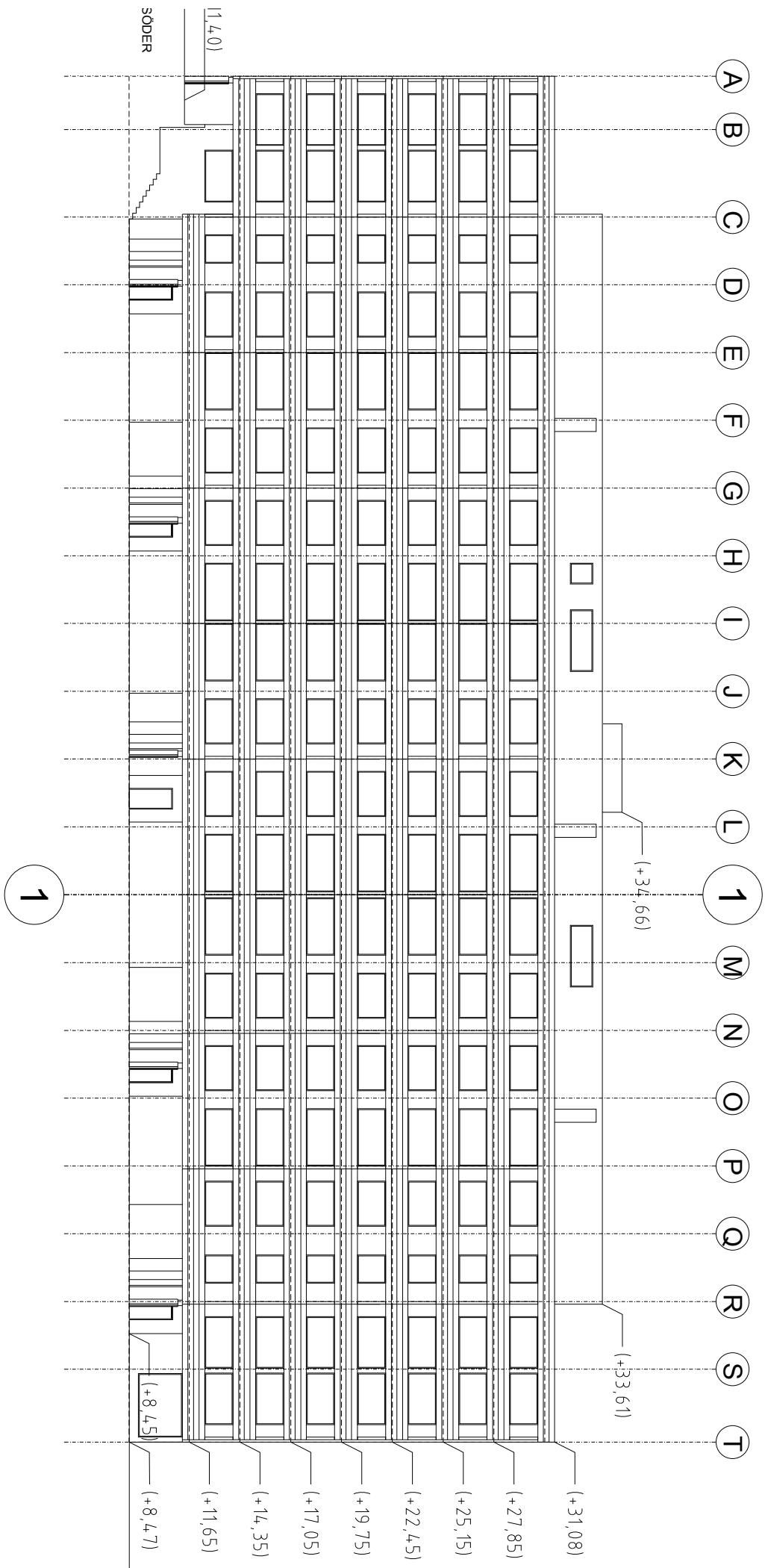
Plan first to fifth floor, 1:300



Plan ground floor, 1:300



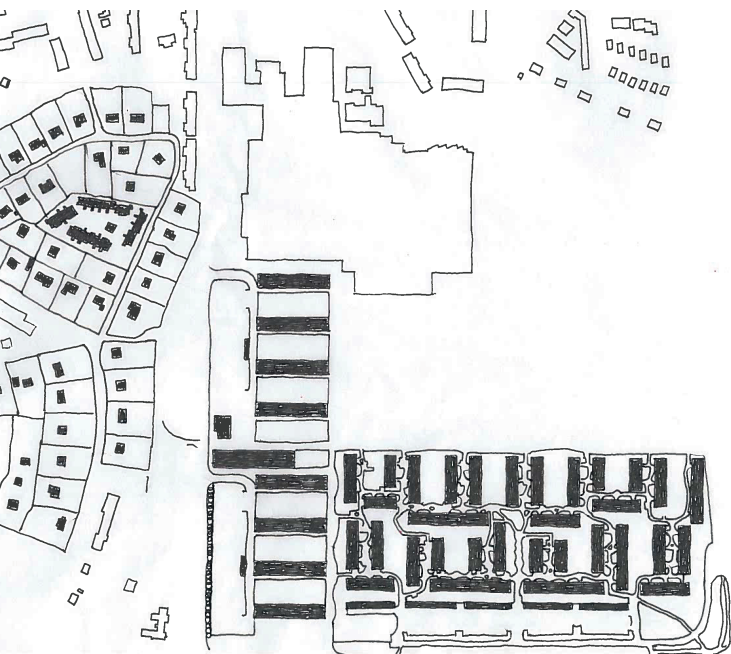
Elevation north, 1:300



Elevation south, 1:300

E. URBAN STRUCTURE ANALYSES AND MENTAL MAPS

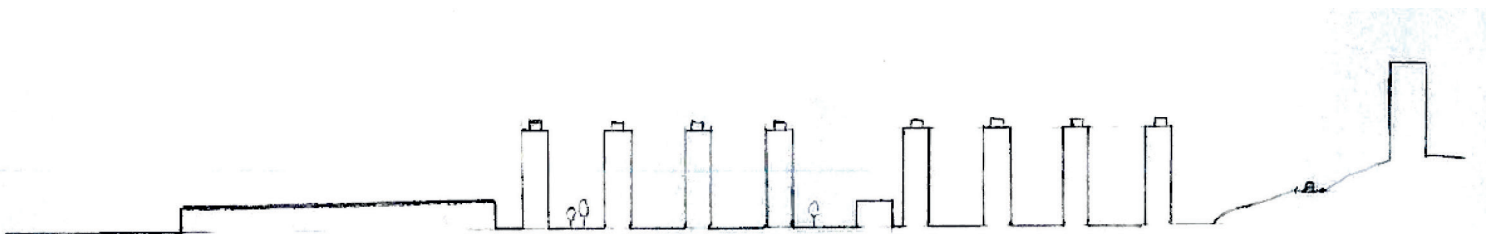
Analyses inspired by SAVE (Stenak 2011) and Lynch (1960). Drawings courtesy of the design team.



Buildings and their associated outdoor spaces



Walking paths around the blue houses



North-south section of Fyrklövern through the blue houses.

F. CASE STUDY PROPOSAL DRAWING MATERIAL

Plans and elevations of the case study proposal for transformation of the blue houses in Fyrklövern, Upplands Väsby. West elevations are not included but are similar to east elevations.

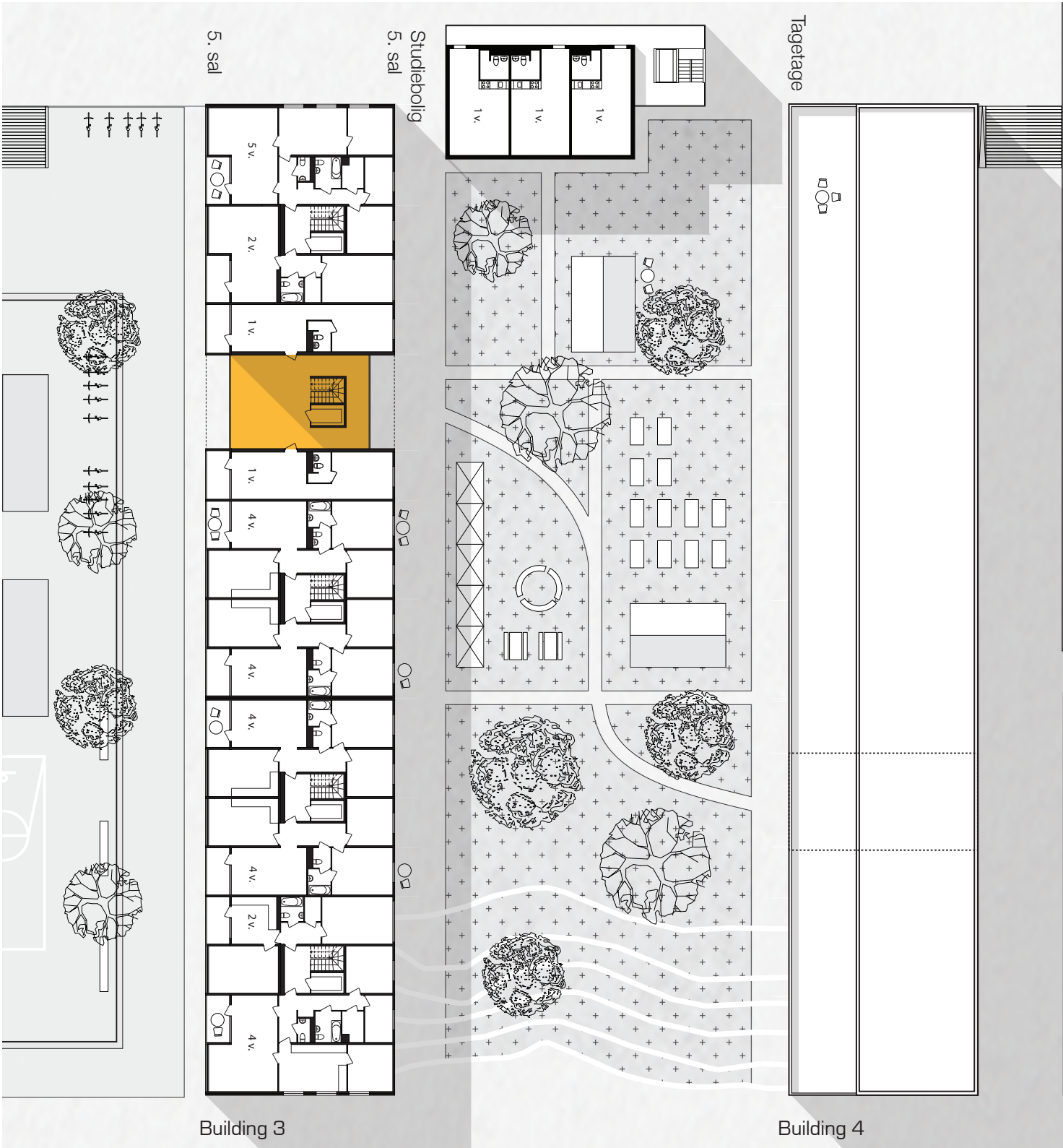


Building 1

Plan ground floor, 1:400

Building 2

Plan first floor, 1:400



Building 3

Plan fifth floor, 1:400

Building 4

Plan roof, 1:400



Elevation north, 1:400



Building 1

Elevations east, 1:400

Building 2



Elevation south, 1:400



Building 3

Building 4

G. STED NETWORK CONFERENCE POSTER AND DISCUSSION GROUP HAND-OUT

This poster was presented by the author at the Nordic Built Sustainable Transformation & Environmental Design (STED) Network Conference at the Norwegian University of Science and Technology (NTNU), Trondheim, Norway, on 9 June 2016.

Research question

How can a design process be supported to secure more socially sustainable solutions in the transformation of Nordic post-war social housing projects?

- What is social sustainability, what characterises socially sustainable solutions and how can the concept be made more tangible?
- How can social sustainability be evaluated and/or quantified and how can this inform a design process?
- How can a design process be organised in order to include the social dimension?

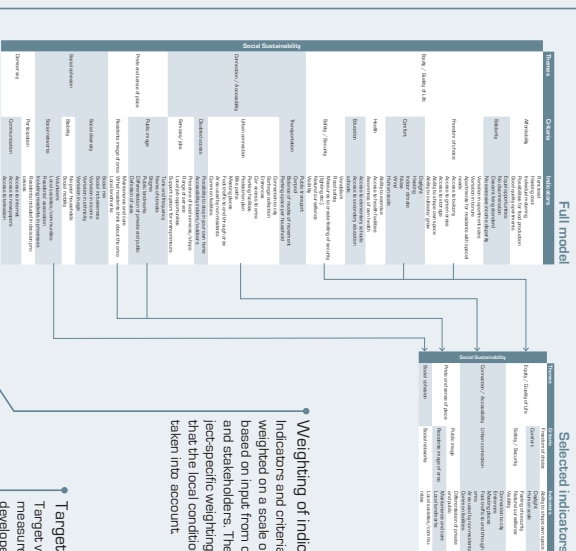
Operation

Selection of indicators

Indicators and criteria are selected based on input from designers and stakeholders. The extensive list of indicators is narrowed down to a more concrete list. The selection can be based on:

- Research
- Site visits
- Stakeholder involvement

Stage 1

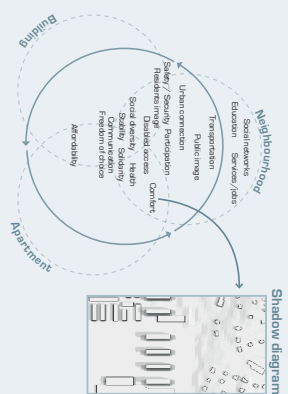


Weighting of indicators
Indicators and criteria are weighted on a scale of 4-10 based on input from designers and stakeholders. The project-specific weighting ensures that the local conditions can be taken into account.

Target values
Target values can be set and measurement scales can be developed for the indicators.

Analysis

Indicators are analysed across different scale levels. In the example below, a shadow diagram informs about the light levels (and this context) in the neighbourhood and apartments.



Stage 2

Analysis of indicators can include:

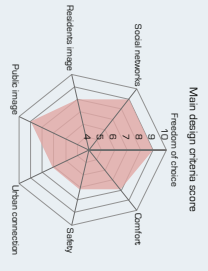
- Analyses of indoor and outdoor comfort
- Daylight analyses
- Connectivity analyses
- Use of GIS
- etc.

Cross-referencing with scales

Themes	Apartment	Building	Neighbourhood
Quality / Quality of life	X		X
Connection / Accessibility			
Pride and sense of place			
Social cohesion			
Democracy			

Scoring of indicators
Based on the analyses and measurement scales, indicators are scored on a scale of 4-10 and alternatives are visualised.

Score	Judgement	Daylight factor
10	Excellent	9%
9	Good to excellent	4.3%
8	Good	3.6%
7	Fair to good	3%
6	Fair	2.3%
5	Acceptable to fair	1.6%
4	Marginally acceptable	1%

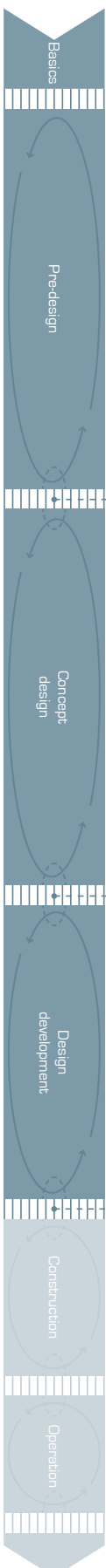


Assessment
Second community involvement. Presentation of ideas. Input from community.

Assessment
Third community involvement. Presentation of design proposals.

Assessment
Fourth community involvement. Presentation of design proposals.

Integrated design process



Tools

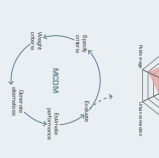
Model of social sustainability indicators



Cross-referencing scale

Themes	Apartment	Building	Neighbourhood
Quality / Quality of life	X		X
Connection / Accessibility			
Pride and sense of place			
Social cohesion			
Democracy			

Multi-criteria decision-making



This handout was used to supplement the author's poster presentation in the subsequent discussion groups to facilitate feedback on the model. Several indicators have since been altered/removed.

Comments

Suggestions for additional content

Themes	Criteria	Indicators	
Equity / Quality of Life	Affordability	Rent level Heating cost Individual metering Possibilities for food production Good quality apartments	
	Solidarity	Equal opportunities No discrimination Decent living standard No excessive income disparity	
	Freedom of choice	Variation in apartment sizes Apartments for residents with special needs Access to balcony Access to green areas Access to storage Ability to shape own space Ability to cultivate/grow	
	Comfort	Daylight Heating Indoor climate Noise Wind Human scale	
	Health	Ability to exercise Access to health facilities Awareness of own health	
	Education	Access to elementary schools Access to secondary education schools	
	Safety / Security	Vandalism Road safety Measures to create feeling of security (lighting etc.) Natural surveillance Visibility	
	Transportation	Public transport Carpool Balance of modes of movement Parking space per household	
	Connection / Accessibility	Urban connection	Connection to city Garbage collection Entrances Car access to area Parking facilities Pedestrian plan Bike paths Meeting places Foot traffic to and through area Area used by non-residents Common facilities
		Disabled access	Possibility to stay in your own home Accessibility indoors/outdoors
Services/jobs		Presence of local services/shops Range of service Local job opportunities Support system for entrepreneurs	
Public image		Tone and frequency Name of streets Stigma Public landmarks Differentiation of private and public Definition of uses	
Pride and sense of place		Maintenance and care What residents think about the area Local landmarks	
Social cohesion	Social diversity	Social mix Social inclusiveness Variation in income Variation in ethnicity Variation in age	
	Stability	No poor households Social mobility	
	Social networks	Volunteers Local societies/communities Residents' association Including residents in processes	
Democracy	Participation	Residents included in decision processes	
	Communication	Access to internet Access to newspapers Access to television	

Themes	Criteria	Indicators
Social Sustainability		

H. DESIGN GUIDE LEAFLET

This leaflet is intended as a condensation of the social sustainability model into a pocket format.

AIM OF RESEARCH

The main objective of this research is to improve the tangibility and practicality of social sustainability in the design process by way of theoretical as well as practical investigations:

Research question:

How can a design process be supported to secure more socially sustainable solutions in the transformation of Nordic post-war social housing projects?

To answer the research question, it looks at how to improve tangibility by looking into existing theory, how to increase measure-ability by looking at existing conceptualisations and evaluation frameworks and how a design process can be organised in order to include the social dimension.

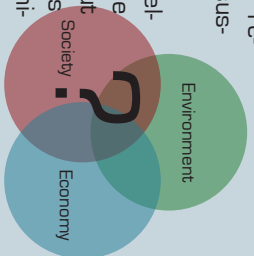
This is done through a literature review and a case study, as well as through interviews and meetings with leading Nordic social sustainability researchers and practitioners

SOCIAL SUSTAINABILITY

Social sustainability is the least researched of the three aspects of sustainability.

The concept is however gaining relevance along with the emergence of new social issues, which sprout as a result of global trends, such as increasing globalization and urbanization.

Although there is no consensus on the definition of social sustainability, one that is often referred to is the following by WACOSS:



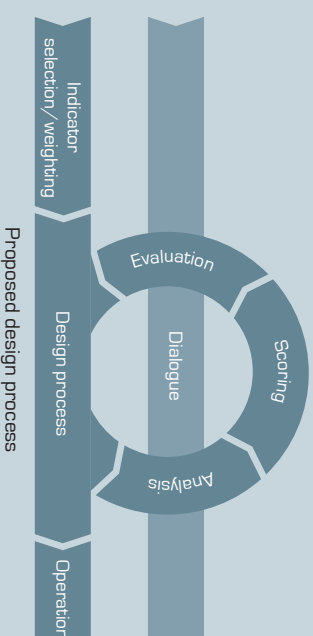
"Social sustainability occurs when the formal and informal processes, systems, structures, and relationships actively support the capacity of current and future generations to create healthy and livable communities. Socially sustainable communities are equitable, diverse, connected and democratic and provide a good quality of life."

Western Australian Council of Social Service

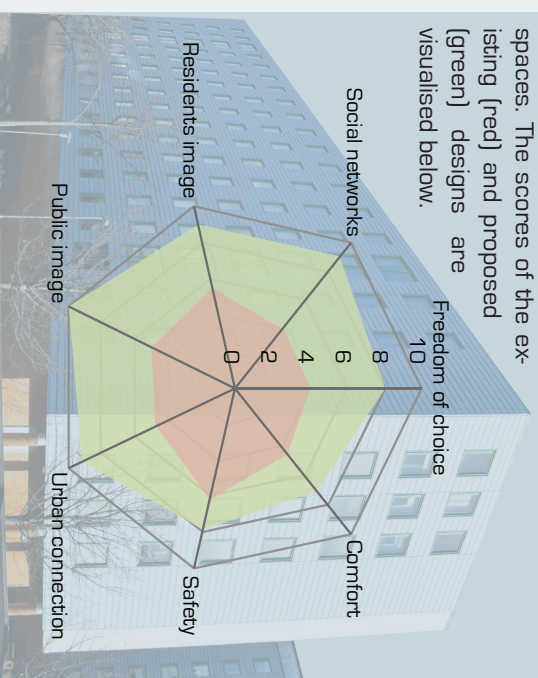
RESULTS: CASE STUDY

The case study is based on the author's participation in a postgraduate-level design project at KADK from 11 February to 22 June 2016, dealing with the transformation of the area known as Fyrklövren in Upplands Väsby north of Stockholm.

Initial research and visits to the site led to the selection of a focus on the space between the buildings, façades and ground floors, which was further underpinned by discussing, selecting, weighting and analysing indicators from the proposed social sustainability model (see opposite side).



The design proposal deals with the identified issues and analysis results on all relevant scales by changing the internal structure of the area, improving integration with the surrounding city, redesigning and reorienting the ground floors and façades, breaking down scales and using level differences and a graduation of private, semi-private and public to introduce a more logical hierarchy of the outdoor spaces. The scores of the existing (red) and proposed (green) designs are visualised below.



DESIGNING SOCIAL SUSTAINABILITY

Towards an operationalization of social sustainability in an integrated design process

Master thesis by Aleksander Probst Otovic
Technical University of Denmark



This leaflet contains a condensation of the findings of the master thesis "Designing Social Sustainability: Towards an operationalization of social sustainability in an integrated design process" by Aleksander Probst Otovic, handed in to the Technical University of Denmark on the 15 July 2016. For more information or for a copy of the thesis, contact the author at s112936@student.dtu.dk

Proposed model of social sustainability including a condensation of the case study results.

Themes	Criteria	Weight	Indicators	Score	Method / Unit of analysis	Qualitative	Quantitative	Tools	Attractors/Solutions	Scale				
										Apartment	Build.	Neigh.	Time scale	
Equity / Quality of Life	Affordability		Rent level											
			Heating cost											
	Freedom of choice		Individual metering											
			Possibilities for food production											
	Comfort		Good quality apartments											
			Variation in apartment sizes											
	Health		Apartment for residents with special needs											
			Access to balcony											
	Education		Access to green/recreational areas											
			Ability to cultivate/grow											
Safety / Security		Daylight												
		Heating												
Transportation		Indoor climate												
		Noise												
Connection / Accessibility		Wind												
		Human scale												
Social cohesion		Ability to exercise												
		Access to health facilities												
Democracy		Awareness of own health												
		Access to elementary schools												
Identity of place		Access to secondary education schools												
		Vandalism removal												
Social diversity		Road safety												
		Lighting												
Participation		Natural surveillance												
		Visibility												
Communication		Public transport												
		Carpool												
Services/jobs		Balance of modes of movement												
		Garbage collection												
Public image		Entrances												
		Parking facilities												
Social networks		Car access to area												
		Pedestrian access												
Democracy		Bike access												
		Area used by non-residents												
Identity of place		Public meeting places												
		Private meeting places												
Social cohesion		Possibility to stay in your own home												
		Accessibility indoors/outdoors												
Participation		Presence of local amenities												
		Range of service												
Communication		Local job opportunities												
		Support system for entrepreneurs												
Identity of place		Name of streets												
		Public stigma (media reports)												
Social diversity		Public landmarks												
		Heritage value												
Participation		Differentiation of private and public												
		Definition of uses (programming)												
Communication		Maintenance and care												
		Resident's opinions												
Social networks		Local landmarks												
		Social mix												
Identity of place		Social inclusiveness												
		Volunteers												
Participation		Local societies/communities												
		Residents' association												
Communication		Residents included in decision processes												
		Access to information/internet												

