

## 4.3 Section three

This part of Hornsgatan stretches from Zinkensdamm to Hornstulls Strand and is 1.1 km long which makes this section the longest of our study. The altitude changes from 22.7 m at Zinkensdamm to 28.2 at the peak of Hornsgatan and then the street tilts downwards to Hornstull which lies at an altitude of 10.7 m. The sharp shift of inclination angle at the peak point is one of the reasons why this is the noisiest part of Hornsgatan in terms of sound quality, obviously in combination with the spatial structure on site.

From a sonic perspective, going from Zinkensdamm to Hornstull is not a particularly pleasant experience. One of the major problems is that the sound levels are so consistently high that it is hard for other sonic qualities to break through the wavelike sonic smog deriving from trucks, buses, trucks and cars. However, when it suddenly grows temporarily quiet and the wave of traffic stops for a while, it is not certain that other site-specific sound will fill this temporary void of relative quietness simply because functions and activities that may generate these simply are not there.

At the beginning of this section, counting from Zinkensdamm, we find ourselves in a narrow street canyon with traffic accelerating upwards or downwards on our one side as the traffic lights turn green. Registering sounds deriving from activities connected to the small businesses situated at ground plan of the building is fairly difficult.

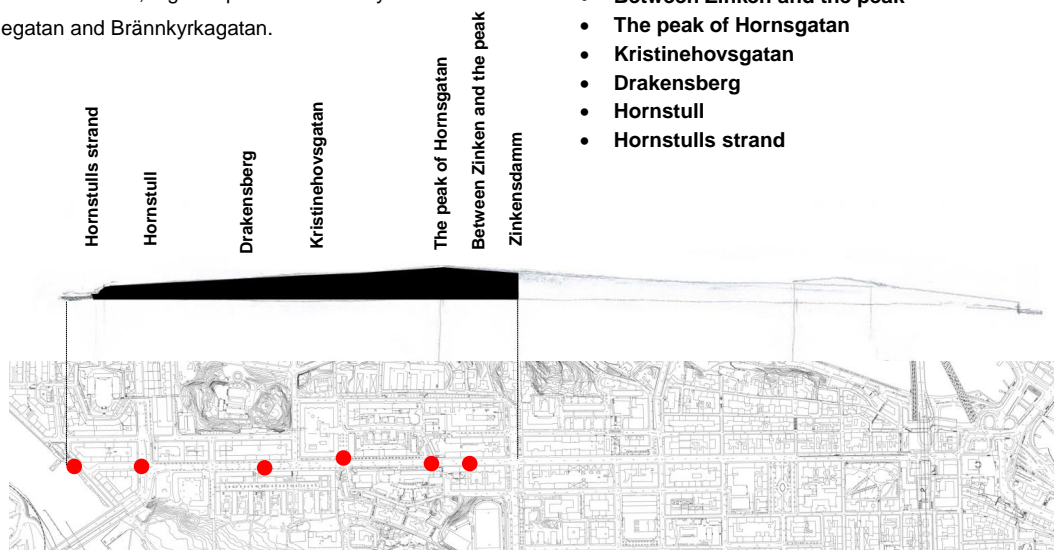
The peak of Hornsgatan is an interesting site, as it is here that Hornsgatan tilts in two directions. The street is lined on one side by a tall wall of rock which continues vertically upwards with the white façade of a modernistic building, while on the other side, a green patch leads away to Ansgariegatan and Brännkyrkagatan.

Hornsgatan is now wider than the former passed parts (30 m instead of the average 24 m) and the residential buildings are partly more modern, which influences the spatial character of this section. Businesses and other site-specific activities are sparse, due to limited available space (a wall of rock and buildings containing long access balconies all the way down to street level and the fact that few people move around in this area or utilize this section of Hornsgatan other than as a passage or transitional space between other parts of Södermalm. Further down and closer to Hornstull, the street gets more crowded as functions, people, traffic and spatial conditions are more concentrated and dense.

Finally, passing the busy traffic junction and transportation node of Hornstull, continuing towards to Lake Mälaren and one end of Hornsgatan, an interesting sonic phenomenon occurs. The act of positioning oneself from the sonic and visual intensity of Hornstull by passing the wide, but not intensively used, last section of Hornsgatan leading to the open spot of Bergsundsstrand, a small square that opens up on the waterfront and the mainland on the other side, provides the attentive listener with an evident sense of sonic release. Suddenly, it is possible to hear the boats, the water, the seagulls, the urban hum from far away, the traffic jam on the bridge of Liljeholmen, the passing bicycle, the sound of footfall and conversations. If you go to the last three-four meters to Hornstulls strand to walk along the seafront, this experience is even more striking. Compilations of facets of spatio-sonic information for section three are available in the appendix.

### Site-specific qualitative sound analyses:

- Between Zinken and the peak
- The peak of Hornsgatan
- Kristinehovsgatan
- Drakensberg
- Hornstull
- Hornstulls strand



Section three: Zinkensdamm altitude 22.7 m, the peak altitude 28.2 m, Hornstull altitude 10.7 m, Hornstulls strand altitude 2.5 m

# Site: Between Zinken and the peak

## Description:

Transitional and narrow passage exposed to high and persistent sound intensities.

## Spatial quality

### Architecture

- Spatially uniform and narrow site sloping upwards.
- Street lane surrounded by mainly 5-6 story 20<sup>th</sup> century buildings.

### Topography

- Sequential change of ground level, rising upwards at a fairly steep angle towards the peak of Hornsgatan.

### Materiality

- Hard and mineral materials (asphalt, pavement, facades).

## Contents

### Activities

- Limited pedestrian use of public outdoor space.
- Transitional site.
- Traffic dominates.

### Functions

- The dominating function of the site concerns transportation.
- Commercial, business and service-related functions are sparse but existing.
- Residential area.

## Temporal features

### Sound quality

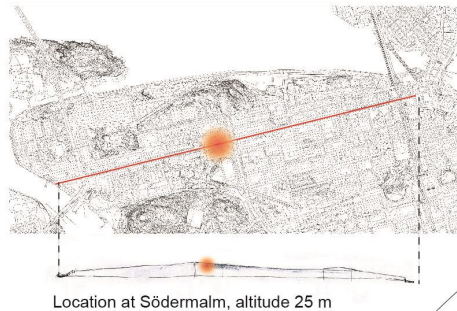
- Persistent domination of high-intensity sounds (traffic).
- Contrasting outdoor sound qualities nearly do not exist.

### Mobility

- The site offers limited possibilities to move closer to or away from its most sound exposed parts.
- The possibility to influence one's distance to various spatio-sonic qualities are restricted on site.

### Accessibility

- There exist two choices for pedestrians to access the site, one in either direction.

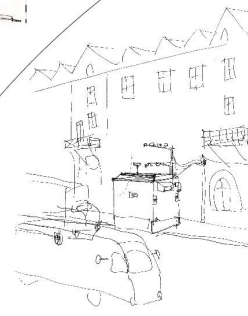


Location at Södermalm, altitude 25 m

Visual, sonic and textual observations,

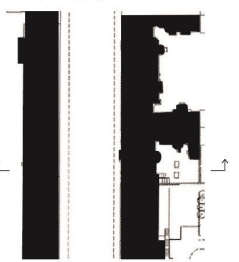


Video recording 360°, 101111, 12:11



The stationary monitoring unit that measures air pollution, 110607

Morphologic plan and section:



Color index describing observed qualities of space and sound:



Intense/ High-intensity sonic situation, mineral and solid materials

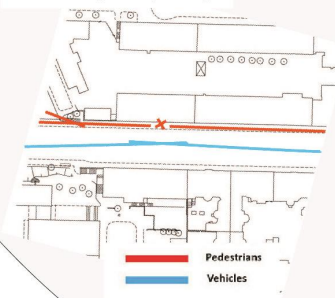


Sound notation from the transparency inventory, 110920, 14:15

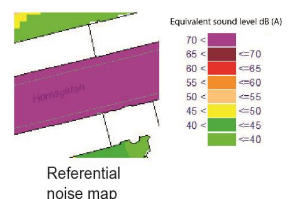
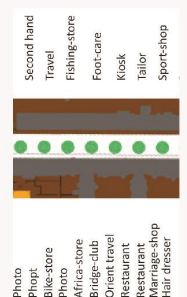


Sound recording 110920, 14:15

Accessibility/ escapeability:



Mapped functions at groundplan, 2010, on an excerpt of the sociotope map

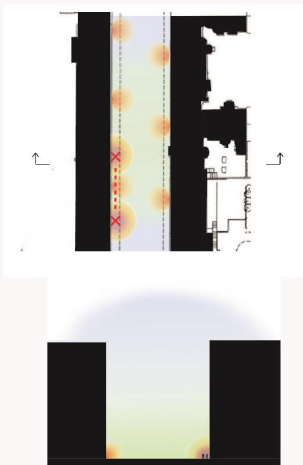


# Qualitative sound analysis

## descriptions and analyses

### Spatio-sonic illustrations:

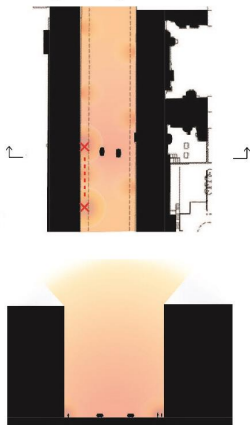
Low-intensity sonic situation



A route of transition and potential positions of experience












High-intensity sonic situation



A route of transition and potential positions of experience



### Key to spatio-sonic illustrations

-  High and persistent sounds generated on site by traffic
-  Background sounds generated at a long distance by human, nature, animal or technical activities
-  Low-intensity sounds generated at a short distance by human, nature, animal or technical activities
-  Abrupt change between low-intensity and high-intensity sounds (blue = background sounds, red = high-intensity and persistent sound coming from traffic, black = the corner of a building)
-  Sounds generated by someone moving or standing still at a possible position of experience (clothes rustling, talking, breathing, walking etc.)
-  Sounds generated by commercial, service-related, cultural or other activities at the ground level of a building, for example people moving in and out of a store or restaurant producing a high level of man made sounds at a specific point.
-  A possible position of experience
-  A route of transition
-  Gradual transition between high, persistent sounds and low-intensity or background sounds

The passage between the communicational node of Zinkensdamm and the peak of Hornsgatan is 155 m long and 24 m wide. The street slopes upwards at a fairly steep angle and the amount of passing traffic is intense and almost never ceases during daytime. As the section is surrounded by a homogenous wall of facades and the motor vehicle traffic such as trucks and buses, accelerates at this point, the sound qualities of this site are very loud and exhausting. The air quality in the area is also an issue here which is why the municipality of Stockholm has a stationary monitoring unit that measures air pollution during the year, that is recurrently exceeded.

The sonic experience while walking here is intense as no space is left for relaxation or contrasting events to take place that can be sonically perceived. Most pedestrians appear to pass through as quick as possible, as the situation when staying longer than necessary is tiresome. There are some small-sized commercial and service related activities at street level at each side of the passage which attract visitors, however these are more common closer to Zinkensdamm. The sidewalks are mainly utilized by pedestrians for passing by or paying a visit to any of the small business, and are not often utilized for strolling around at slow pace.

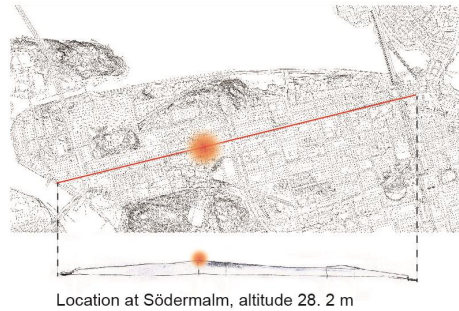
As the availability to other contrasting sound qualities in the immediate outdoor surroundings is non-existent, the peak of Hornsgatan and spatially open character Zinkensdamm offers a sense of release from this severely sound exposed part of the case study.



# Site: The peak of Hornsgatan

## Description:

### Peak point of Hornsgatan



## Spatial quality

### Architecture

- Spatially variegated site, long distance vision.
- Mix of building types from several centuries and decades.
- Nature and natural rock structures are present on site.

### Topography

- Abrupt and smooth change of ground level.
- "Rock wall" (approx. 6-7m).

### Materiality

- Hard and soft materials mixed (grass, trees, stonewall, asphalt).
- Nature/mini-park.

## Contents

### Activities

- Limited pedestrian use of public outdoor space.
- Transitional site.
- Traffic dominates.
- Recreational activities.

### Functions

- The dominating function of the site has a transportational and transitional character.
- Commercial and business related functions are sparse but existing.
- Site containing several schools and preschools and a care center for the elderly. Residential area.
- Recreation, though limited.

## Temporal features

### Sound quality

- Predomination of high-intensity sounds (traffic).
- Temporal, fairly long breaks of relative silence.
- Less dominant sound qualities are existent but not numerous.

### Mobility

- The site offers several possibilities to move closer to or away from its most sound exposed parts.
- The possibility to influence one's distance to various spatio-sonic qualities are manifold but not numerous due to morphologic structure and contents on site.

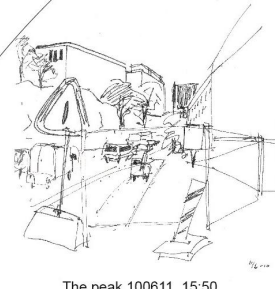
### Accessibility

- There exist several choices for pedestrians to access the site. One path is not attainable for disabled (stairs leading up to Hornskroken).

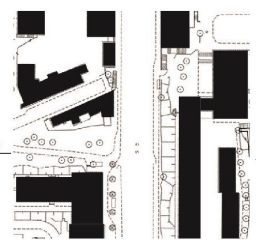
Visual, sonic and textual observations,



Video recording  
360°, 101111, 12:18



Morphologic plan and section:



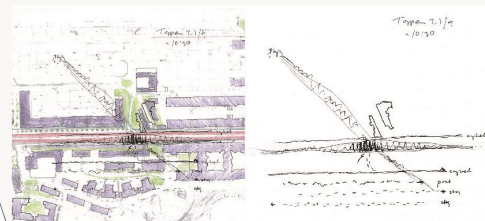
The peak 100611, 15:50

Color index describing  
observed qualities of  
space and sound:

	<b>Green passage</b> Low and high-intensity sonic situation, green and porous materials
	<b>The peak, near street lanes</b> Low and high-intensity sonic situation, mineral and solid materials

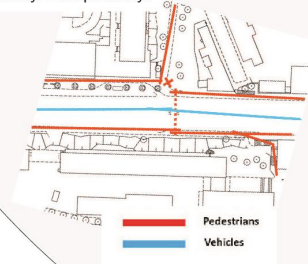


Sound notation from the transparency inventory, 110921, 10:30

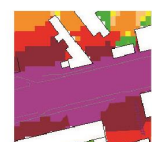
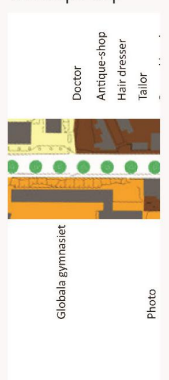


Sound recording  
110921, 10:30

Accessibility/ escapeability:



Mapped functions at  
groundplan, 2010,  
on an excerpt of the  
sociotope map



Referential  
noise map

Equivalent sound level dB (A)

70 <	≤ 70
65 <	≤ 65
60 <	≤ 60
55 <	≤ 55
50 <	≤ 50
45 <	≤ 45
40 <	≤ 40



# Qualitative sound analysis

## descriptions and analyses

### Spatio-sonic illustrations:

The site is the highest at Hornsgatan with an altitude of 28.2 m above sea level, containing a variety of experiential qualities (spatial quality, content and temporal features). At one side, a rock wall raises high above Hornsgatan (approx. 15 m), on which a modernistic building exposes its white facade. On the other side, a green passage of decayed park-like character, leads away from the drivers lane. In one corner of the site an one-story house from the 18<sup>th</sup> hundred century elevated some 4 m above street level, hosts a preschool. The site can be accessed and departed from at several different angles which makes it flexible in terms of mobility and accessibility.

The area has a transitional character and is not well-frequented by people staying here for a longer period of time. Depending upon how the traffic flows and the way its movement is controlled by the traffic lights, the sound quality on site clearly shifts between high and low-intensity sounds giving the site a certain dynamic character. When the hum and buzz at Hornsgatan are very intense at the peak point, walking upwards through the green passage evokes a sense of sonic release when changing one urban sound quality for another.

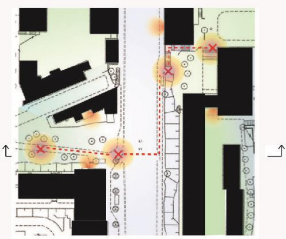
Coming from either direction of Hornsgatan and reaching the peak also provides a sense of release, visual as well as sonic, as the view opens up and the mono-sonic domination of traffic temporally ceases. This site is full of contrasts both visual and aural, which provides the visitors, the passers-by, and the dog owners with a possibility to have a variegated experience in comparison to the sound quality of the immediate surroundings.

The site is interesting even though sound levels are partially high, as it provides spatial, content-wise and temporally bound possibilities to have a variegated experience.

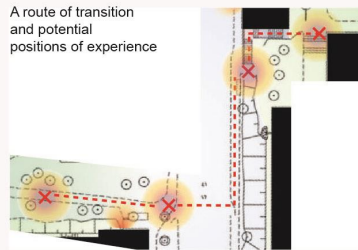
Variations in the morphologic structure of the site including differentiations of materiality and topography together with the differentiation between two opposite sonic states, gives the site a certain dynamic character that contrasts the surrounding context.

However, much could be done to further increase already existing qualities as well as decreasing others.

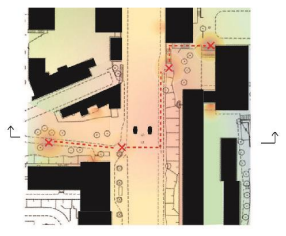
### Low-intensity sonic situation



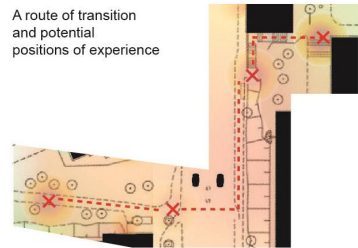
### A route of transition and potential positions of experience



### High-intensity sonic situation



### A route of transition and potential positions of experience



### Key to spatio-sonic illustrations

- High and persistent sounds generated on site by traffic
- Background sounds generated at a long distance by human, nature, animal or technical activities
- Low-intensity sounds generated at a short distance by human, nature, animal or technical activities
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- A possible position of experience
- A route of transition
- Gradual transition between high, persistent sounds and low-intensity or background sounds

# Site: Kristinehovsgatan

## Description:

**Spatially open, variegated and highly sound exposed site with accessible contrasting sound qualities at close .**



Location at Södermalm, altitude 18 m

## Spatial quality

### Architecture

- Spatially variegated site with open character.
- Building types from the 1930s and onwards with a predomination of structures from the nineteen sixties.
- Visual connection with distant sites and greenery.

### Topography

- Change of ground level (ca. 7 m down) at the south side of Hornsgatan, accessed by a flight of stairs.
- Hornsgatan slopes down towards Hornstull in an outstretched but not very steep angle.

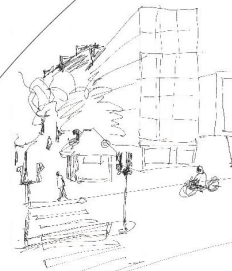
### Materiality

- Hard and mineral materials near Hornsgatan and a mixture of hard and soft materials at the inner yard of Plankan.
- Visual contact with nature/ park (Tantolunden).

Visual, sonic and textual observations,

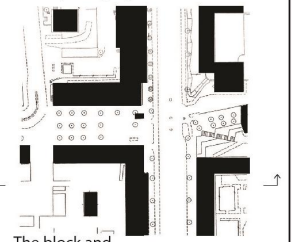


Kristinehovsg.  
101111, 12:35



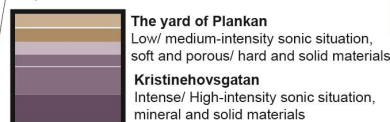
Kristinehamnsgatan,  
110607, 12:30

Morphologic plan and section:



The block and courtyard of Plankan

Color index describing observed qualities of space and sound:



## Contents

### Activities

- Limited pedestrian use of public outdoor space.
- Transitional site.
- Traffic dominates.
- Limited business and service related activities.

### Functions

- Transportation and communication (Kristinehovsg.).
- Sparse cultural, commercial and business related functions, though existing.
- Residential area.
- Recreational and restorative qualities (the block of Plankan).

## Temporal features

### Sound quality

- Predomination of high intensity sounds (traffic).
- Temporal, fairly long breaks of relative silence.
- Less dominant sound qualities are existent but not numerous near Hornsgatan but numerous at the inner yard of Plankan.

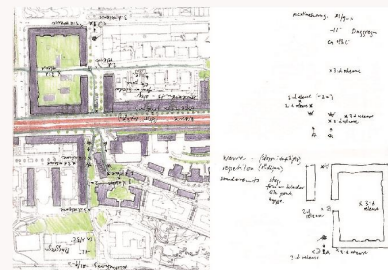
### Mobility

- The site offers several possibilities to move closer to or away from its most sound exposed parts.
- The possibility to influence one's distance to various spatio-sonic qualities are several because of the morphologic structure and contents on site.

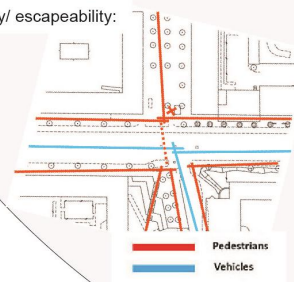
### Accessibility

- There exist several choices for pedestrians to access the site. One path is not attainable for disabled (stairs leading down to Drakensberg and Tanto).

Sound notation from the transparency inventory, 110921, 11:00

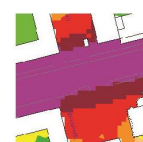
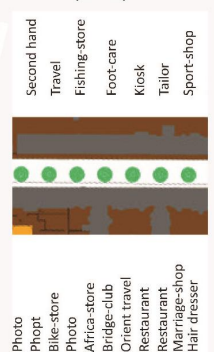


Accessibility/ escapeability:



Sound recording  
(Kristinehovsgatan,  
110921, 11:00)

Mapped functions at groundplan, 2010, on an excerpt of the sociotope map



Referential noise map

Equivalent sound level dB (A)

70 <	≤70
65 <	≤65
60 <	≤60
55 <	≤55
50 <	≤50
45 <	≤45
40 <	≤40

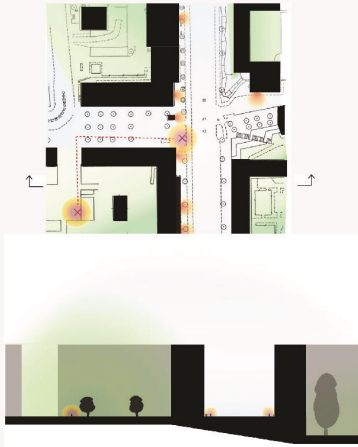


# Qualitative sound analysis

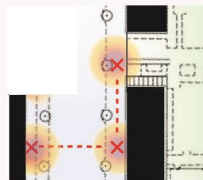
## descriptions and analyses

### Spatio-sonic illustrations:

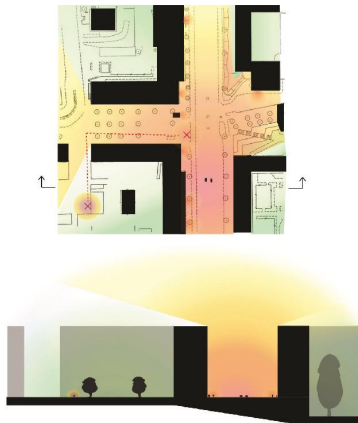
#### Low-intensity sonic situation



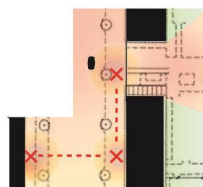
A route of transition and possible positions of experience



#### High-intensity sonic situation



A route of transition and possible positions of experience



### Key to spatio-sonic illustrations

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- A possible position of experience
- A route of transition
- Gradual transition between high, persistent sounds and low-intensity or background sounds

Hornsgatan is broader here with an average width of 37 m. The building stock around the site is erected between the 1930s and 1980s. On one side, Kristinehovsgatan, with a width of 27 m, resembles an esplanade with greenery, only without any activities at street level. It is an esplanade without a vivid life. Facades are closed. Here, the block of “Plankan” is situated, known for its generous inner courtyard of almost 1 hectare accessible to the public but though built on private property. The inner yard is currently under debate because of plans for building a round residential block on the yard which has lead to lengthy discussions and legal processes.

On the other side of Hornsgatan, the esplanade continues visually but not spatially through an open sight line between another residential block from the 1970s (Drakensberg) and buildings from the 1980s and earlier contains offices, a care center for the elderly and apartments. On this side, the site is characterized by a shift of ground level, approx. 7 m.

The entire segment between Hornstull and the peak slopes in a steady angle which has effects on the flow of traffic, which accelerates all the way up to the highest point (if not hindered by the red lights).

However, widening the site of inquiry to also include the nearest vicinity, the site also contain several spots with a different sound quality than the one encountered right at sidewalk of Hornsgatan. For example the courtyard of Plankan hosts a contrasting sound quality as it provide both calmness and quietness at the same time as it is accessible for the general public. On the other side, below the stairs and further away from the edge of the drivers lane, a contrasting and calmer sound quality can be distinguished, colored by the low-intensity sounds of the residential area.

This part of Hornsgatan is sonically affected by the heavy acceleration of cars travelling between the nodes of Zinkensdamm and Hornstull. In the afternoon the traffic is passing by in waves of roaring intensity. Indoor activities at street level are not numerous in the area, though existent particularly at the north side. High sound intensities deriving from traffic might affect how people use the spaces closest to Hornsgatan.



# Site: Drakensberg

## Description:

At the middle of the sloping section between Hornstull and the peak

## Spatial quality

### Architecture

- Spatially uniform site with recurring openings in the wall of access-balcony facades on the south side.
- Mix of building types from last century. Drakensberg is a block of buildings consisting of three 100 meter- long sections (erected in the 1960s), stretching along the south side of Hornsgatan.
- The width of Hornsgatan is 30 m.

### Topography

- Change of ground level down to the inner courts of Drakensberg, some 7 m.
- The site slightly slopes towards Hornstull.

### Materiality

- Mainly hard and solid materials (asphalt, pavement, facades but also newly planted trees).

## Contents

### Activities

- Limited pedestrian use of public outdoor space on the south side and more frequent use of the north side.
- Transitional site.
- Traffic dominates.
- Commercial, business and service-related activities at ground level of mainly the north side.

### Functions

- The dominating function of the site has a transportational and transitional character.
- Commercial and business-related functions are though numerous on one side but rare on the other side of the street.
- Residential area.

## Temporal features

### Sound quality

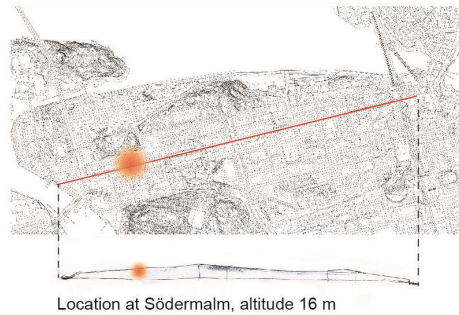
- Predomination of high-intensity sounds (traffic).
- Temporal breaks of relative silence.
- Less dominant sound qualities are existent, in particular on the north side.

### Mobility

- The site offers several possibilities to move closer to or away from its most sound exposed parts.
- The possibility to influence one's distance to various spatio-sonic qualities are manifold but not numerous due to morphologic structure and contents on site.

### Accessibility

- There exist three choices for pedestrians to access/ departure the site. One path is not attainable for disabled (stairs leading down to Drakensberg).

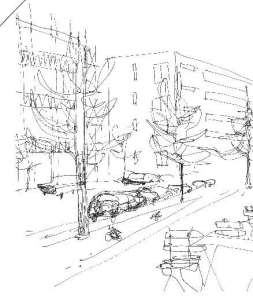


Location at Södermalm, altitude 16 m

Visual, sonic and textual observations,

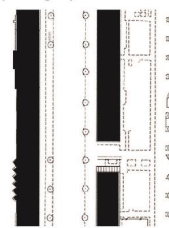


Drakensberg, 101111, 12:50



Hornsgatan/ Drakensberg, 110607, 12:30

Morphologic plan and section:



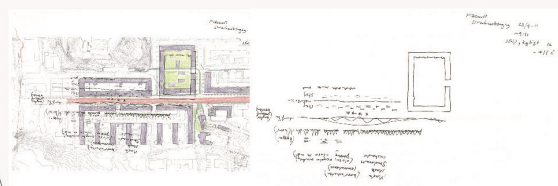
Color index describing observed qualities of space and sound:



Intense/ High intense sonic situation, mineral and solid materials

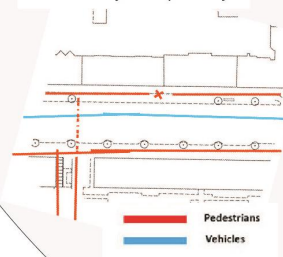


Sound notation from the transparency inventory, 110923, 09:30

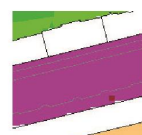
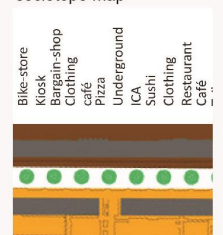


Sound recording 110923, 09:30

Accessibility/ escapeability:



Mapped functions at groundplan, 2010, on an excerpt of the sociotope map



Referential noise map

Equivalent sound level dB (A)

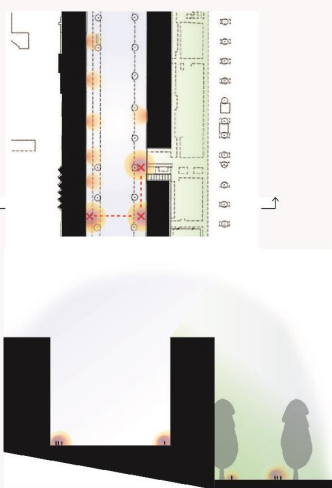
70 <	<=70
65 <	<=65
60 <	<=60
55 <	<=55
50 <	<=50
45 <	<=45
40 <	<=40

# Qualitative sound analysis

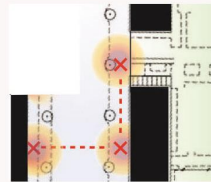
## descriptions and analyses

### Spatio-sonic illustrations:

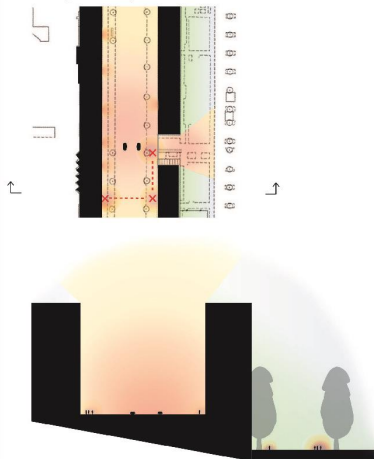
#### Low-intensity sonic situation



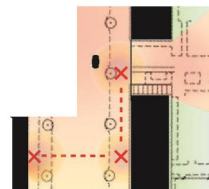
A route of transition and possible positions of experience












#### High-intensity sonic situation



A route of transition and possible positions of experience



### Key to spatio-sonic illustrations

-  High and persistent sounds generated on site by traffic
-  Background sounds generated at a long distance by human, nature, animal or technical activities
-  Low-intensity sounds generated at a short distance by human, nature, animal or technical activities
-  Abrupt change between low-intensity and high-intensity sounds (blue = background sounds, red = high-intensity and persistent sound coming from traffic, black = the corner of a building)
-  Sounds generated by someone moving or standing still at a possible position of experience (clothes rustling, talking, breathing, walking etc.)
-  Sounds generated by commercial, service-related, cultural or other activities at the ground level of a building, for example people moving in and out of a store or restaurant producing a high level of man made sounds at a specific point.
-  A possible position of experience
-  A route of transition
-  Gradual transition between high, persistent sounds and low-intensity or background sounds

Right at the midpoint between Hornstull and the peak of Hornsgatan, the street is around 30 m wide and the building stock stretches over several of the last century's decades. A building complex from the 1960s is a prominent architectural feature on site. The block of Drakenberg stretches some three hundred meters along one side of the street, offering limited activities at ground level.

As Hornsgatan makes an overall change of ground level of some 18 m at a 700 m distance, the site is slightly sloping. This situation together with the intense traffic flows that characterize this section (Ringvägen at Zinkensdamm is a natural outflow for vehicles coming from Hornstull), turns this whole section into a rather problematic one according to matters of sound quality.

The north side of the street contain a variety of commercial and service-related businesses as well as an entrance/exit to the metro system that attract people and creates a certain vivid street life at this point. In the recurrent breaks of traffic flow, these actions and activities connected to street life, create a contrasting low-intensity sound quality that is possible to take part in and experience while passing by or remaining for some time on site.

As the street canyon here is wider than the average distance of 24 meter closer to Slussen, enables for pedestrians and other users of urban public outdoor space to be slightly more separated from the intense drivers lanes, having the possibility to take part in other spatio-sonic qualities on site of a more low-intensity character.

The change is subtle, however it is possible to distinguish it on site. This phenomenon is verified by the number of clients actually sitting outside restaurants and bars in spite of severe and exhaustive sound intensities coming from the passing traffic.

Even small differentiations in the urban structure in relation to the present activities on site, may offer small yet perceivable changes in the perception and experience of urban sonic space. These changes are possible to distinguish particularly in comparison to other contrasting spatio-sonic qualities on site.



# Site: Hornstull

## Description:

**Communicational junction.**  
**Beginning/end of Hornsgatan**

## Spatial quality

### Architecture

- Spatially open site.
- Mix of building types from several centuries surrounding a four-way crossing.
- Hornsgatan continues on the other side of Långholmsgatan, but is here de-connected from the dense flow of traffic.

### Topography

- Flat ground though the inclination down to the waterline continues at the other side of the crossing down to Hornstull strand.

### Materiality

- Hard and solid materials (asphalt, pavement, facades).

## Contents

### Activities

- Intense pedestrian use of public outdoor space.
- Transitional site, communicational node.
- Traffic dominates.
- Commercial, business and service-related activities are numerous in the area at large.
- Cultural and recreational activities exist at a close distance.

### Functions

- The dominating function of the site concerns transportation and communication.
- Commercial, business and service related functions are numerous in the area.
- Residential area.
- Schools and preschools in the neighborhood.
- A care center for the elderly at Hornsgatan, close to Hornstull.

## Temporal features

### Sound quality

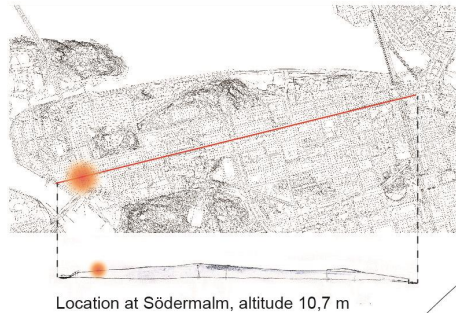
- Predomination of high-intensity sounds (traffic).
- Temporal short breaks of relative silence.
- Less dominant sound qualities are existent and fill in the recurrent gaps of "silence".

### Mobility

- The site offers several possibilities to move closer to or away from its most sound exposed parts.

### Accessibility

- There exist several choices for pedestrians and others to access the site.

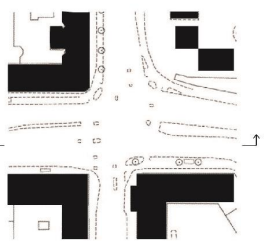


Visual, sonic and textual observations,

Video recording 360°,  
101111, 13:06



Morphologic plan and section:



Color index describing  
observed qualities of  
space and sound:



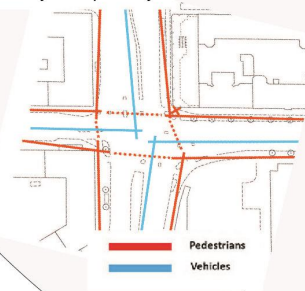
Intense/ High-intensity  
sonic situation,  
mineral and solid materials



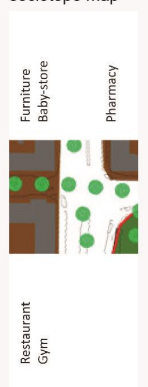
Sound notation from the transparency inventory, 110923, 12:00



Accessibility/ escapeability:



Mapped functions at  
groundplan, 2010,  
on an excerpt of the  
sociotope map



Equivalent sound level dB (A)

70 <
65 <
60 <
55 <
50 <
45 <
40 <

Referential  
noise map

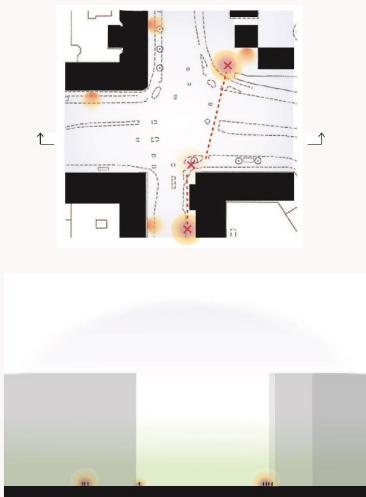


# Qualitative sound analysis

## descriptions and analyses

### Spatio-sonic illustrations:

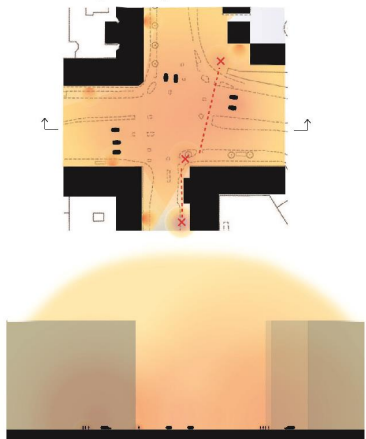
#### Low-intensity sonic situation



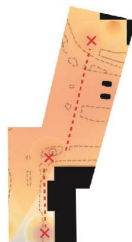
A route of transition  
and possible  
positions of experience












#### High-intensity sonic situation



A route of transition  
and possible  
positions of experience



### Key to spatio-sonic illustrations

-  High and persistent sounds generated on site by traffic
-  Background sounds generated at a long distance by human, nature, animal or technical activities
-  Low-intensity sounds generated at a short distance by human, nature, animal or technical activities
-  Abrupt change between low-intensity and high-intensity sounds (blue = background sounds, red= high-intensity and persistent sound coming from traffic, black= the corner of a building)
-  Sounds generated by someone moving or standing still at a possible position of experience (clothes rustling, talking, breathing, walking etc.)
-  Sounds generated by commercial, service-related, cultural or other activities at the ground level of a building, for example people moving in and out of a store or restaurant producing a high level of man made sounds at a specific point.
-  A possible position of experience
-  A route of transition
-  Gradual transition between high, persistent sounds and low-intensity or background sounds

This is the site where Hornsgatan officially ends. Hornstull is situated at a strategic point where several transportation systems are overlaid. The site serves as a communicational node for this part of the city. As this is a junction in terms of transportation gives a certain character to the area, particularly at street level. Very loud sound intensities are predominant at the expense of other less prominent sounds. The area around Hornstull hosts a large amount of services, commercial activities as well as minor culture institutions, and is also densely populated. In recent years Hornstull has undergone a physical facelift and is currently more popular than ever before. Hornstull is characterized by a vibrant and constantly ongoing urban life, people are visible on the streets and move in and out of the buildings, in and out of the transportation systems and up and down Hornsgatan in either direction. This is the entry/exit to Hornsgatan for traffic coming from or going to the southern and northern parts of Stockholm. In terms of sound, Hornstull is a site largely affected by the site's function as a communicational node in the area. Sound coming from motor vehicles, rising and falling as the traffic passes by or stops at the traffic lights for then accelerating up to a convenient speed, are highly intense and physically unavoidable at this point. In the short breaks of relative "silence", less intense sound qualities coming from people on their move, are breaking through as well as the sounds deriving from one's own activities (walking, interacting, talking, clothes rustling etc.). Paying attention to minor sounds, the sonic focus here tend to lie on events/ activities happening in the close vicinity of the attentive listener/observer at this spot, as the sounds coming from events/ activities further away are drowned by more dominant sound intensities.

Even though, the area around streets of Hornstull is popular, well visited and vibrant, the dimension of minor sounds is suppressed during most of the time. As the area around the crossing of Hornstull (Hornsgatan/Långholmsgatan) is not a site for recreation or revitalization, the recurrent waves of intense sound masses, is not a major problem for a temporal pedestrian passing by or only staying for a short while. However, for those utilizing the exterior public space on a daily basis and those living in the area, the situation is problematic. This group is dependent upon alternative urban environments in the neighborhood of contrasting sonic qualities compared to the one near the junction, to acquire a recreational, revitalizing experience of space and sound while moving through and taking part in public outdoor urban space.

# Site: Hornstulls strand

## Description:

The very end of  
Hornsgatan

## Spatial quality Architecture

- Spatially open site with free sightlines to the horizon.
- Five-six story buildings surround the end of the street at two sides.
- The site has two levels of which one connects to the street and one is a recreational space some 4 m down by the waterline (Hornstulls strand).

## Topography

- A site at two levels, one at the end of Hornsgatan at an altitude of ca 8 m, and one down by the waterline (altitude 2,5 m).

## Materiality

- Hard and solid materials (asphalt, pavement, facades) mixed with some greenery above Hornstulls strand.
- Down by the waterline; soft and porous materials (gravel, grass, trees).

## Contents

### Activities

- Medium intense pedestrian use of public outdoor space.
- Recreational site.
- Commercial, business and service-related activities are numerous in the area, though not extensive.
- Cultural activities.

### Functions

- The dominating function of the site concerns recreation, revitalization and culture.
- Residential area.
- Schools and preschools in the neighborhood.

## Temporal features

### Sound quality

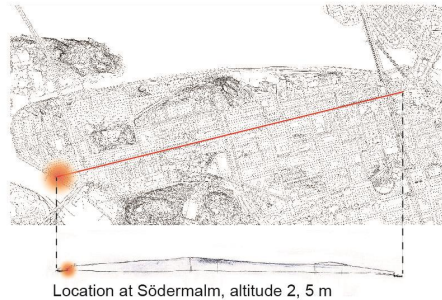
- Predomination of low-intensity sounds (people, nature, animals).
- Relative silence dominates, traffic only passes by temporally.
- High-intensity sounds exist at a distance and mainly constitute a sonic background.

### Mobility

- The site offers several possibilities to move closer to or away from various sound qualities in the neighborhood.

### Accessibility

- There exist three choices for pedestrians and others to access the two sites. At the above level, three directions are accessible for everyone and at Hornstulls strand the options are two along the waterline and one is mounting the 4 m edge between the two ground-levels through a flight of stairs.



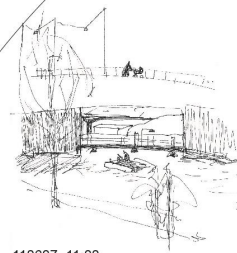
Location at Södermalm, altitude 2, 5 m

Visual, sonic and textual observations,

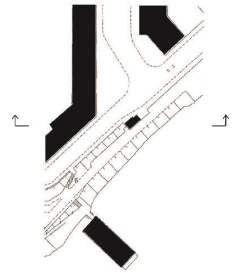
Video recording 360°,  
101111, 13:25



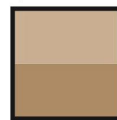
Morphologic plan and section:



110607, 11:00



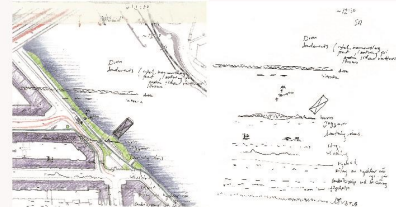
Color index describing  
observed qualities of  
space and sound:



Low/ medium-intensity  
sonic situation,  
soft and porous materials

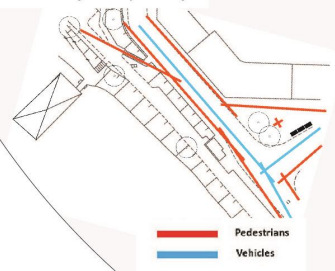


Sound notation from the transparency inventory, 110923, 12:30

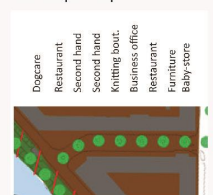


Sound recording  
110923, 12:30

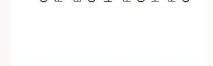
Accessibility/ escapeability:



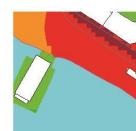
Mapped functions at  
groundplan, 2010,  
on an excerpt of the  
sociotope map



Dogcare  
Restaurant  
Second hand  
Second hand  
Knitting bout.  
Business office  
Restaurant  
Furniture  
Baby store



Clothing  
Restaurant  
Bakery  
Clothing  
Knit  
Fishing store  
Clothing  
Half dresser  
Restaurant  
Gym



Equivalent sound level dB (A)

70 <	60 <
65 <	55 <
60 <	50 <
55 <	45 <
50 <	40 <
45 <	40 <
40 <	40 <

Referential  
noise map

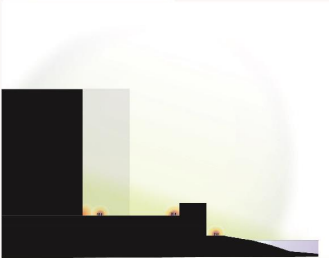
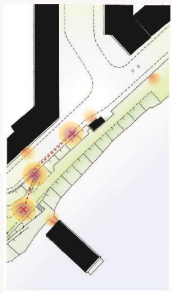


# Qualitative sound analysis

## descriptions and analyses

### Spatio-sonic illustrations:

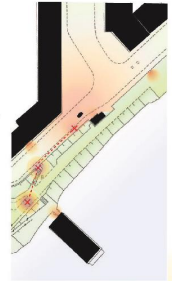
#### Low-intensity sonic situation



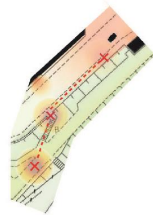
A route of transition and possible positions of experience



#### High-intensity sonic situation



A route of transition and possible positions of experience



### Key to spatio-sonic illustrations

- High and persistent sounds generated on site by traffic
- Background sounds generated at a long distance by human, nature, animal or technical activities
- Low-intensity sounds generated at a short distance by human, nature, animal or technical activities
- Abrupt change between low-intensity and high-intensity sounds (blue = background sounds, red = high-intensity and persistent sound coming from traffic, black = the corner of a building)
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- Sounds generated by commercial, service-related, cultural or other activities at the ground level of a building, for example people moving in and out of a store or restaurant producing a high level of man made sounds at a specific point.
- A possible position of experience
- A route of transition
- Gradual transition between high, persistent sounds and low-intensity or background sounds

This is where Hornsgatan spatially and formally end. The short length of 100 m between Hornstull and Hornstulls strand, offers a huge change of physical, functional and sonic character. This section is detached from the functional mission of being an important traffic artery, as goes for the rest of Hornsgatan. Instead it only hosts a few vehicles every now and then and focuses on recreational values instead of communicational ones.

At the very end, the street makes a turn towards Bergsunds strand. Here the site opens up towards the water of Mälaren and area of Liljeholmen on the other side, creating a little square situated above the walker-friendly passage of Hornstulls strand. The sites, both above and below, have openness and free sightlines as well as calmness and relative quietness in common. In particular the site of Hornstulls strand has a high recreational value in the area, popular both for visitors and locals living in the neighborhood.

Here, it is possible to distinguish a variety of sonic qualities. The openness towards the distant horizon, the water, the bridge leading over to the other side together with simultaneous ongoing activities icoming from people doing things like walking, jogging, socializing, dog-walking etc. in combination with the lack of dominant traffic sounds masking other less intensive sounds, are optimal conditions for creating a low-intensity and permitting sound environment.

Coming from the crossing of Hornsgatan/ Långholmmsgatan, radically enhances the difference between these two urban sonic environments. Hornstulls strand has a different and contrasting urban sound quality compared to Hornstull.

The spatial and sonic circumstances provide a situation that can be experienced as a release in contrast to the dense and hasty sound qualities of the buzzing traffic junction some 100 m away. The site-specific sound qualities of Hornstulls strand are important for the neighborhood as a whole seen from a sustainability perspective.

Having access to "both and" instead of "either or" in terms of low sound intensities and high sound intensities, that are physically reachable within a short distance in relation to the dense and exhausting sonic situation in the surrounding area, can be regarded as a positive quality for those living, working and visiting the area.

As long as Hornstull will be a host of heavy traffic, the calmness and relative quietness found a few meters away will continue to be prominently important in terms of providing an alternative urban environment accessible for the general public, where people can find and have access to a rich variation of sound qualities.



#### 4.4 Summarizing analysis of Hornsgatan

Based on the gathered spatio-sonic information and qualitative sound analysis of the chosen case study sites presented on the previous pages, a final summarizing reflection and analysis of the entire street is given in the following section.

As explained at the beginning of the case study chapter, the street can be divided into several sections and sites depending on the experienced and observed quality of sound and space.

The identified tripartite division of Hornsgatan, is directly connected to the experienced sonic synthesis of the entire street. The sonic synthesis is affected by the physical structure of the built environment and relates to the temporal activities and functions existing there more or less recurrently. It is a synthesis experienced by a person, in this case me, situated in and moving through that urban sonic space by feet. From this perspective, section one and two have similarities in terms of function and spatial quality that section three does not embrace in the same way. This difference is a part of what gives Hornsgatan its unique expression and particular identity, which is characterized by having both positive and problematic qualities.

##### Section one and two

On the whole, the first two sections between Götgatan and Zinkensdamm can be regarded as fairly well functioning as the interaction between different sound intensities and sound events coming from various sound sources, are in a fairly good balance in terms of dynamic interplay. In short, the ability to hear and to be heard by someone else at a proximate distance is present in this urban space for a majority of the studied time periods. The amount of traffic is obviously a dominating sonic feature of this site, but still, contrasting sonic events are present and fill in the temporal breaks of a more silent character that recurrently appear during the day as the flow of traffic changes or are regulated by the traffic lights. The spatial character along this section is also variegated. Here it is relevant to mention Puckeln, Maria Magdalena churchyard, Mariatorget, Bysis and Bysistorget. The spatial character affects the behavior of sound on site and beyond and also affects human behavior and presence in the area. Parts of this section have more of a closed character, being a typical street canyon with no or limited possibilities to move away from the present spatio-sonic situation. This situation is partly weak and problematic as one is directly exposed to high

sound intensities coming from the constant waves of traffic at a very close distance which drowns any other sound event. Here it is relevant to mention the strip between Mariatorget and Bysistorget and the strip between Bysistorget and Zinkensdamm - these parts are, however, outweighed by sites of more spatially loose and open character, leaving several choices of moving to and from the specific geographic position. This possibility affects the overall spatio-sonic experience as the act of moving enables the experiencing subject to take part in a variety of contrasting qualities.

The conclusion is that the sound quality of this part of Hornsgatan can be considered as adequate in relation to how it is utilized. These two identified sections are appreciated by the inhabitants as they contain several co-existing activities, usages and functions of different character that are not entirely drowned by the partly intense traffic, just disturbed. However, it is important not to neglect that acceptable sound pressure levels too often are exceeded at Hornsgatan and that the street would of course benefit from lowering the sound pressure levels for the wellbeing of all. At the same time such a change would decrease the exceedingly high levels of toxic air-borne particles emitted from the traffic, providing a better quality of life for everyone in the area.

##### Section three

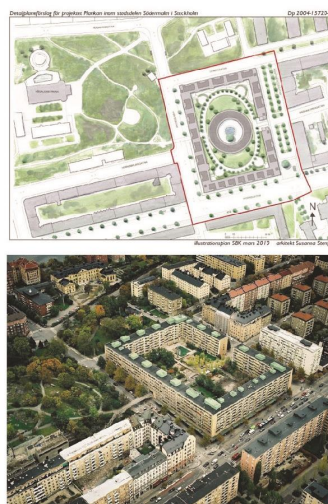
The inventory and spatio-sonic analysis of the thesis points out that the third section of Hornsgatan, between Zinkensdamm and Hornstull, is of another problematic magnitude in terms of urban sound quality than the previously described two sections.

Between Zinkensdamm and Hornstull, the relationship between the physical structure of the built environment and the present activities, actions and functions can be regarded as *not* being in balance or well-functioning from an experiential point of view. Here, human outdoor and indoor activities at ground level are sparse and the function of Hornsgatan as a transportation artery dominates both the visual and aural scene. Human and natural sounds are recurrently drowned, not only disturbed, in highly intense sound masses deriving from traffic. At the same time as the situation repels human and natural sound to emerge and fill up the air in the pauses that do occur regularly due to the frequency of how the traffic lights operated. This implies that in the breaks of relative silence that do in fact occur during the lapse of an ordinary day are very limited.

Being able to access contrasting spaces in terms of sound quality that differs from the dominating sonic state is crucial. Living in this area as a child, or as an elderly or disabled person with a limited radius of movability which raises the question of the importance of availability and access to variegated spaces in a neighborhood. The qualitative inventories and mappings of this section point at a limited access to contrasting sonic spaces in particular between the peak of Hornsgatan and Hornstull, in particular for those who have problems of movability, such as children, the elderly or the disabled. The public park of Tantolunden and the park around the church of Högalid are nearby, but the path is spatially cut off from Hornsgatan due to the change of ground level and dependence upon the usage of stairs to enter into the park areas. The limited ability to take part in other kinds of sonic qualities found in urban public space that function like an interesting, stimulating or calming contrast to the most common and prevailing site-specific sound quality – traffic - is alarming. The described situation puts the publically accessible inner courtyard of the residential block Plankan into the core of this discussion. Current plans of building a round house containing 119 new apartments at the approx. 1-hectare-sized courtyard can be questioned on account of the described situation. Proposing a solution for the area as a whole and for those living and working there, would be to update the currently decayed and worn out courtyard of Plankan into an open and freely accessible site for

recreation calmness and social interaction for everyone regardless of age or physical abilities. Such scenario would of course be of extra value and relevancy as long as the surrounding inferior spatio-sonic situation continues to be severely degraded. However, in case of changed circumstances concerning the surrounding spatio-sonic situation steps could be taken towards a densification of the site by exploiting the open yard. At least from a democratic sound perspective and the right for everyone to choose what kind of sonic environment one wants to linger and live in. It is possible to claim that the qualitative sound analysis of this work has enabled a deepened understanding for the functions and meanings of this site in relation to the area as a whole, by extending the discussion on sound quality and placing it in a site-specific context

The final part of section three, between Hornstull and Bergsundsstrand, has its own character and experiential quality. The busy crossing of Hornstull can be described as a dense sonic wall during weekday daytime. Increasing ones distance to the sonically intense crossing and moving towards the sea along the last strip of Hornsgatan, provides the clear sensation of an apparent transition through evidently changing spatio-sonic qualities. Slowly the tempo goes down and the sonic intensity of the traffic node at Hornstull diminishes in the distance. When approaching the edge of Hornsgatan and walking down to Hornstulls strand just below and by the waterfront, the quick change between two completely very opposing sonic states are obvious. The closeness between these oppositional states in terms of distance makes the act of physical transition into a valuable experiential quality on its own. The meaning and importance of having access to and being able to experience such a change of both the spatial and sonic quality within a very short distance in this highly activated and densely populated urban area, is a subject that according to my opinion, is worth further discussion both at a more general level in for example urban development projects as well as at more graspable site-specific level when dealing with concrete detail solutions in the neighborhood.



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<sup>160</sup> Local plan and aerial photo of the block of Plankan 2010, Stockholm planning office (Stockholms stadsbyggnadskontor) retrieved from [www.stockholmproject.blogspot.se](http://www.stockholmproject.blogspot.se) (161021).

# 5. Synthesis:

## Conclusion and future development

The urban sonic environment is a complex phenomenon created by several interacting components.

Spatial quality, content and temporal features are all aspects that co-create and affect the overall and specific character of urban sound. This intimate relationship is the baseline condition of existence that creates an ever-changing pattern of urban sound, a pattern that cannot solely be communicated through decibel-levels. What this study attempts to add to the common methods for describing and handling the variations of subtle sound qualities in urban environments are complementary tools and strategies for dealing with the invisible and neglected “grey scale” of sound that the bright colors of the noise map do not show or cannot describe.

This work attempts to extend the colorful gradient scheme of a noise map by trying to capture, describe and analyze some of the disparate, contrasting, swift and ephemeral qualities of urban sounds that we meet in our everyday lives in a way that goes beyond common methods. The small yet perceivable changes in the experience of space and sound while moving through the urban weave as well as evident and highly intense changes of the same, are qualities that affect our own specific experience and behavior. These are important urban sonic qualities that affect the way we relate to, behave and participate in the same urban space.

The licentiate thesis attempts to identify and to unfold some of the various qualities of urban sound (human, natural, animal and mechanical), and how these interact and behave in relation to their spatial context, with the intention of enhancing the understanding of this complex phenomenon. The thesis also presents examples of how it is possible to approach, capture and describe sound in the built environment from an extended, yet limited, perspective. Extended in the sense that the main focus is on the explorative search and development of current methods for describing and communicating sound. Limited in the sense that the presented method only involves *one* single perspective (me, the researcher). In conclusion, the presented method only constitutes *one* single example of how such ambition can be achieved. Thus this study is an example that proves that it is possible to add layers of qualitative information that have both meaning and function which extends the current approach to urban sound management and brings forth other perspectives.

This study also shows that it is possible to, through broadened sonic communication, have another kind of discussion on sound, space and experience in the built environment that may lead to other kinds of conclusions and strategies of urban planning and design that would affect the wellbeing of the urban inhabitant.

However, there exist no absolute truths of how to grasp, communicate and deal with sound. Finding meaningful and efficient ways that embrace these complex features of intertwined perspectives; the subjective and the objective, the specific and general, the qualitative and the quantitative, is a veritable challenge that needs to be handled with awareness and respect if we want to build cities, urban areas and local sites that are well-functioning in terms of sound quality from the side of urban inhabitants.

### Tools techniques and strategies

So, what is the practical and useful outcome of this work? To identify, test and evaluate **tools, techniques** and **strategies** that are possible to utilize within practice-based and operative contexts like the architectural and urban planning sector, for example, when describing and communicating the complexity of urban sound, has been central to this challenge. Through constant and recurrent exploration, creation and re-creation, a model has emerged that offers a visual, textual and sonic survey of select spatio-sonic information, in the form of a three-dimensional document containing two-dimensional information as well as a digital document including recorded sounds and videos in the form of a website.

Some of the presented tools techniques and strategies have shown to be of greater importance and relevancy than others and could presumptively be applied in the work of professionals and other disciplines working with the creation of urban sonic space, like for example sketching and mapping techniques as well as the use of certain sound-concepts, textual descriptions and analyses etc. Other tools techniques and strategies have turned out to be as successful at the final stages of the project.



## Spatio-sonic drawings

The tools, techniques and strategies proven to be the most useful and persistent all through the different stages of the spiral-researching process have been assimilated in the final version of the **spatio-sonic drawings**.

These drawings serve as a condensed visual, sonic and textual descriptor and analysis of each studied site along Hornsgatan. The drawings enable reflection, comparison and critical discussion on how space, sound, time and possible physical movement interact and potentially affect us at different levels.

In these compilations, decisions have been taken as to which information is assumed to be the most important to include when performing a qualitative sound analysis of Hornsgatan. The chosen information relates to the three identified parameters of spatial quality, content and temporal features. Important to note is also that the textual analysis of the final compilations builds its argumentation upon all of the made inventories and acquired knowledge generated when studying the sonic environment of Hornsgatan during the course of the project.

The spatio-sonic drawings contain information about the identified **active conditional agents** affecting the qualitative dimension of urban sonic space; **spatial quality**, **content** and **temporal features**.

As stated at the beginning of the thesis, the intention is not to propose a fully set program for how to manage the sonic environment at a severely problematic street in Stockholm, but to find strategies to approach these sonic spaces and discuss the active conditional agents affecting transient and ephemeral sound qualities on site.

In this case, it is the relation between sounds generated by intense traffic flows and sounds coming from other events and activities on site that is central for the analysis with regard to the spatial characteristics. Adding to this the dimension of experience and exposure to these changing urban sound qualities, posing questions like; how it is possible to move within a certain space? Can we access various spaces containing different and sometimes contrasting sound qualities compared to the most dominant ones on site? As this is highly interesting to discuss when also taking into account matters of health and everyone's right to choose what kind of sonic environment one wants to be part of, or not.

## Transdisciplinary communication

Sharing knowledge around these aspects over disciplinary borders may affect design-strategic decisions in urban contexts in a positive way.

This study had its point of departure in a critique of the prevailing domination of noise maps for planning and handling urban sonic space today, and it raises the issue of having a more integrative and holistic approach to sound in dense urban environments as well as striving for creative and practice-based methods of description and operation which may be of relevance for practitioners working with the planning and creation of public urban space at different levels. The noise map is here relevant as one of the necessary tools of description and operation, it cannot, however, be the only one. In this study, the noise map is integrated as a point of reference, a base point around which further and more elaborative discussions can take place along with a co-reading of complementary information on sound space and experience.

To be able to work with the temporal and transient architecture of sound in urban contexts in a conscious and creative way, it is necessary to lift forth and discuss what a well-functioning and sustainable urban sonic environment might consist of, by which components it is created and affected by, and how it may be experienced. To be able to do this we need efficient word and efficient tools to help us in the process of communication between professionals, interests and concerned stakeholders.

## A democratic urban sonic environment

One thing is for certain, the clearly outlined intent upon working with this matter in urban planning should not be about obtaining total or relative silence at any price on behalf of what is actually the main characteristic of a city; its life, its movements and activities. Instead, it should be a matter of conscious planning to strive towards the creation of variegated, contrasting and accessible urban sonic places – for everyone. These spaces differ from each other in terms of sound quality and are open to every urban citizen irrespective of age, physical ability or socio-economic ability. To have access to a sustainable and healthy urban sonic environment is a basic human right, this implies the existence of choice.

In a sustainable and democratic city, everyone should have access to different urban sonic spaces within reach, and they should not unwillingly be exposed to persistent and monotonous sonic qualities over extensive time

periods. Such an environment is, I claim, characterized by the existence of a pluralistic range of urban spaces containing a plenitude of distinct, contrasting and multilayered sonic qualities.

If we wish to transgress the mental and disciplinary borders of this field, and to increasingly address visually, spatially and functionally-oriented practitioners and other stakeholders engaged in the planning, creation and maintenance of urban environments, it is necessary to develop methods that may enhance communication and knowledge development and are possible to implement in practice.

When working in the frontline of everyday practice with the challenge of handling matters of sound quality of dense urban environments, it is necessary to pose questions of **what** kind of urban sonic environment one wants to achieve, **why** a certain urban sonic environment is necessary to obtain in a certain context and for **whom** urban sonic space is supposed to function on an everyday basis. The answers are not one-dimensional, but complex and multifarious, just like sound itself. Extending the practice-based and design-oriented competence of urban sound planning and design also requires demonstrative and educational examples to promote development. This study hopes to be part of that process by constituting an example of how to approach sound from a qualitative and operatively oriented perspective.