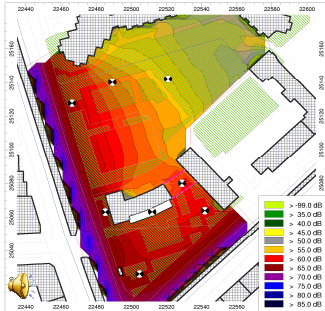


# Soundscape Approaches Public Space Perception and Enhancement Drawing on Experience Nauener Platz in Berlin



Bundesministerium  
Für Verkehr, Bau  
und Stadtentwicklung



Landesamt  
für Bauwesen und  
Raumordnung



# Soundscape project - a module of the project “Nauener Platz - Remodelling for Young and Old”

Framework of research program “Experimental Housing and Urban Development (ExWoSt)” [research field “Innovation of Urban Neighbourhoods for Families and the Elderly”]

Contracting entity:

- “Federal Ministry of Transport, Building, and Urban Affairs (BMVBS)”, overseen by “Federal Office for Building and Regional Planning (BBR)”

Project executing organization:

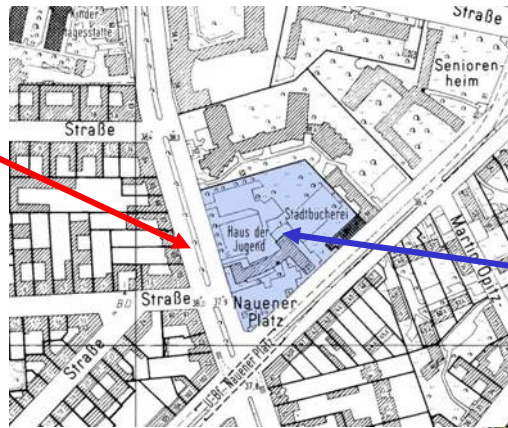
- “Regional Office Berlin-Mitte”



- The concept of the development of the place was to rebuilt the place into one with social freedom and, from the very beginning to involve people who live in the area.
- Therefore, different approaches were done to get residents involved by e.g. public hearings about the intention other renewing of the place as well to get access to the different social groups with respect to their different expectations through well defined workshops.
- Also attention was given to gender and age, and on the other hand but also to interdisciplinarity in collaboration.



Reinickendorfer Street



“Nauener Platz“



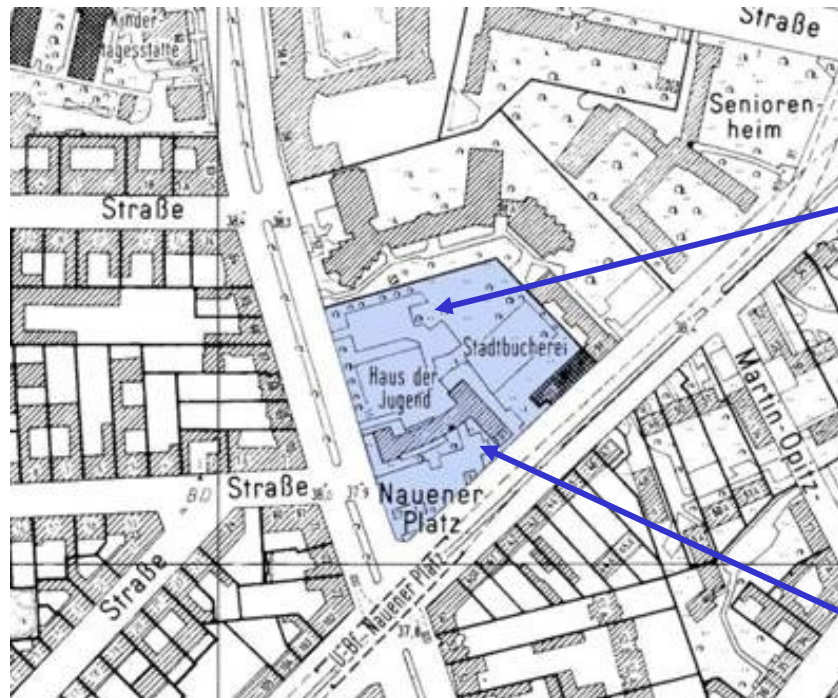


## Bird's eye view of “Nauener Platz”

Investigated area of  
“Nauener Platz” with  
measurement positions

The lanes of  
Reinickendorfer Str. and  
Schulstr. (modelled as  
line sources)

# “Nauener Platz”



# Participation of residents



working group



results „youngsters“

was auch erwartet:

Diskutieren	Ideen austauschen	Planen	Café trinken

mit vorhandenen Button planen:

Lagerfeuerstelle	Verkauf	Pflanzen / Blumen	entspannen, liegen

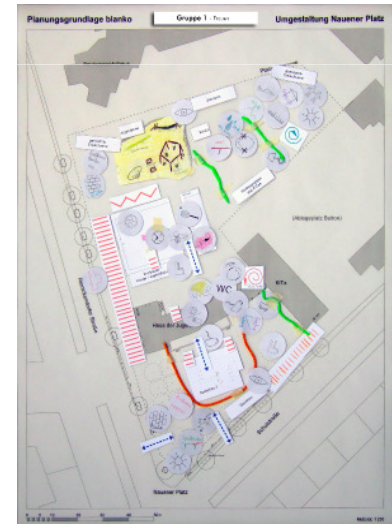
neue Button entwickeln:

... (eure Ideen)	... (eure Ideen)	... (eure Ideen)	... (eure Ideen)

work material



results „girls“



land management „women“



# Participation of residents II



Part I – public discussions

Part II - internal workshop





# Urban Soundscaping and outdoor sound design



Classical measurements

# Urban Soundscaping and outdoor sound design



binaural recordings with artificial head

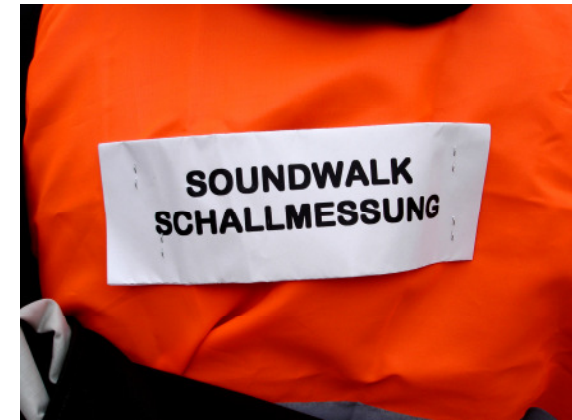


# Urban Soundscaping and outdoor sound design

- Points for measurements chosen from people living or working there

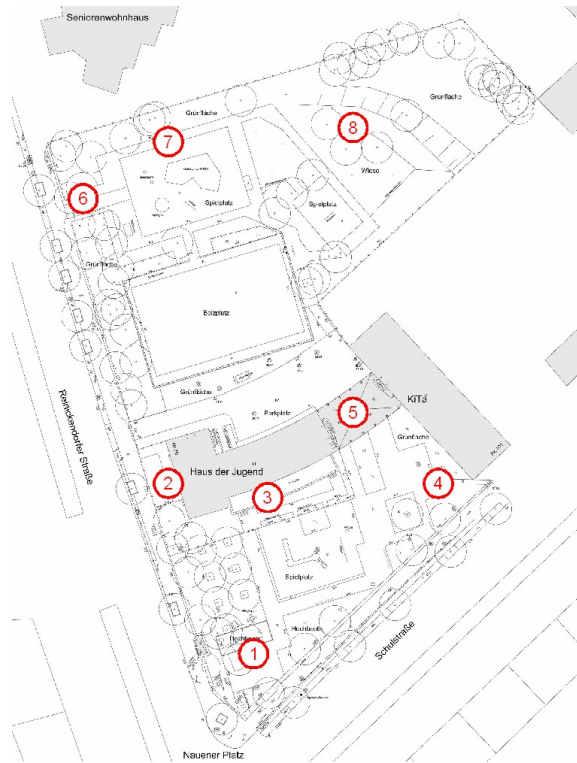
The new experts (local experts)

- Examination with Soundwalks

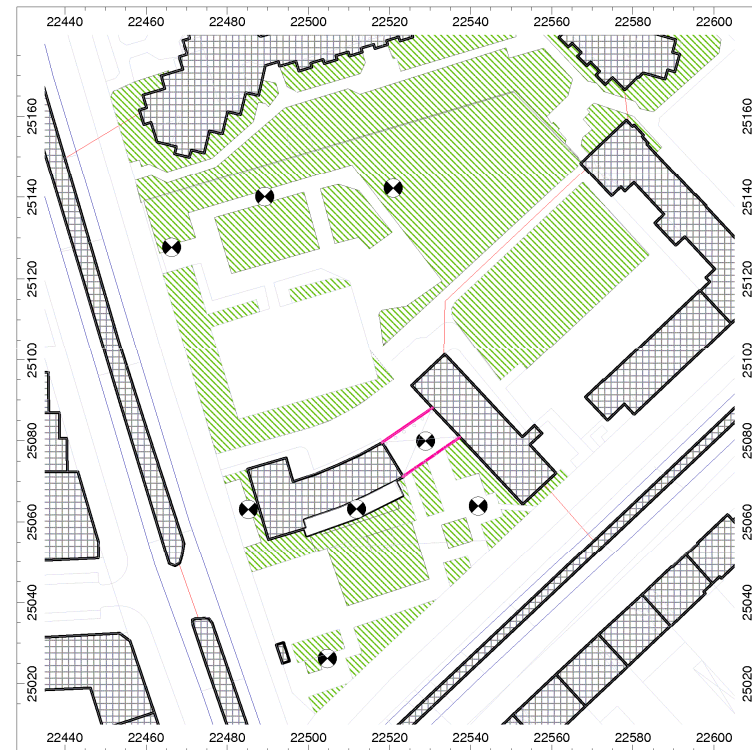


Soundwalks

# Measuring points “Nauener Platz”



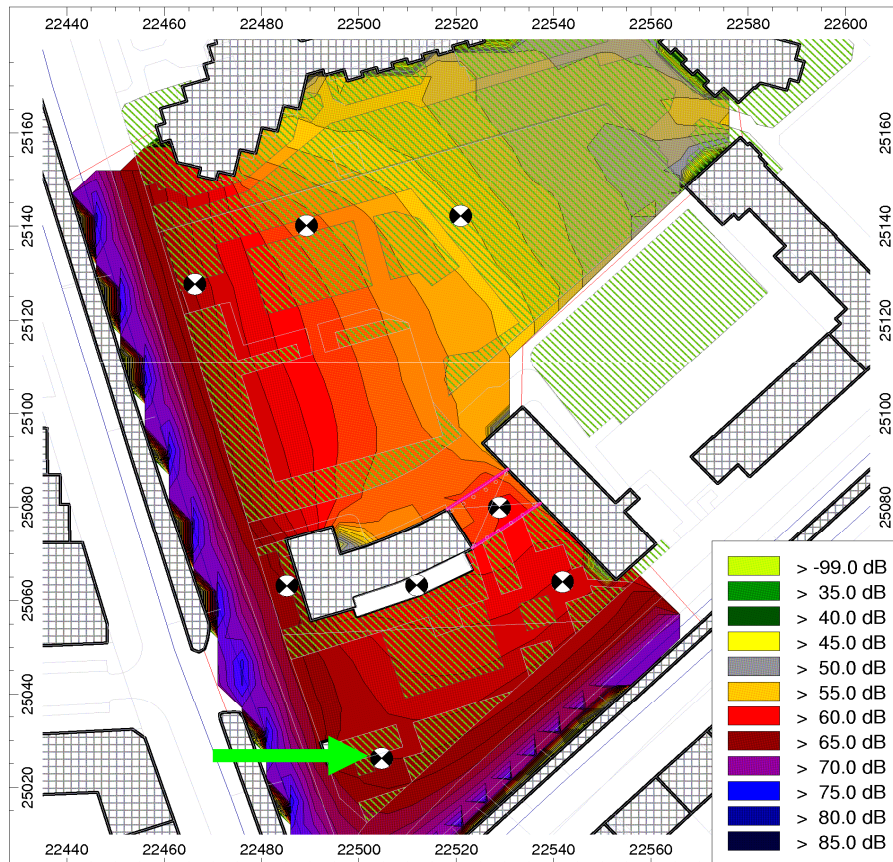
Schematic overview measuring points



Modelized area (“Cadna A” / DataKustik)

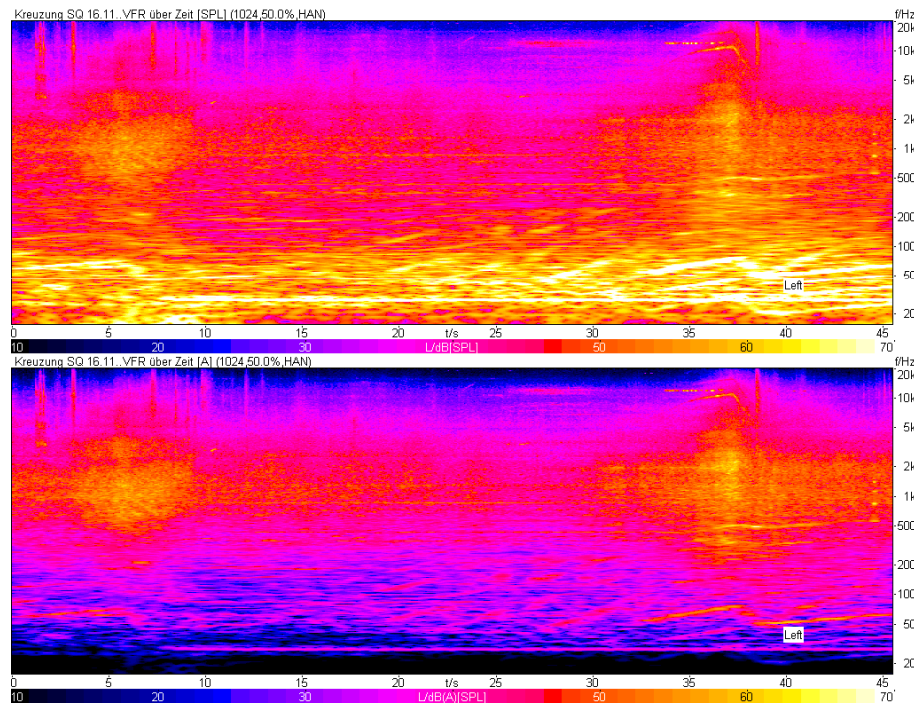


# Measuring point 1 (near crossroads “Reinickendorfer Street” / “School Street”)

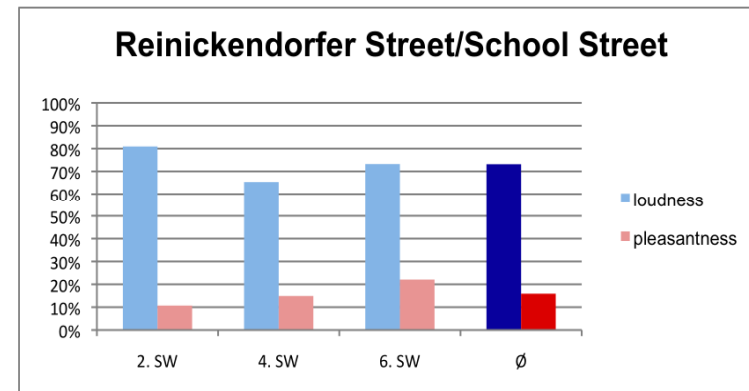


Calculated noise map

# Measuring point 1 (near crossroads “Reinickendorfer Street” / “School Street”)

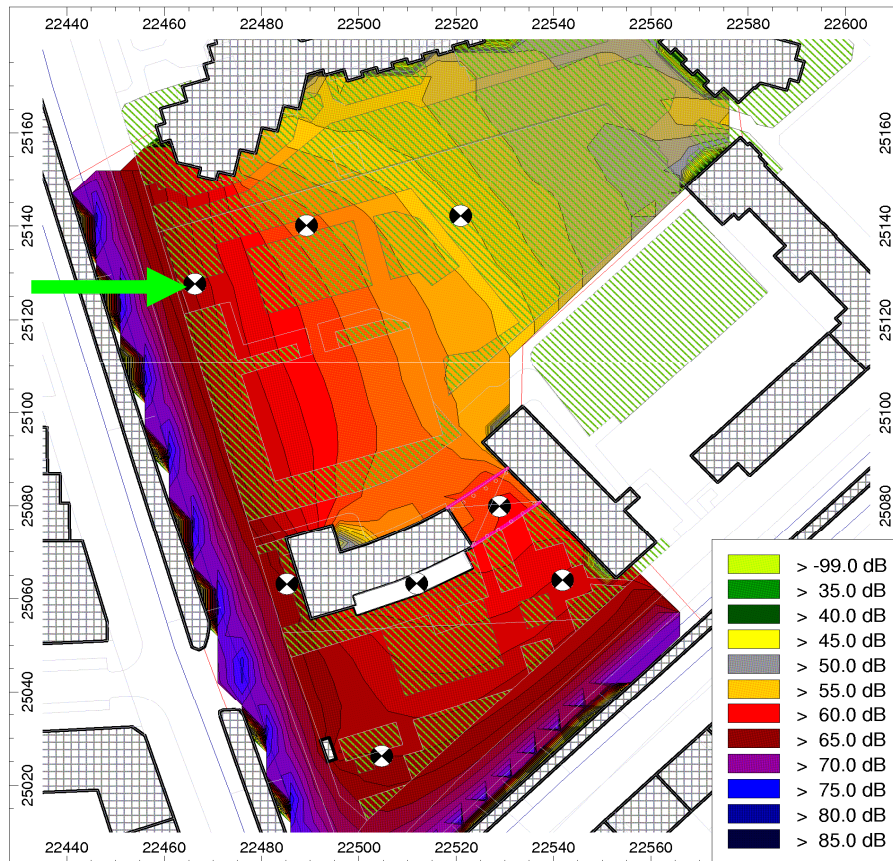


Spectra (linear / A-weighted), „Artemis“ / HEAD acoustics



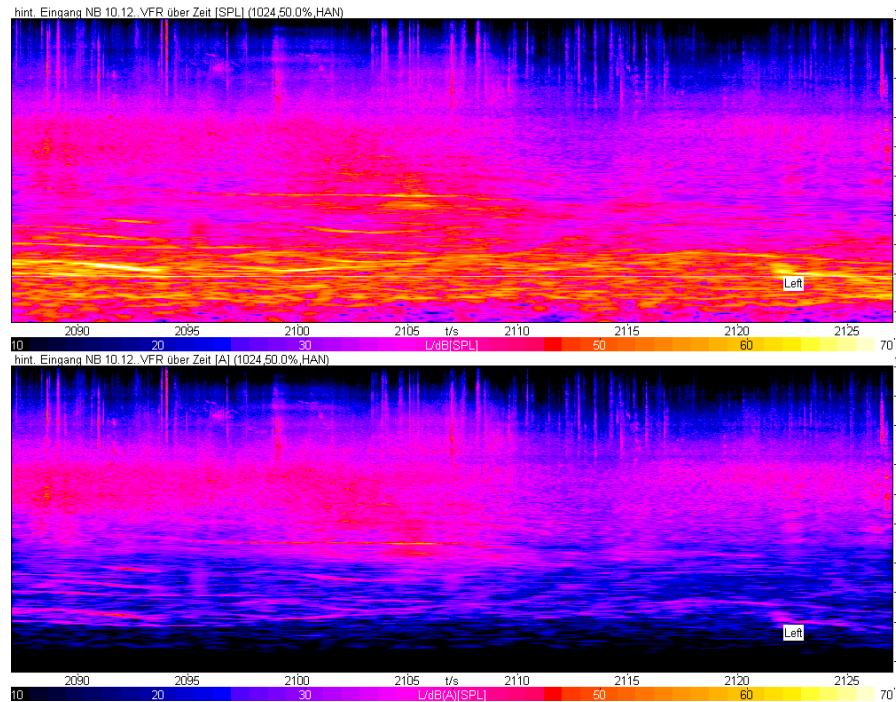
Results from rating (measuring point 1)

# Measuring point 6 (Entrance “Reinickendorfer Street”)

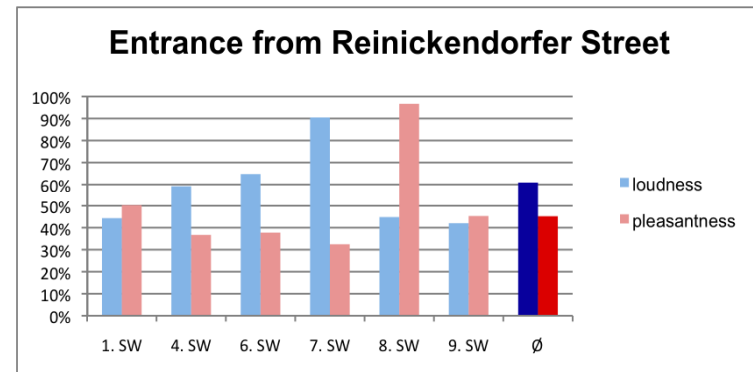


Calculated noise map

# Measuring point 6 (Entrance “Reinickendorfer Street”)



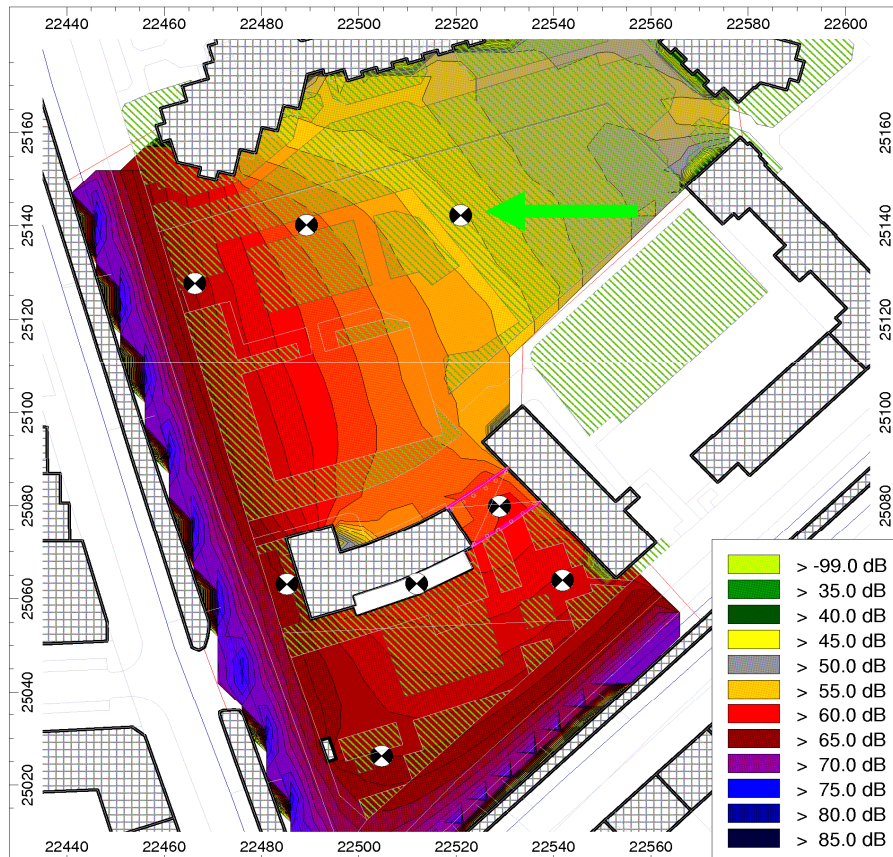
Spectra (linear / A-weighted), „Artemis“ / HEAD acoustics



Results from rating (measuring point 6)

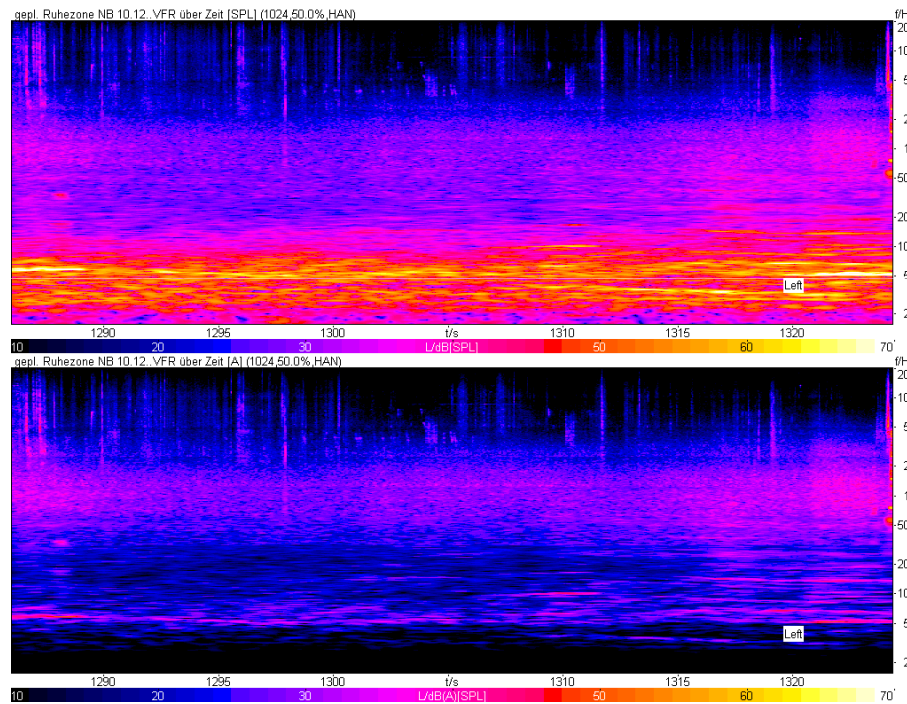


# Measuring point 8 (projected rest area)

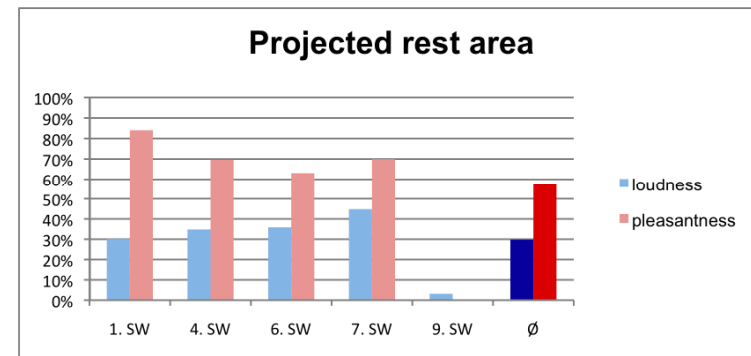


Calculated noise map

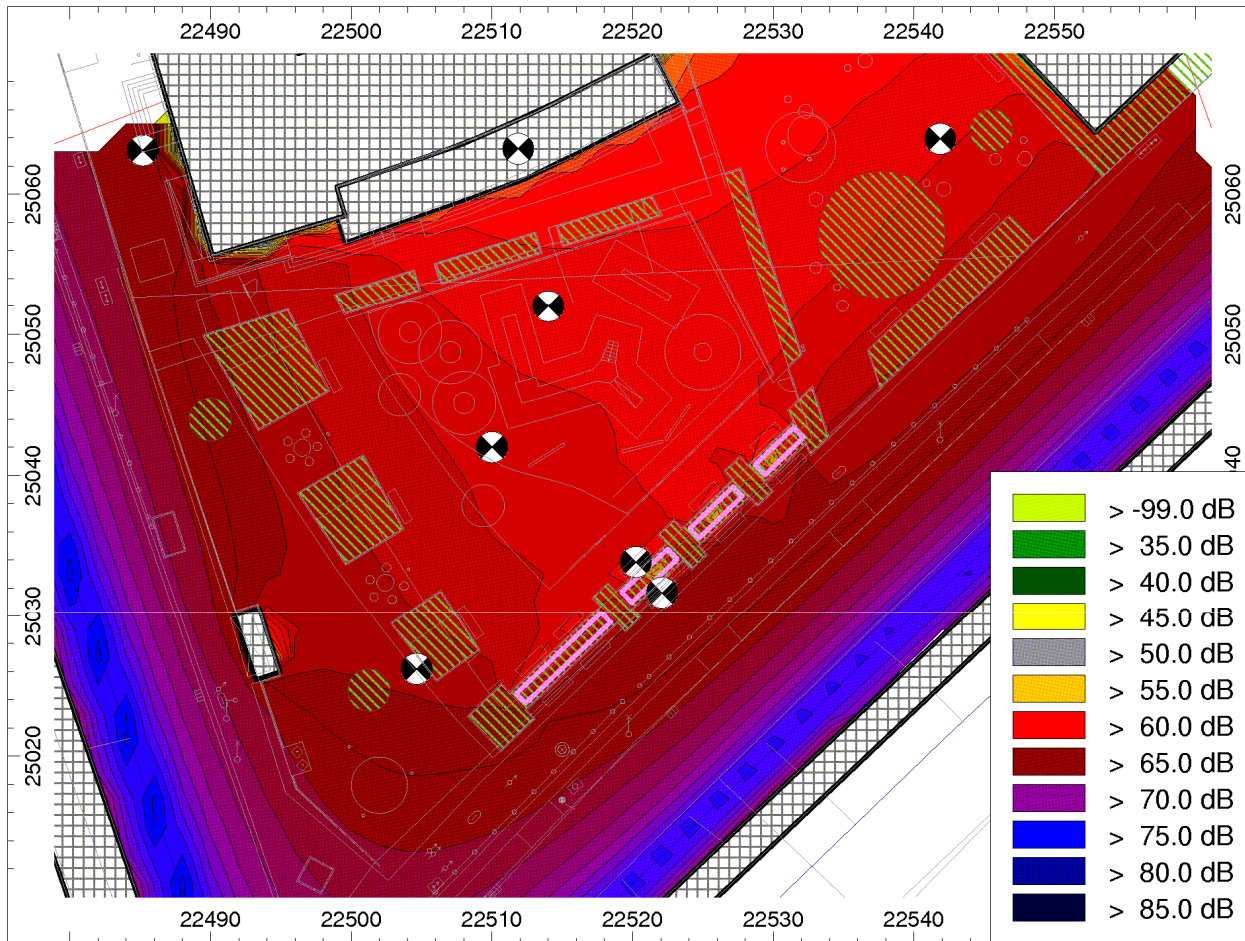
# Measuring point 8 (projected rest area)



Spectra (linear / A-weighted), „Artemis“ / HEAD acoustics



Results from rating (measuring point 8)



Noise reducing action at the playground near the cross-way

Height of calculation above ground: 1.25 m (ear of a sitting person)

Several noise barriers at Schulstr., height: 1.40 m (e.g. gabions)



# Narrative interviews



- 17 single interviews
- 1 group interview
- approximate 2 – 3h

# Data analysis

- Sound pressure levels (weighted, linear, averages, maxima)
- Calculation related to noise maps
- Spectral and psychoacoustical analysis based on binaural recordings
- Rating scales analysis
- Analysis of short-time descriptions and detailed interviews (qualitative analysis based on “grounded theory”)

# Indicators and meanings

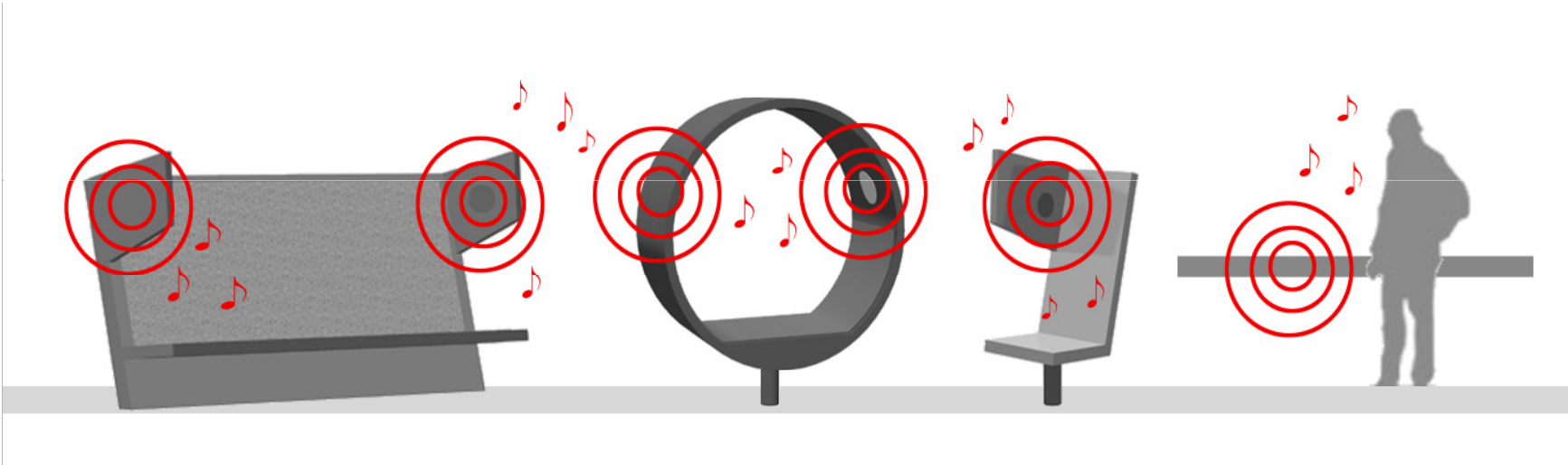
... instead of “silence”:

- Harmony
- Acoustical home

# Tendencies and results

- Sound pressure level dB(A) decreases with increasing of distance (referring to calculation), but projected rest area is characterized through low frequency noise
- Green influences the meaning of noise
- Requests for “Green Acoustics” (singing birds, watersounds) for the projected “audio island”

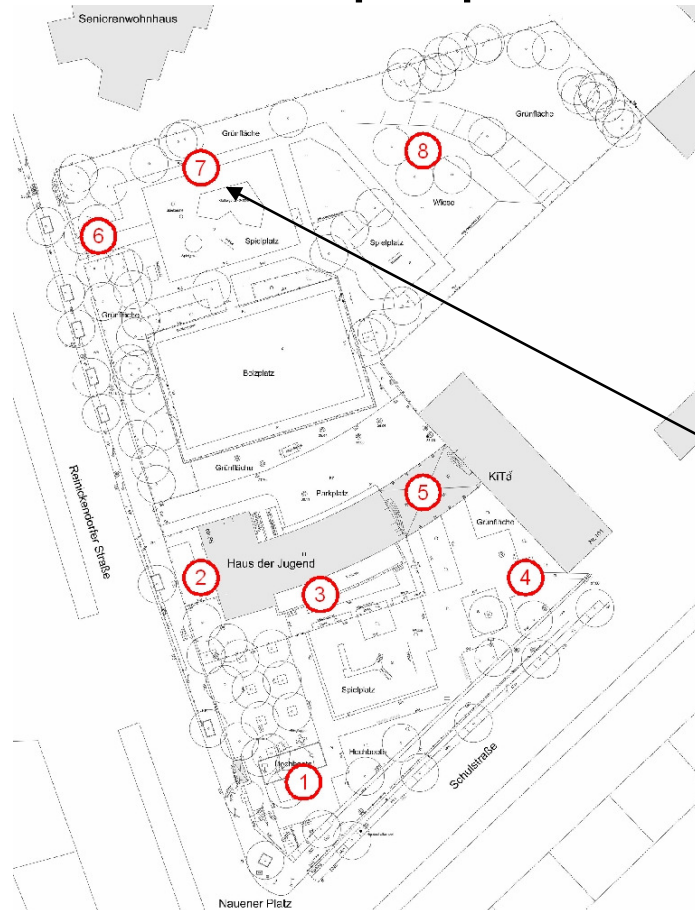
# Installation of the sounds



Sound devices, Barbara Willecke



# Sound masking based on proposals of the new experts



- ① cross road
- ② new entrance
- ③ Café Naumi
- ④ kindergarden
- ⑤ walk through
- ⑥ entrance reinickendorfer st.
- ⑦ playground
- ⑧ projected rest area



traffic noise at playground



traffic noise + forest birds

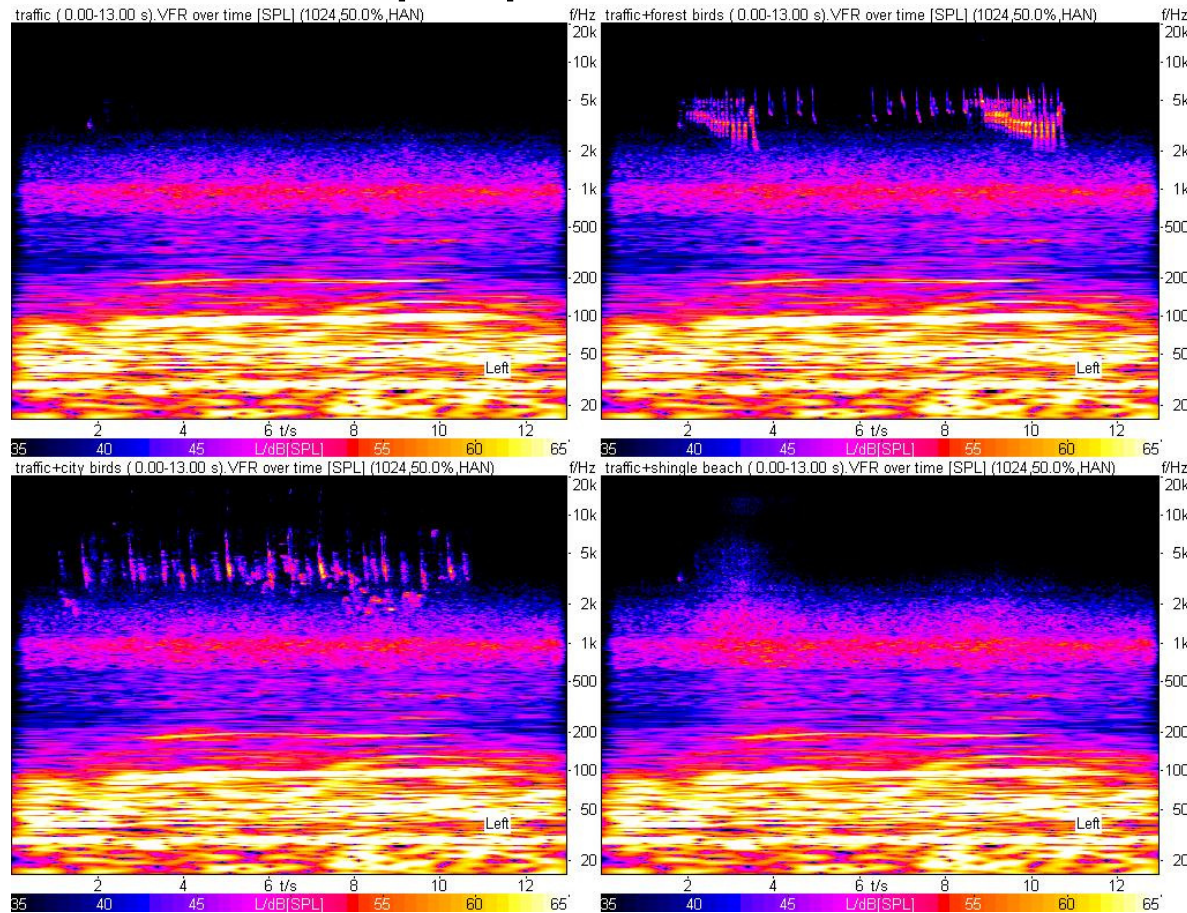


traffic noise + city birds



traffic noise + shingle beach

# Sound masking based on proposals of the new experts



Spectra of masking sounds,  
„Artemis“ / HEAD acoustics

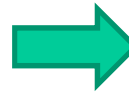
# Installation of the sounds



# Impressions “Nauener Platz”



# Nauener Platz before and after



# Validation of the psychoacoustic infrastructure of a public space in Berlin based on the concept of Soundscape

V. Acloque, B. Schulte-Fortkamp



# Methods and Tools



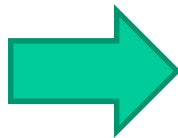
- Binaural measurements
- Soundwalk with residents and non-residents
- 9 Interviews



# Results: Achievement of major goals

- New kind of users:
  - more families
  - Kindergarten classes in the morning

**SECURITY FEELING**





# Various sound atmospheres

- Interviews results:
  - Traffic = still dominant noise source

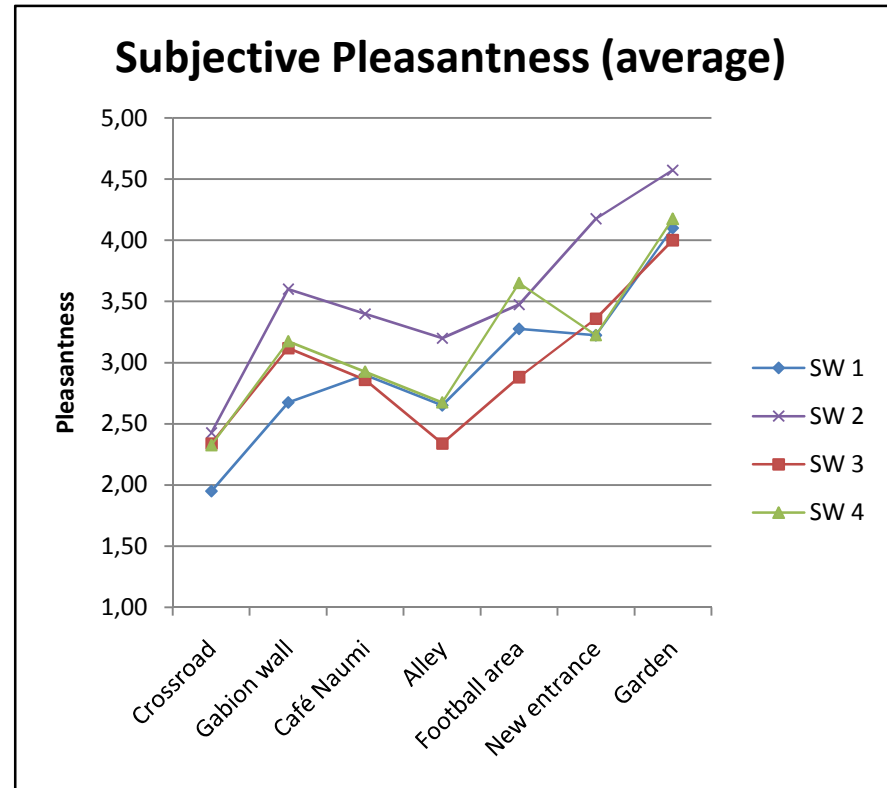
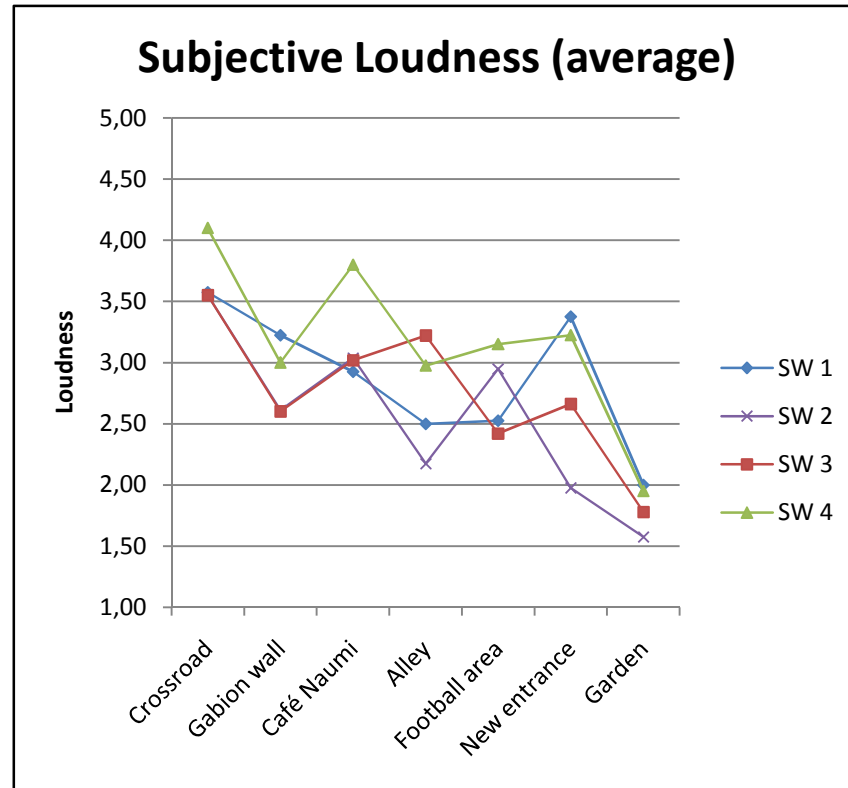
BUT

  - Human sounds: increased but more lively
  - Importance of natural sounds (real or artificial from the sound installations)



**Switching from lo-fi to hi-fi Soundscape**

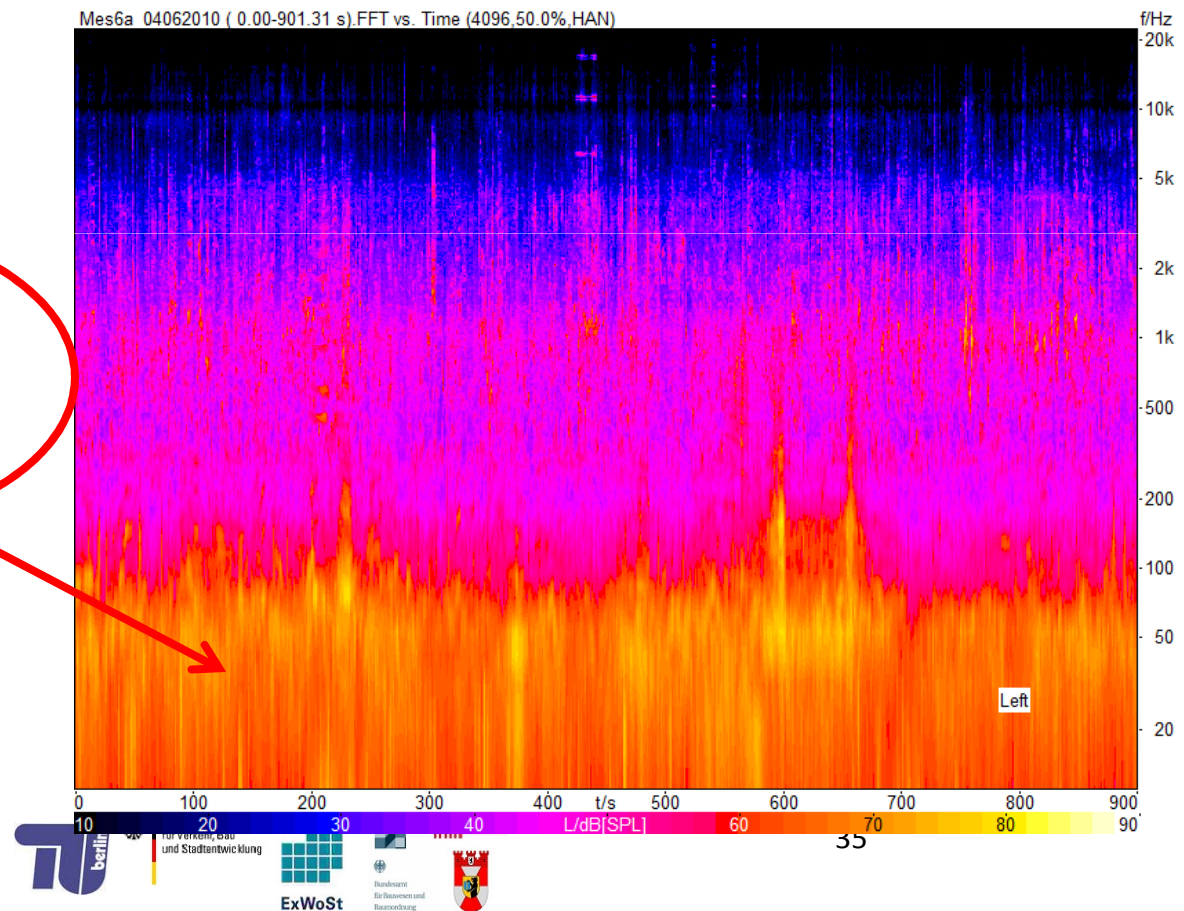
# Subjective loudness and pleasantness



# One example: the rose garden (1/2)

- The most quiet area despite the remaining traffic noise

**Traffic noise  
+ metro  
vibrations**



## One example: the rose garden (2/2)

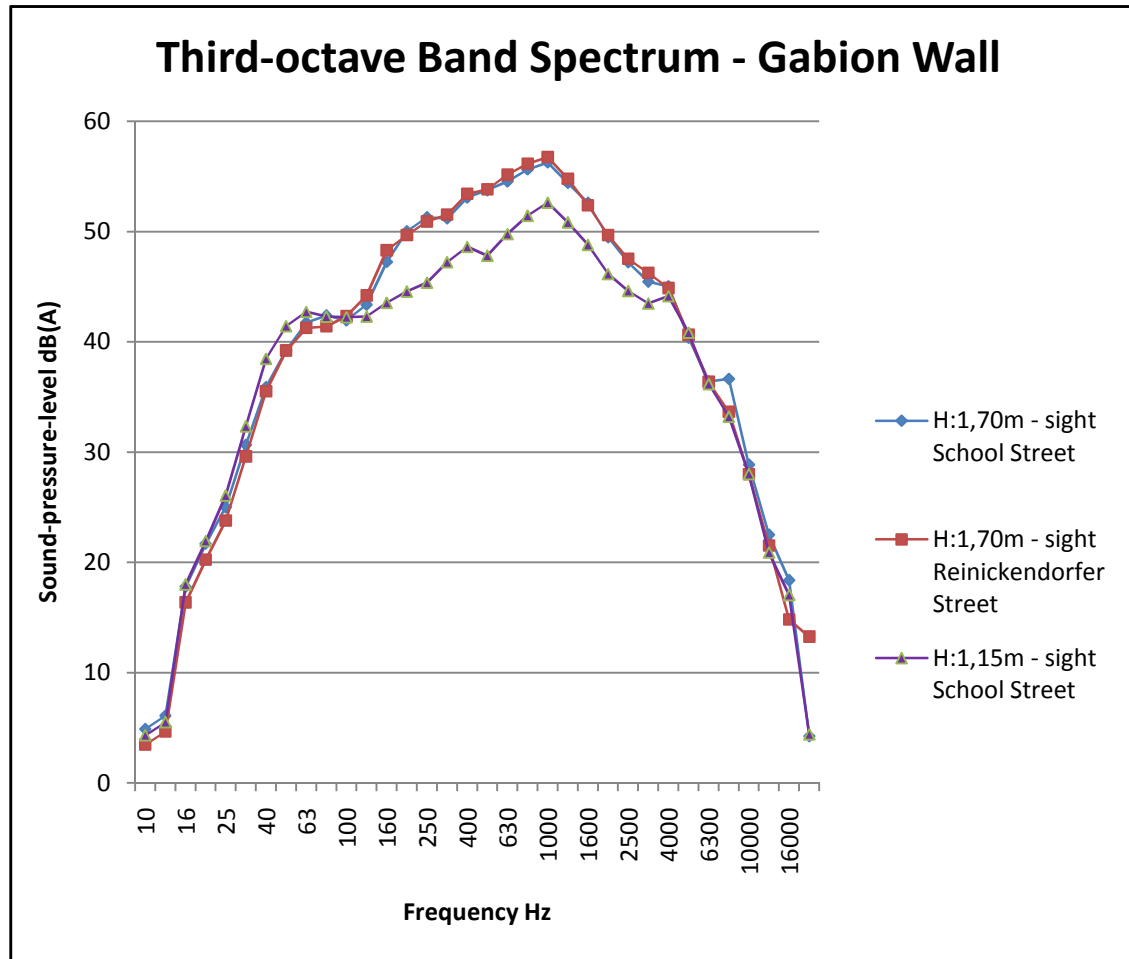
- Some quotes about this location:
  - *“traffic disappears, birds are really present, wind in the trees, small oasis“*
  - *“it’s the most pleasant and the most quiet place“*
- Also well accepted by seniors
  - *“one can simply seat here without a kid, lie on a deckchair or seat on the bench. It isn’t only relying on the playground”*

# The gabion wall



- Standard noise-abatement-wall inappropriate
  - Max. height: 1.50 m
- User-oriented solution
  - Along the playground
  - Benches for parents directly behind the wall.

# Impact of the gabion wall

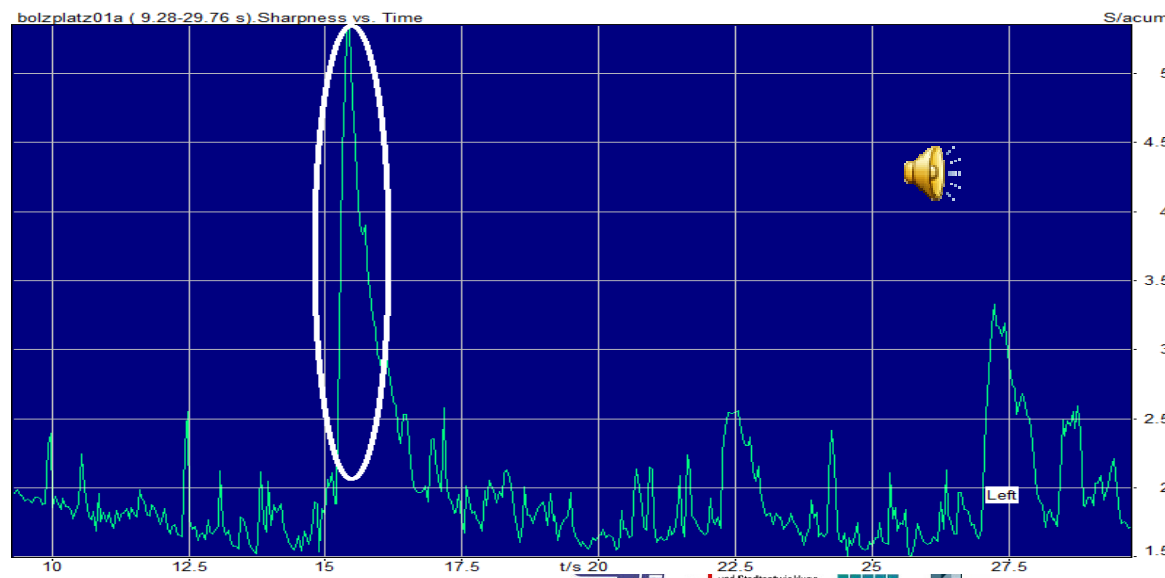
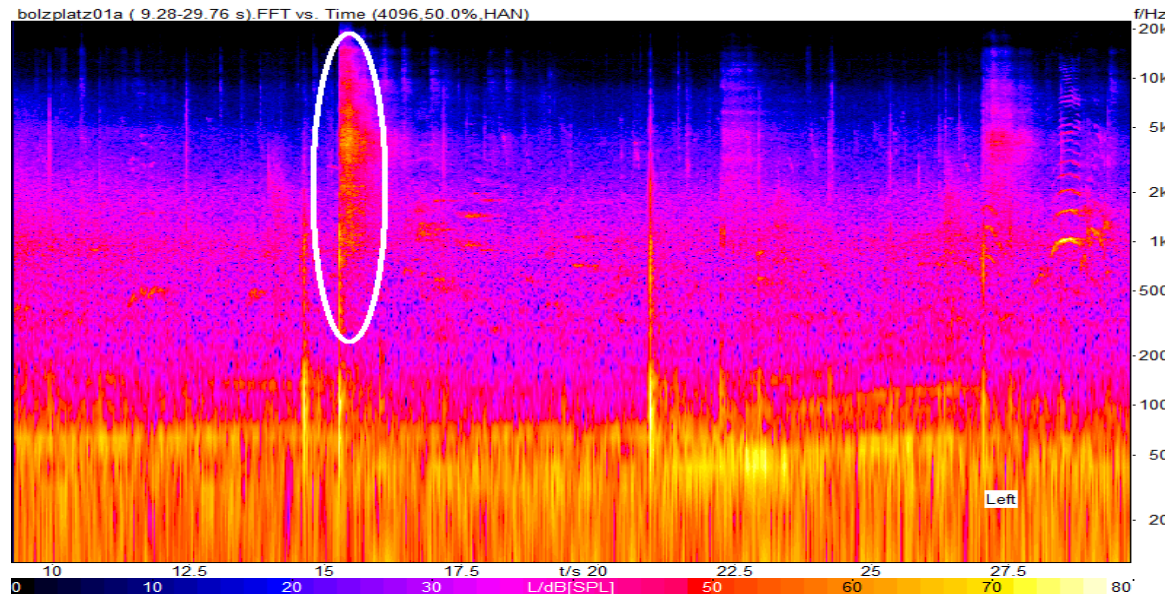


Gain of max. **6 dB**  
between 200 Hz and 1  
kHz (i.e. rolling noise)

# Remaining issue: the football field

- New organisation: a closed field for football and an open one for basketball
- Metallic wire mesh around the field
- Burning point for generational conflicts
  - For retired people, it is acceptable to play football (even if it is loud) but not to shoot against the wire mesh as hard as possible.
  - For young people: playing is fun but the noise of the barrier is a good indication to know who is the strongest

# Football field (1/2)



High peaks for all psycho-acoustical parameters (like sharpness on the left)



# Conclusion

- Good acceptance of the new place, especially the peaceful area
- Traffic noise is still dominant but became lower thanks to:
  - Other more pleasant sources
  - The gabion wall

# Conclusions

- The challenge is the collaboration
- Binaural acoustic measurements and evaluation through “people’s mind”
- Balancing between acoustic measurements, architectural planning and the expertise from people living in the area leads to a new understanding and concept of a public place – the new Soundscape