

NOISE CONTROL FOR QUALITY OF LIFE

**inter noise**  
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# APPLICATION OF THE METHODOLOGY TO ASSESS QUIET URBAN AREAS IN BILBAO: CASE PILOT OF QUADMAP

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- **QUADMAP project**
- **Pilot cases in BILBAO (General Latorre square)**
- **Results of the application of proposed methodology of QUADMAP in the urban pilot case**
- **CONCLUSIONS**

QUIET URBAN AREA: an urban area whose current or future use and function require a specific acoustic environment, which contributes to the well-being of the population.

# QUADMAP



LIFE10/ENV/IT/407

QUiet Areas Definition and Management in Action Plans)

<http://www.quadmap.eu/>



- ✓ 2º objective of END: preserving Quiet Areas.
- ✓ Lack of homogeneous methodologies to identify, evaluate and management Quiet Areas.



*This approach towards "quietness" goes beyond reducing pollution levels and requires soundscape assessment, (perception and the context of the sounds)*





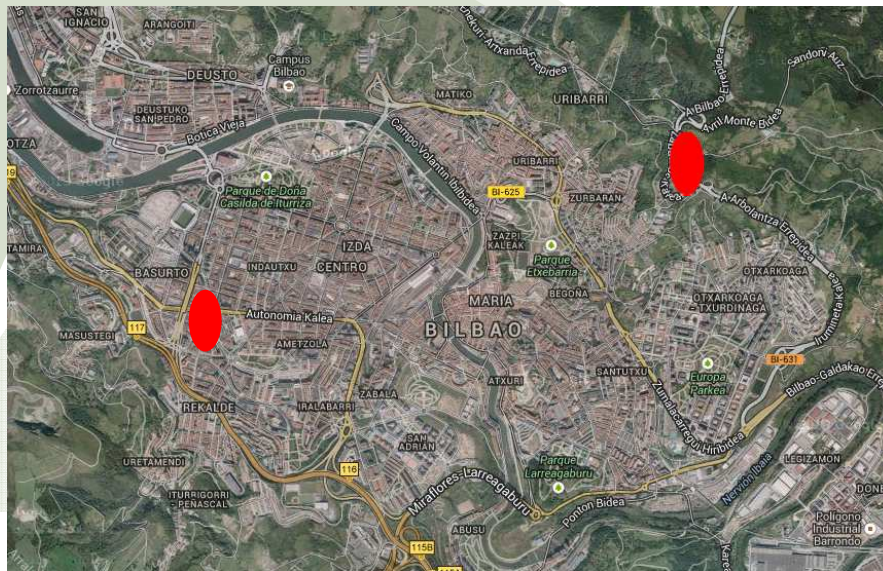
# Pilot Cases in Bilbao



Bilbao city council identifies QUADMAP project as an opportunity to create QUAs through **the reconversion, intervention or maintenance of public spaces.**



**General Latorre Square:** urban area mainly used for resting, social interaction, reading and relaxing (benches fully occupied) and going through.



**Green Ring recreational area:** Peri-Urban Area: use for resting and natural value

# Pilot Cases in Bilbao: General Latorre Square

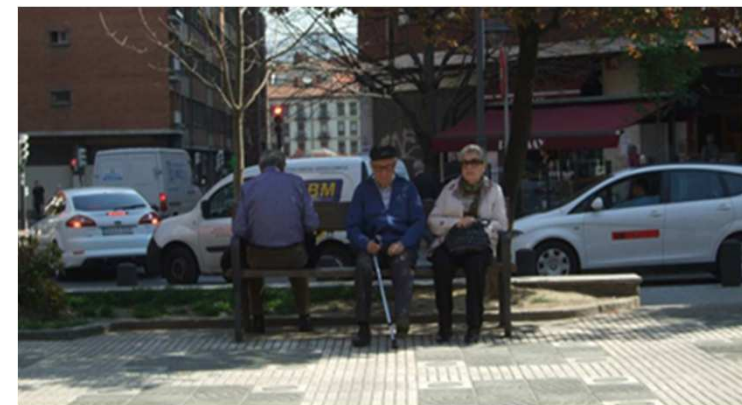


**Pre-selection: ¿Does General Latorre fulfill the criteria as a candidate of quiet urban area?**



## Criteria 1: Use and Function of the area:

- Category of land use*: residential (general urban planning). Urban park.
- Function of the space*: resting, social interaction, reading and relaxing (benches fully occupied) and going through.

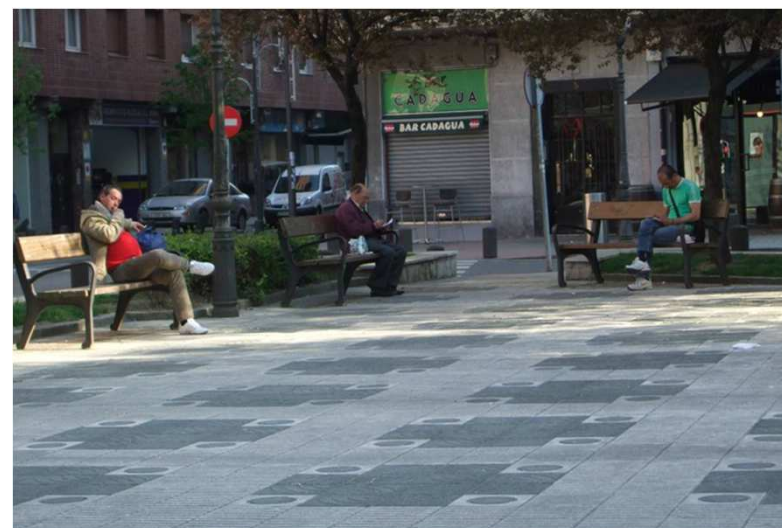


## Criteria 2: Noise Levels:

*The area must fulfill the  $L_{den} < 55$  dBA requirement.*



# Pilot Cases in Bilbao: General Latorre Square



# Pilot Cases in Bilbao: General Latorre Square



## STEP 1: HUAs definition (Homogeneous Unit of Analysis)



### Case study Urban Area: General Latorre Square

Item 1: Landscape	Same visual elements and landmarks can be observed in the area
Item 2: Use	Use for resting or going through
Item 3: Distance and presence of sound sources	Dimensions of the area implies the same sound atmosphere dominated by traffic in a context of residential zone

**1 HUA in  
General Latorre**

# Pilot Cases in Bilbao: General Latorre Square



**STEP 2: In situ” survey to be carried out in each HUA for a quietness diagnosis**



## A- Analysis of non acoustic

## Expert Analysis tool

### *Principal Factors:*

- Landscape: Greenery, Buildings and motorized vehicles in all directions (N, S, E, W).
- Cleanliness and maintenance: regularly maintained and cleaned (with exception of lawn (activity of dogs)).
- Safety: Presence of a few homeless (that can imply an insecurity perception) who use benches and drinking-water fountain.

### *General Analysis:*

- Urban Context: Far from key points.
- Proximity: Far from key points.
- Accessibility: Pedestrian (with possibility for people with reduced mobility), urban public transport (bus –stop) and private vehicle.
- Proximity to noise sources: urban-traffic (main noise sources ) is audible and visible.
- Presence of multi-source scenario: road traffic (noise), people and natural (birds)
- Noise reduction interventions: Interventions with average acoustic efficacy are possible



# Pilot Cases in Bilbao: General Latorre Square



**STEP 2: In situ” survey to be carried out in each HUA for a quietness diagnosis**



## A- Analysis of non acoustic aspects

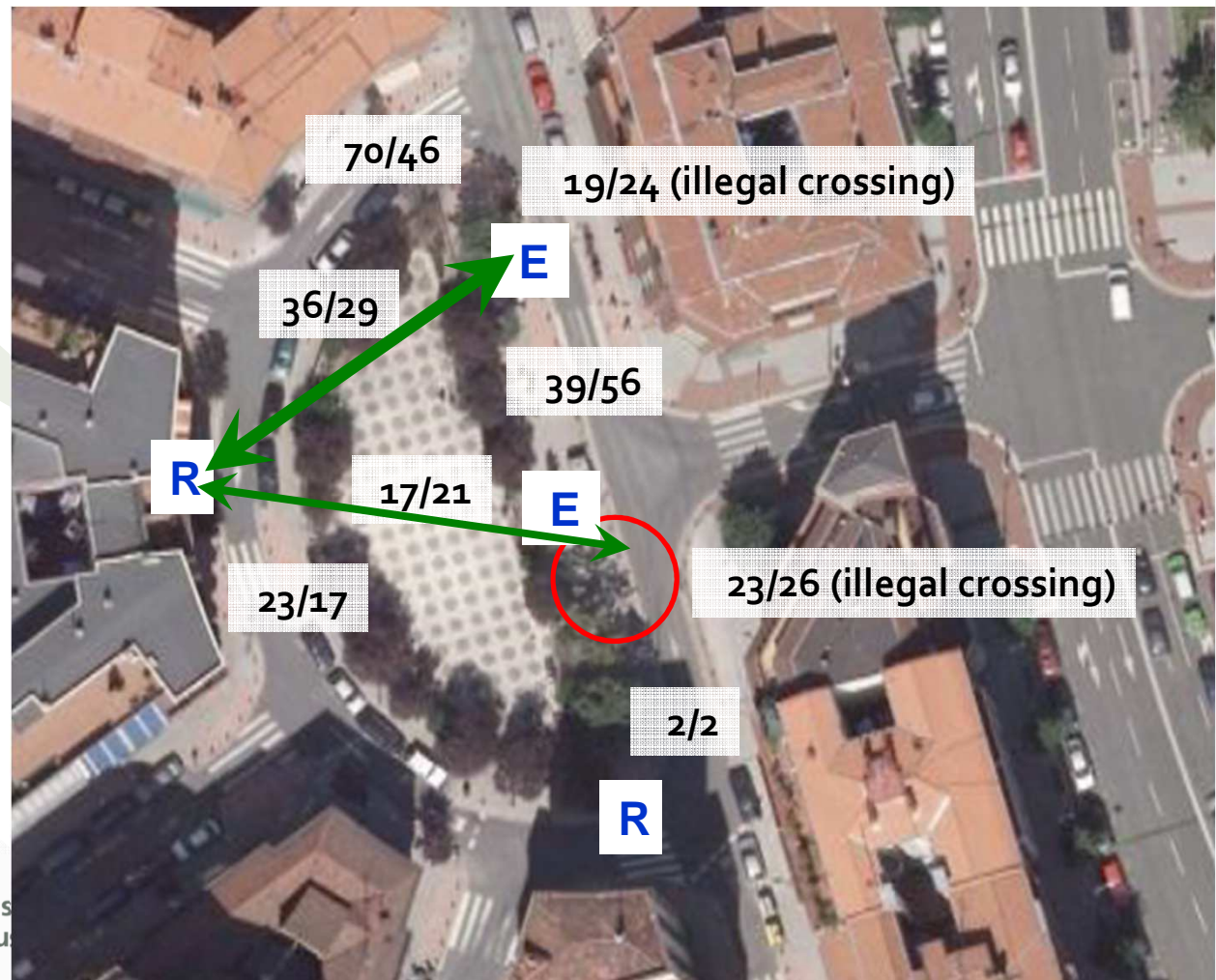
## Expert Analysis tool

### *Behavior Analysis*

- Mainly use for resting, social interaction, reading and relaxing (benches fully occupied) and going through.
- Mainly use by elder people > 50 years old.

People going through  
(morning/evening).

E: stairs  
R: ramp



# General Latorre Square: results



**STEP 2: In situ” survey to be carried out in each HUA for a quietness diagnosis**



## **B- Campaign for assessment by developing questionnaires and measurement:**

### **Questionnaires to users tool**

**Sample:** 85 people, 37 (43.5%) in the morning and 48 (54.5%) in the evening.

#### **% users consider sound atmosphere as:**

33 % CALM

38 % PLEASANT

38% CONGRUENT

#### **% users perceived the area as:** (free evocation in open question)

20 % safety

21% clean and maintenance

28% accessible:

9 % pleasant from a visual point of view (free evocation in open question)

- **Sound sources (dominant):** traffic (unpleasant) and birds (pleasant).
- **Activity:** passing by (53%), enjoying the free time (20%), shopping and errands (11%), waiting for someone (7%), which is associated with different activities like, mainly, moving (49%), sitting (18%), walking (18%).
- **Reason for use:** going through or relaxing.
- **Duration stay:** less than 30 minutes.
- **Global satisfaction with the place:** 43.5%

# General Latorre Square: results



**STEP 2: In situ" survey to be carried out in each HUA for a quietness diagnosis**



## B- Campaign for assessment by developing questionnaires and measurement:

## In situ measurements tool

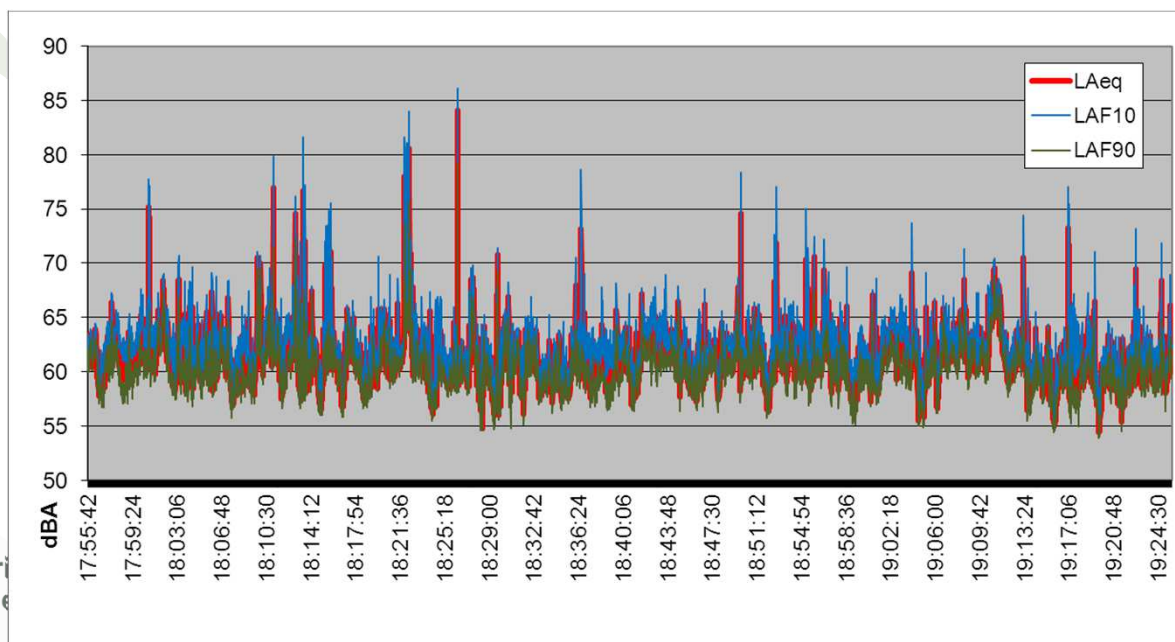
	Morning		Evening	
	11:00-11:30	11:30-12:00	18:00-18:30	18:30-19:00
L <sub>Aeq</sub>	67 dBA	62 dBA	64 dBA	62 dBA
Events (negative)	6	8	9	2
Events (positive)	0	0	0	0

predominance of negative events

Time History: Evening (example)



UDALA  
AYUNTAMIENTO





# General Latorre Square: results



**STEP 2: In situ" survey to be carried out in each HUA for a quietness diagnosis**

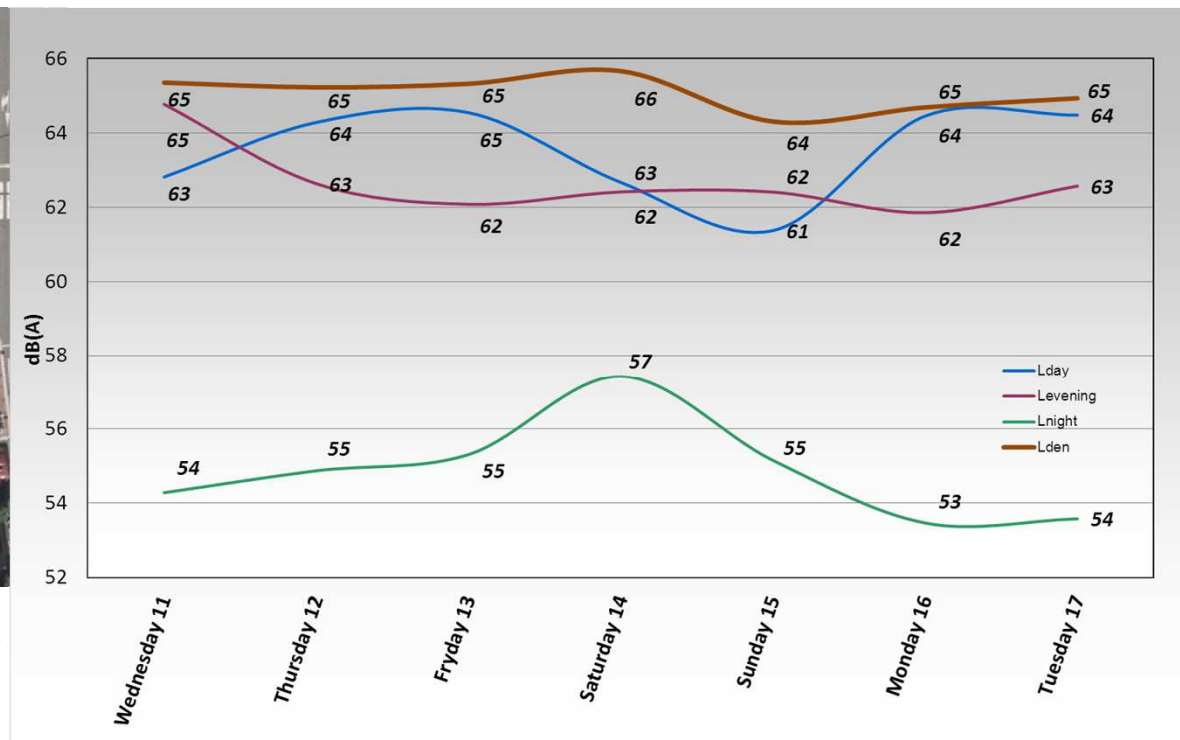


**B- Campaign for assessment by developing questionnaires and measurement:**

**Long term measurements tool**



At the present it is not a QUA



# Conclusions



## Regarding the methodology

Complete approach for quietness, noise levels + composition of sound atmosphere + and the number and type of existing events.

*“Easy” to apply (not very costly)*

Discussion

- Definition of the process to analyze the results of the long term Sound measurement.
- There could be some overlap in the information collected with the following two approaches in different steps of the proposed methodology: assessment of non-acoustic variables in step 2, obtained from perception analysis (questionnaires); and the expert analysis, developed in the step 1.
- The definition of the thresholds for QUAs should be open to the legal framework in each city or country.

# Conclusions



## Regarding the intervention in General Latorre

### *Reduce Traffic noise and its events (possibilities)*

- P1: Traffic reorganization (traffic directions)
- P2: Creating a pedestrian preference area
- P3: Give fluency to the traffic (avoid events of traffic jam)
- P4: Urban barrier for traffic noise (street Felix Landin Dotorea)
- P5: Increasing sound absorption

### *Modify dominant sound sources and increase positive events*

- P1: Improving and adding greenery.
- P2: Urban furniture with water.
- P3: Increasing presence of children in the area (less than 3 years old)

*Improving other aspects of the area  
(apart from “sounds”): safety,  
accessibility and clean and  
maintenance conditions.*





## **European Symposium on Acoustic Comfort in Urban Design** ***27th and 28th November 2013, Bilbao***

- **Wednesday 27th November 2013: Practices on Acoustic Comfort in Urban Design.**
- **Thursday 28th November 2013: World-coffee: “The role of Urban Design elements in Soundscape and acoustic comfort in cities”.**

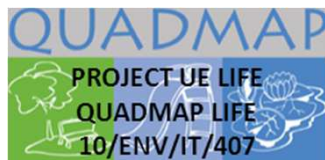
**Symposium Satellites meetings:**

**Tuesday, 26th November 2013**

**Internal meeting of QUADMAP Project**

**Thursday afternoon 28th and Friday 29th November 2013 EUROCITIES meetings: Noise working Group**





***THANK YOU VERY MUCH FOR  
YOUR ATTENTION***

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