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## Executive Summary

This Deliverable includes the results of Task 2.3 - Pilot Design and Planning, and presents a compilation of work of ten cities and regions on establishing local Urban Living Labs (ULLs) and conducting Pilot Sites selection, stakeholder engagement, co-design, and implementation planning, for prototyping of SMILE CITY systemic solutions:

- A.** e-charging stations for e-bikes, with concrete pre-cast elements, PV panels for roofing or flooring, and second-life EV batteries for electric power storage;
- B.** Cycling lanes / tracks re-paving with different mixes of recycled rubber and polymers;
- C.** Curbs and lane dividers in molded recycled rubber;
- D.** Bollards in molded recycled rubber.

The Deliverable includes explanation of the methodology applied, description of the challenges and constraints encountered during the work, local reports on the main achieved results and innovation decisions, as well as conclusions and recommendations for subsequent phases of project implementation.



# 1. Introduction and Methodology

This Report includes the results of Task 2.3 - Design and plan of further pilots using the SMILE CITY circular systemic solutions for all the target sites of the project, following the structured roadmap framework for establishing Urban Living Labs (ULLs) developed and presented in Deliverable 2.3.

In each target city, an ULL was established, to design and plan the SMILE CITY pilots. Joint exploration (Mapping) and co-creation & prototyping (Designing) was conducted focusing on technical aspect. The involvement of the end beneficiaries and final users was not needed at this stage.

The approach of wider engagement of local stakeholders and end-users will be more effective and will be applied in subsequent phases of the work, to be aligned with finalisation of the design and technical elaboration work related with Task 3.6 and development of e-charging stations for e-bikes.

Cities were guided through an analytical process for selecting pilot sites which are feasible for experimentation, and have the highest potential for replication, in line with national and EU potential markets. Coordination was provided to ensure that installation sites demonstrate solutions for both public, private and commercial situations.

Joint approach for understanding SMILE CITY systemic solutions was developed, through series of technical meetings, both online and in-person (e.g. in Rome on January 30<sup>th</sup> and in Brussels on March 24<sup>th</sup>), through development of common project *Questions & Answers Document*, through a *Questionnaire for Potential Contractors* and a *Questionnaire on Pilot Sites*. Online plenary meetings were organized on a regular basis for representatives of cities and regions, for supporting them in understanding processes and steps of ULL development, illustrated in *Worksheets 1-4*, which were developed and presented in Deliverable 2.3.

Cities and regions were conducting actions towards development of technical designs for permits, using a coherent, but place-based and context-sensitive approach. Considering that pilots will be implemented in various territorial contexts, with different legal and administrative requirements, and considering different level of experience of local municipalities with application of innovative procedures and materials, especially rubberized asphalt and urban furniture – cities and regions reached different level of technical maturity within this process, but they have a clear pathway of all necessary steps and procedures in compliance with local, regional and state regulations.

For example, Fundación Patrimonio Natural de Castilla y León (FPNCyL) developed technical project documentation and already initiated three administrative procedures for obtaining approvals and permits for pilot works, while the City of Varna did not progress much beyond locations selection for the pilot's implementation.

In the first 18 months of project duration, two cities left the consortium: Gmina Sosnowiec from



Poland (in March 2025) and Belgrade from Serbia (in December 2025). In early 2026, two new cities joined the consortium, although formal annexing process has not yet been terminated: **Alba Iulia** from Romania and **Veszprem** from Hungary. The two new cities have accelerated their actions towards project pilots identification and administrative preparation, so there is not much risk regarding the permit obtaining process to conduct the pilots. Alba Iulia and Veszprem have been learning from the experience of other cities and regions in the project on how to coordinate all the complexities, so their pathway process that includes site selection, stakeholder engagement, co-design, and implementation planning is expected to be shorter and more direct.

In the preparation phase of the Project Proposal, the **expected number of pilots was 20**, the same as the number of Units A of SMILE CITY systemic solutions – e-charging stations for e-bikes. However, after careful analysis of the potential locations and the conclusion that Pilot Site can be assembled from various combination of SMILE CITY systemic solutions, most of the cities decided to territorially detach e-charging stations from rubberized pavement of cycling lanes. Since **the Pilot Site is each concrete location with at least one SMILE CITY systemic solution, or with a specific combination of systemic solutions (A, B, C and/or D), the number of Pilot Sites is higher – it is now 27**, according to the last local confirmations. This does NOT imply that the higher number of specific units will be installed, but only that already planned units, or SMILE CITY systemic solutions A, B, C and D, will be territorially organised in a different manner than initially expected. The decoupling of the Pilot Sites of the SMILE CITY systemic solutions will further increase the visibility and demonstration impact of the project.

It should be underlined that the most significant Systemic Solution, apart the Charging Station, is the Rubberised Asphalt. Europe is chronically behind this kind of technology for many reasons, and the projects would be a good occasion to catch up, by introducing it in Cycling Paths, and by this way disclose opportunities for future applications also in roads in the same cities and countries.

All the cities made decisions on **rubberized pavement of cycling lanes** (systemic solution B). All ten cities proposed locations on **e-charging stations for e-bikes** (systemic solution A), but these pilot sites need to be confirmed by various local institutions, which will depend on the final design. It may happen that some locations proposed for the selected and awarded solutions will be changed if more appropriate sites will be identified, thus final list of pilots may differ in the subsequent stages of project implementation. For several pilots of e-charging stations for e-bikes final decisions have not yet been made (marked with \* in the Table of Pilots).

It should be recalled that most of the Municipalities will implement the Pilot in the context of projects of cycling mobility already approved or on their way to be approved. Each Municipality has involved a good team of technicians which work close to the technical partners. The schedule of Pilot installation will be managed in a flexible way, anticipating the cities who are ahead in obtaining the permits and delaying those who are late, to avoid downtime.

**Urban furniture: curbs and bollards** (systemic solutions C and D) were mostly not considered yet (marked with \*\* in the Table of Pilots), since the attention was fully focused on understanding the



process and methodology for rubberized paving (systemic solution B), and roles regarding the installation of e-charging stations (systemic solution A). Urban furniture elements, as smaller prefabricated pieces, are considered to be easier for production and testing. The scope of systemic solutions C and D is to be used in the types and quantities that will contribute to enhance cycling safety, in the mapped contexts. For this reason, it could be necessary to modify the number of elements proposed in the Grant Agreement.

The list of Grant Agreement requirements regarding Pilot Sites and SMILE CITY systemic solutions is presented in the following table:



#	CITY / REGION	REQUIRED				
		# PILOTS	PV Ch St	Rubbr. Paving	Curbs	Bollards
1	LUCCA	2	2	2000 m2 (1750m2 currently to be achieved)	200 m	40
2	MANRESA	2	2	1000 m2	100 m	20
3	BURSA	2	2	2000 m2	0	20
4	CRETE	1	1	1000 m2	100 m	20
5	CASTILLA Y LEON	4	4	3000 m2 (2550m2 currently to be achieved)	100 m	80
6	ISTANBUL	2	2	2000 m2 (1200m2 currently to be achieved)	200 m	40
7	VARNA	2	2	2000 m2 (1200m2 currently to be achieved)	0	20
8	TORINO	1	1	1000 m2	100 m	20
9	VESZPREM	1	1	1000 m2	100 m	10
10	ALBA IULIA	3	3	2000 m2	100 m	60



The list of all identified Pilot Sites and their specific combination of SMILE CITY systemic solutions is presented in a table below:

#	CITY / REGION	PLANNED						
		PILOT	Pilot Code	PILOT NAME	PV Ch St	Rubbr. Paving	Curbs	Bollards
1	LUCCA	3	L 1	Asse Suburbano	0	700m x 2.5m	**	**
			L 2	Sports Hall Parking	1	0	0	0
			L 3	Railway Station*	1	0	0	0
2	MANRESA	3	M 1	Avinguda Pirelli - Congost	0	800m x 2.5m	**	**
			M 2	Congost Sports Centre	1	0	0	0
			M 3	Congost New Industrial Area	1	0	0	0
3	BURSA	2	B 1	Hüdavendigar City Park	1	0	0	0
			B 2	Naim Suleymanoglu Boulevard	1	800m x 2.5m	0	20
4	CRETE	2	C 1	Akti Kanari	0	800m x 2m	**	**
			C 2	1821 Square*	1	0	0	0
5	CASTILLA Y LEON	5	CL 1	Sanabria Lake (Zamora)	0	850m x 3m	20	6
			CL 2	PRAE building (Valladolid)	1	0	0	0
			CL 3	Pozo María (Zona Alfa, León)	1	0	0	0
			CL 4	Valladolid (IES Galileo)	1	0	0	0
			CL 5	*	1	0	0	0
6	ISTANBUL	2	I 1	Avcılar Coastal Park	1	800m x 1.5m	**	**
			I 2	Caddebostan Şehit Kadir Yıldırım Park	1	0	0	0
7	VARNA	2	VA 1	Varna Municipality Square	1	800m x 1.5 m	0	20



			VA 2	Varna Medical University Campus	1	0	0	0
8	TORINO	2	T 1	Piemonta in bici, Pianeza	0	700m x 1.5m	**	**
			T 2	Sangone Park, Rivalta	1	0	0	0
9	VESZPREM	2	VE 1	Almadi Balaton Street	0	500m x 2m	**	**
			VE 2	Public Zoo Entrance	1	0	0	0
10	ALBA IULIA	4	AI 1	Vauban Citadel - Prince's Palace	1	0	0	0
			AI 2	The Dendrological Park	1	0	0	0
			AI 3	Alba Iulia City Hall	1	0	0	0
			AI 4	Mărășești street	0	900m x 2.4m	**	**

## 2. Challenges and Constraints

Throughout the process, cities and regions faced several challenges and constraints regarding the scope and objective of their local ULLs and roles and responsibilities of the consortium partners.

### **e-Charging Stations for e-Bikes (A)**

First of all, the design of the e-charging stations for e-bikes (with concrete pre-cast elements, PV panels for roofing or flooring, and second-life EV batteries for electric power storage) was organized within the Task 3.6, in a co-creative competition process, but including only few city and regional representatives in a more active manner.

Local ULL were supposed to be designed as open innovation ecosystems embedded in real-life urban contexts, enabling citizen-centred prototyping of SMILE CITY systemic solutions. In two cases local stakeholders were proactively engaged in creative design process of the e-charging station: in the Region of Castilla y León, IES Galileo developed a design proposal, and Metropolitan Municipality of Bursa collaborated with participating team from the Bursa Technical University.

However, majority of the cities and regions could not engage their local creative capacities in a locally most efficient manner into the design process. Moreover, they could not test potential solutions in their local contexts from the early-stage process. This could be highly complex and cause barriers in subsequent stages for cities with strong cultural and build heritage protection requirements, e.g. for Lucca, Alba Iulia or Chania. Implementation of e-charging stations for e-bikes in touristic places with high frequency of users often means that it is in the vicinity of fortresses or monuments, which can pose significant limitations regarding the shape, colour and materials which can be used in any new physical intervention.

Considering that designing and selection process of the e-charging stations for e-bikes has not yet been finalised at the end of June 2026, local authorities could not proceed with any formal consultations regarding conditions or approvals for this SMILE CITY systemic solution.

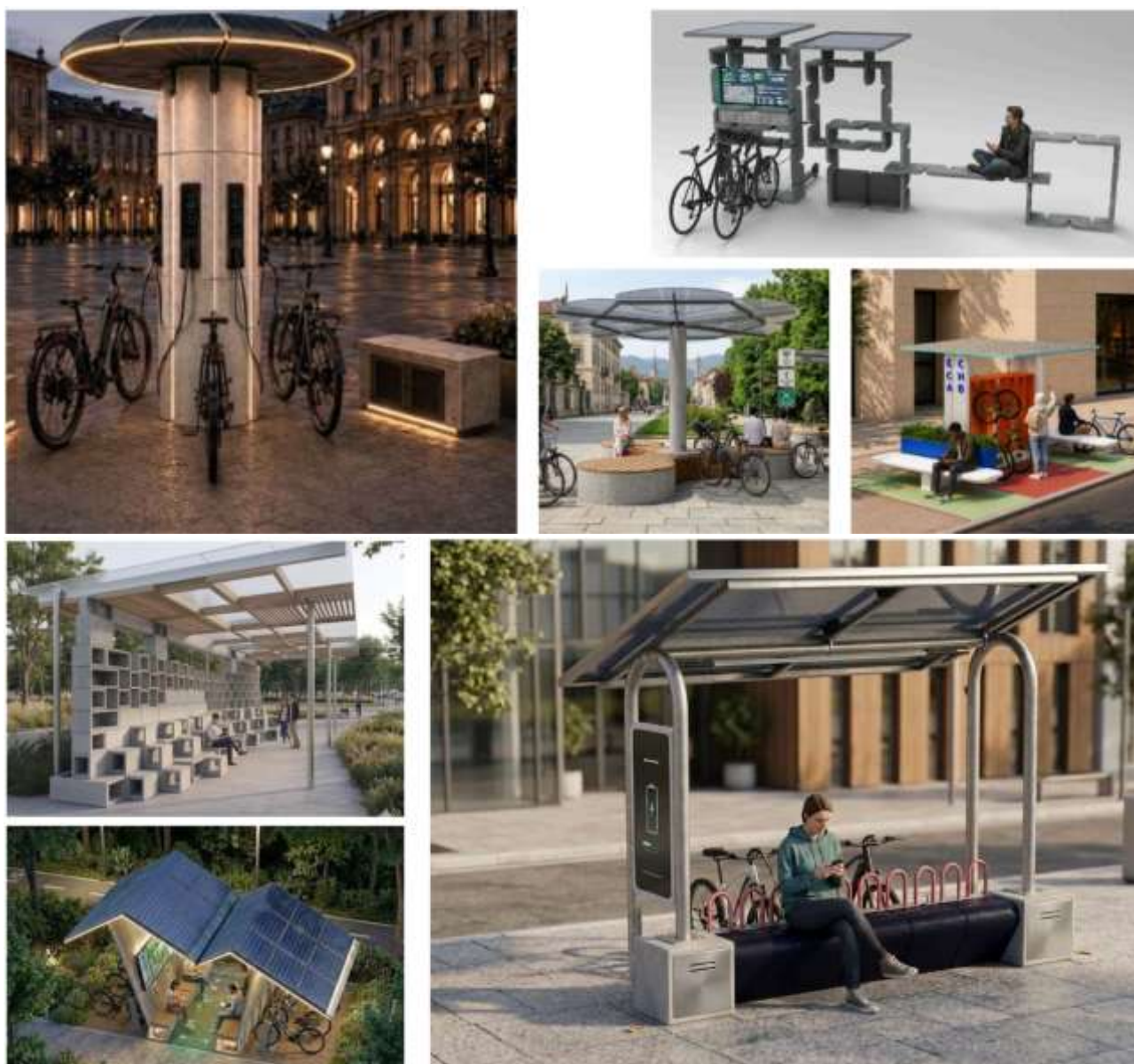


Figure 1: Several Proposals for the Design Competition for the SMILE CITY e-charging station, within the Task 3.6

Several cities expressed that they expected to receive material specifications, technical data, and structural and architectural blueprints of the technologies to be tested from other project partners. Once the necessary information is received, specialized technicians from the local administrations will oversee developing the specific public work technical projects for each Pilot.

During the ULL 2.3 several points were also discussed and raised to ULL 3.6 about technical elaboration and production of elements for the e-charging stations by project partners, more specifically about their transportation, import and customs, and the related fees. Finally, there are uncertainties regarding the local assembling of the parts of the e-charging stations, their testing, certification and operationalisation, that will be analysed and settled with the other partners, on the basis of what highlighted by the two ULLs. Responsibility for costs for all these activities must be



agreed promptly among project partners.

## **Cycling Lanes Re-paving with Recycled Rubber and Polymers (B)**

Secondly, the co-design process for cycling lane pavement with End-of-Life (EoL) rubber and/or textile fibres was divergent and required high level of engagement, research and innovation efforts from the local governments.

Innovative materials data sheets, technical specifications and certifications were expected from the technical partners for a long time, but due to site-specific conditions and complex nature of Design Mix preparation for new asphalt solutions, major efforts have been needed from local contractors and/or local technical consultants, for preparation of the tender procedures, contract amendments and adequate works implementation. In this manner, major innovation-related decisions were delegated to local administrations.

Coordination of the roles among the partners from different sectors: public (local governments), private (technical partners) and civil sector (horizontal partners) was highly challenging, and this Report reflects the level of achieved understanding and adjustment. The issue of responsibilities for bearing various work-related costs which are not so obvious at the first instance (e.g. development of Design Mix Formula, supply of specific material (additives) for new rubberized asphalt, or laboratory certification of newly tested materials) remains open for this systemic solution as well.

Moreover, due to legal, technical, operational or financial reasons, it could be appropriate and advisable in some cities or regions to re-define the surface to be paved, depending on the location, use intensity, special performance required, etc. The objective is not only to pave certain number of surfaces of rubberised asphalt, but to improve cycling tracks, with a combination of systemic solutions, where they are more useful and needed by the users.

Finally, it shall be verified if and how much the prices of the resources for implementation of asphalt-based works were increased since the Project Proposal phase, and when needed, a financial reassessment will be conducted, on case-by-case basis.

## **Urban Furniture: Curbs, Lane Dividers and Bollards in Molded Recycled Rubber (C and D)**

Urban furniture elements: curbs, lane dividers and bollards in molded recycled rubber have largely not yet been addressed or planned, since efforts have been concentrated on understanding the processes and methodologies related to rubberized paving (systemic solution B), and roles for the installation of e-charging stations (systemic solution A).



Given their smaller, prefabricated nature, urban furniture components are generally considered easier to manufacture and test. However, where planning and calculations have been carried out, the projected quantities of these elements, due to actual needs in space, but also due financial reasons, differ significantly from those outlined in the Grant Agreement. For instance, in Castilla y León, the plan includes installing 20 lane dividers and just 6 bollards, compared with the original target of 100 meters of curbs and 80 bollards.

It is strongly advised to the cities and regions to have a joint, detailed project review of the cities' planning and technical design before formal approval, permitting and works implementation, to adjust the project document to the actual needs.

## 3. Local Reports

All the cities and regions were strongly engaged in local co-creation and innovation designing processes. However, due to various reasons: location specificities, legal requirements, local capacities and previous experience, etc. they have reached different level of technical maturity and developed different levels of detailed information on Pilot Sites planning.

None of the cities have obtained construction permits yet but considering that the permitting process is mostly the jurisdiction of the local municipality itself, the permitting is not expected to be very challenging. The preparatory tasks were, however, highly complex, since communication and roles definition were thoroughly discussed and reconceptualized during Task 2.3 implementation.

### 3.1. City of Lucca – Local Report

#### 3.1.1. Setting up the Urban Living Lab and stakeholders' engagement

The SMILE CITY project in the City of Lucca is coordinated by the public administration, in particular the Mobility Office (A.2), according to the Plans/Program of the Municipality. The City of Lucca appointed an internal working group which communicates with the various stakeholders and other departments involved, and above all, it will oversee the installation of the SMILE CITY pilots from the beginning, planning phase, until full completion, implementation and evaluation. This internal working group, comprised of a number of Municipality employees, has been coordinated by the A.2 department, which is directly involved in the SMILE CITY project.

Collaboration with consortium technical partners with specific knowledge and experience has been beneficial. Collaboration with external facilitators for co-design and participatory processes was considered, but it was deemed more effective to rely on the technicians already employed within the Municipality of Lucca, creating an internal working group that could also oversee the development and implementation of the entire project. Regarding external participatory processes, since the project pilots were incorporated into already approved and well-established executive projects, they



were integrated into those activated previously. In this sense, the pilots represent an optimisation of the original objectives previously agreed upon with external entities and various stakeholders.

### 3.1.1.1. Working Framework

The City of Lucca has adopted a SUMP (Sustainable Urban Mobility Plan), approved in 2018 and still in force. This medium- to long-term plan develops a cycling network within the "Bicipolitana" project (a highway line for bicycles), which has been developed in a specific plan approved in 2021. It includes the redevelopment, reorganisation, and creation of new cycle paths, so this project is relevant for positioning pilot locations.

The land considered for the pilots' locations is owned by the Municipality of Lucca.

Regarding the technical designs, the City of Lucca expected to receive essential documents from the various project partners, including material specifications, technical data, and structural and architectural blueprints for the charging stations. Once the necessary information is received, a specialised technician from the Municipality of Lucca (a member of the internal working group) will be in charge of putting everything together and developing it into a specific public works project, with technical documentation, for each pilot.

The works on cycling lane paving will be executed by a private company with which the City of Lucca already has an existing contract, by integrating the pilot paving project into an existing agreement, via an amendment. In this manner, the process will be much quicker, less expensive and technically feasible, considering the amount of technical support provided by other consortium partners.

It is possible to have the new construction materials tested, analysed, and certified by local producers and manufacturers involved in the pilot installations. For example, regarding asphalt made with a recycled rubber mix, it is possible to involve local companies in laying the cycling path with these materials and subsequently analyse and test the material used. But to do this, local producers and manufacturers expected the technical specifications and product data sheets of these new construction materials.

Responsibility for certification of Mix Design and potential registration of End-of-Waste status for recycled rubber from tyres is still under consideration.

Regarding the permits for implementation of works, these will be issued by various public bodies, but managed by the City, by requesting them through the national procedure called "service conference", which is mandatory for all public works.

Regarding the project's financial aspects, since the various pilots are currently still in the preliminary design phase, it is very difficult to make reliable economic assessments. However, preliminary investigations already suggest a potential and substantial discrepancy between the estimated costs made during the drafting of the Proposal and current socioeconomic market conditions. Therefore, it is necessary to await future developments to gain greater clarity regarding the necessary financial commitment, especially regarding the charging station pilots, which are still in the preliminary design phase.

For the moment, however, the City of Lucca has not planned to contribute with its own funds to the pilots' costs beyond the project budget; to do so, it would need political approval and numerous



technical and bureaucratic procedures to allocate more resources, and currently, this is not planned. The idea is to manage everything within the project's available resources.

### 3.1.1.2. Mapping the Main Stakeholders

To ensure the successful implementation of the SMILE CITY pilot in Lucca, various stakeholders have been identified and mapped, both within and outside the public administration.

Regarding stakeholders within the Municipality of Lucca, there are certainly the Public Works Department and the Traffic Department; both of these offices have been directly involved in the pilot project design to assess the impact on traffic to prevent potential problems and supervise the installation to certify the proper execution of the work. Also, the Maintenance Office is crucial because it must evaluate the materials' characteristics and durability, as well as their maintenance needs over time.

Another very important stakeholder that could truly negatively impact the project's implementation is the Superintendence of Cultural Heritage. Since Lucca is an old city with many historical monuments and places of artistic and cultural interest, it is necessary to ensure that the location of the pilot projects does not pose a problem for the Superintendence; in this case, it could prohibit the City of Lucca from proceeding with the installation and force the City to change the project, especially from an architectural point of view. Although this institution is reluctant to be involved in the project without official procedure, the City will put effort into establishing a preventive dialogue.

Among the external stakeholders, the most representative and important ones are the citizens and tourists of the City of Lucca, who are the main end users of the project. Local cycling associations and/or businesses could be involved after a proper evaluation.

The planned levels and methods of engagement of stakeholders are as follows:

LEVEL OF ENGAGEMENT	INFORM	CONSULT		INVOLVE		COLLABORATE
Method of engagement	Website	Questionnaire	Focus Groups	Workshop	One-to-one meetings	Task Force
Public Works Department				X		X
Traffic Department						X
Superintendence						X
Cyclist Organizations	X		X	X		
Citizens/ Tourists	X		X		X	

For the installation of the charging stations in a public parking lot, while eliminating parking spaces, vehicle owners could become vulnerable and opposing stakeholders, subject to potential adverse impacts.



### 3.1.1.3. Visioning and Scale-up Potential

The city of Lucca has been working for years to increase sustainable mobility within its territory. This is due to significant traffic and air quality problems that negatively impact the lives of residents and tourists visiting the city.

The Smile City project could bring the City's construction practice closer to the best available techniques in terms of environmental sustainability and the circular economy. The aim is also to encourage the use of sustainable means of transport, which reduces environmental impact and facilitates travel without the use of motor vehicles, by placing the charging stations in strategic locations (near the historic centre, car parking, and train and bus stations).

#### Scale-up potential of the pilot, in the national or EU context

The City of Lucca has been implementing sustainable mobility for years, often using funding sources available at regional, national, and European levels.

In this context, the city's institutional relationships, developed with other municipalities and relevant national bodies, will provide a basis for scaling up systemic project solutions and offer useful communication channels for incorporating procedures and techniques into national guidelines. For example, relationships with **ANCI (the National Association of Italian Municipalities)** and with bodies involved in promoting sustainable mobility, such as the **National Observatory on Sustainable Mobility**, and the **Tuscany Region**, are highly important.

### 3.1.2. Multicriteria analysis for site selection

According to the Grant Agreement, Lucca will have to install two charging stations and lay one cycle path; therefore, five potential pilot locations were considered: three for the charging stations and two for the cycle lane. These five locations differ in their positions and utility to the community and have been selected based on their feasibility. For the **Charging Station, the following three options will be analysed in detail, and for the Cycling Lane Locations, another two options:**

1. **Location 1: Sports Hall Parking**
2. **Location 2: Railway Station**
3. **Location 3: Carducci Parking**
4. **Location 4: New "Asse Suburbano" – cycle path (part A or part B)**
5. **Location 5: Via Martiri delle Foibe**

All the potential locations for pilots of the SMILE City project are aligned with the Sustainable Urban Mobility Plan from 2018, and the "Bicipolitana" project and plan from 2021.

#### 1. Location 1: Sports Hall Parking – for e-bike charging station (option n.1)

Location: Lucca, Via delle Tagliate

Coordinates: 43°50'59.2"N, 10°29'43.7"E

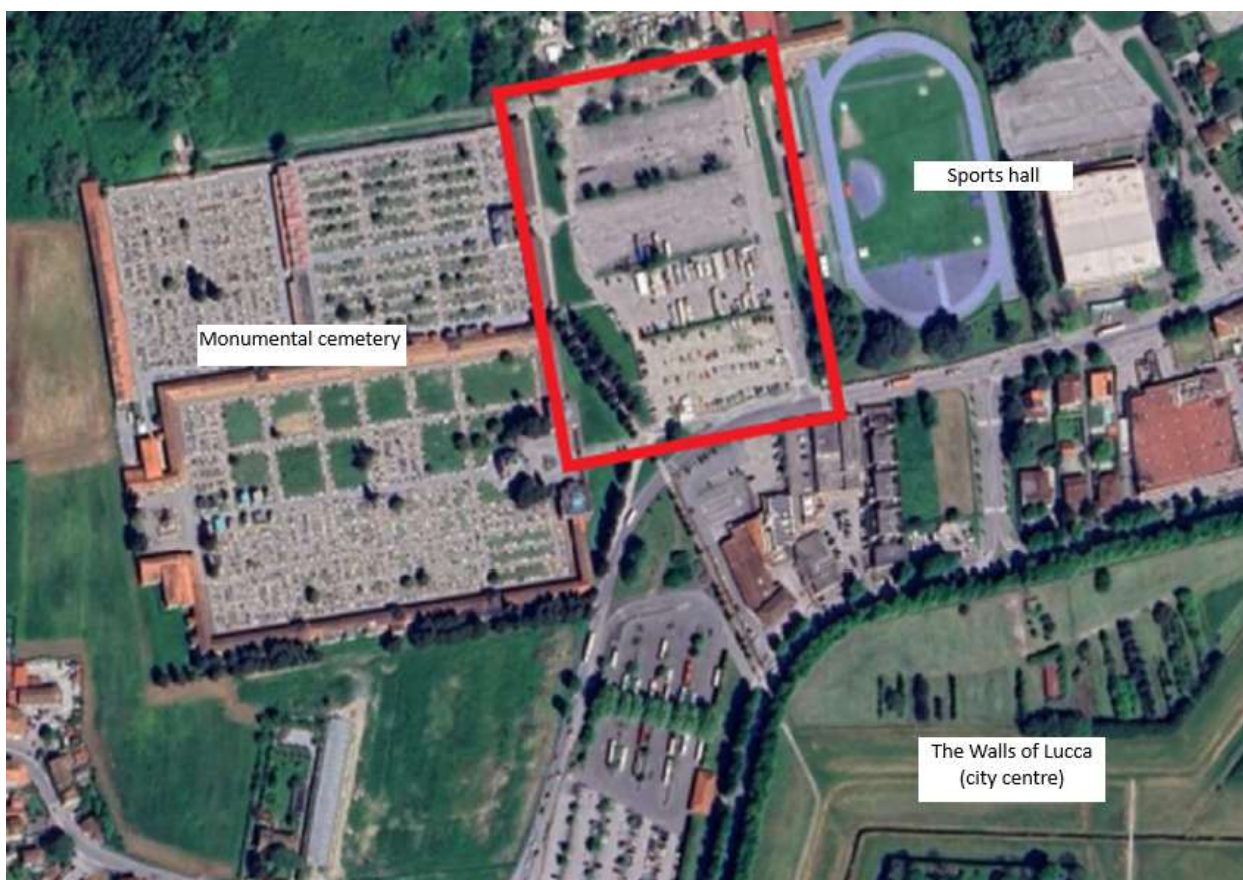
Currently, there is a free parking area on this site, located **between Lucca's monumental cemetery and the Palazzetto dello Sport**. The area is **very close to the historic walls** of Lucca's city centre and is served by public transportation, with a strategic position.

Both the parking area and the sports centre have already approved projects for their renovation and valorisation, to be realised in the next 12-24 months.

This location could be a very good one, due to the fact that:

- The parking area will be free, with an expected high frequency of use;
- It is very close to the city centre (about 600 mt);
- It is served by public transportation (bus stop with shelter);
- It is close to an existing cycling path, and the already-approved renewal project will enhance its use and importance for citizens, workers, and tourists.

Landscape constraints imply the authorisation required from the local Superintendency.



The Municipality of Lucca has already launched a project to redevelop the area and plans to build a new, large, modern parking lot. Disabled parking spaces, designated parking spaces for pregnant women, electric charging stations, and a charging station for bicycles and e-scooters are planned.



## 2. Location 2: Railway Station – for e-bike charging station (option n. 2)

Location: Lucca, Piazzale Ricasoli

Coordinates: 43°50'15.7"N 10°30'22.9"E

This is the area **in front of the city railway station**, an intermodal strategic hub, linked to the cycling path called “Ciclovia Lucca-Pontedera”, **very frequented by tourists and local bikers**.



- This location is very close to the city centre (about 300 mt), and FS is discussing with the Municipality on how to realise a “soft mobility service point” here in order to give more mobility services to their customers, such as bike sharing station, bike and car charging station, and bicycle parking stations.
- This area is the property of FS but has been granted to the Municipality for public use.



Landscape constraints imply the authorisation required from the local Superintendency.

### 3. Location 3: Carducci Parking – for e-bike charging station (option n. 3)

Location: Lucca, Viale Carducci

Coordinates: 43°50'17.1"N 10°29'47.9"E

This is a parking area very close to the city wall; it is heavily used by workers and tourists because it is well served: it is in front of a local public transportation stop and connected to the city entrance, near a very utilised pedestrian and cycle underpass.



However, it remains the last choice in order of priority, because the first two are better in terms of connection to the city intermodal hubs, and they let the two opposite areas of the city to be served.



Landscape constraints imply the authorization required from the local Superintendency.

### 4. Location 4: New “Asse Suburbano” – cycle path (part A) option n.1

Location: Lucca, Via dell’acquacalda – Via della Santissima Annunziata

Coordinate: (approx) from 43°51'45.9"N 10°31'21.7"E to 43°51'31.9"N 10°31'37.2"E

This pilot location involves a new strategic north-south road link in the eastern part of the city, which will be sided by a new bike path.

- Strategically developed road network to reduce traffic on the city's ring road
- Investment approved and co-financed by the Tuscany Region and featuring high design standards.
- A 300-meter road that will connect the new bridge over the Serchio River to Viale Castracani (one of the main city roads) and therefore to the San Luca Hospital area
- Very important new infrastructure, including a cycling path, in a city area with very little bike infrastructure and a high daily traffic volume
- The possibility of using the main contractor yet granted, through a project design variation/update.



Construction work on this new stretch of road has already begun and is progressing rapidly, with completion scheduled for December 31st of this year. Given the rapid pace of progress, the City of Lucca is working to integrate the road with the cycle path planned in the pilot project.

## 5. Location 5: Ciclovia Brennero– cycle path (part B) option n.2

Location: Lucca, Via Martiri delle Foibe

Coordinate: (approx) from 43°51'31.4"N 10°31'37.0"E to 43°51'05.5"N 10°31'32.5"E

This pilot location involves a new bike lane, recently financed by the Ministry of the Environment with a program for the development of intermodal urban cycle paths.



Construction of a cycle path, called “Ciclovia Brennero”, including Via Martiri delle Foibe (on the map presented with a red line), will be a two-way street, through the redesign of the existing sidewalk.

- The length of the path is approximately 860 meters;
- Very compliant with SMILE CITY objectives: the project aims to create a strategic infrastructure for cycle mobility as an alternative to private road transport and to work as an intermodal integration with local public transport;
- The possibility of using the main contractor to be granted, through a project design variation;

Compatibility of the timing with the SMILE CITY project pilot: the Ciclovia has to be completed by December 2026.



### 3.1.2.1 Legal Criteria

For Location 1, the executive project called "Redevelopment of the Via delle Tagliate parking lot" is almost completed – a detailed Executive Project.

For Locations 2 and 3, several design hypotheses have been made, but not yet materialised into a real project design.

For Locations 4 AND 5 - a project has been developed in two phases; the first is currently underway, and the second will begin by the end of October 2026. Both the first and second phases of work involve the construction of a dedicated cycle path alongside the road; one section was considered as the first candidate for the pilot site, depending on the timing of the pilot project and of the construction site.

The Suburban Axis project includes Section A and Section B, both of which include a cycle path. The initial choice of these two locations depended on feasibility, also in relation to the construction schedule, but we can say that Section A is the first choice for the first pilot project. Construction of this new section of road has begun in recent months, and the City of Lucca has initiated discussions with the local contractor to include the recycled asphalt cycle path in the initial project.

### 3.1.2.2 Technical Criteria

For Location 1 - Documentation related to SMILE CITY's specific needs will be provided at a

In the months leading up to and during the ULL 2.3 meetings, the City of Lucca approved the executive project, which incorporated the Smile City project recommendations and included a dedicated space for the charging station. As soon as the results of ULL 3.6 are available, the project documents will be further detailed, and final approval and pilot installation will proceed.

The person in charge of technical documentation is the RUP (project manager): Engineer Francesca Guidotti.



For Locations 2 and 3, it is not possible to identify a project manager or share defined technical documentation, since design proposals were not elaborated enough.

Since these locations are more sensitive and complex from an authorisation standpoint, the outcomes of ULL 3.6 could heavily influence the choice between these two options.

For Location 4, there is a specific project under realisation, already approved and ongoing. The use of the materials and solutions provided in SMILE CITY must be integrated during work execution, either through a specific project design variation procedure or through agreements with the contractor (depending on the type of changes that the project will require). The person in charge of technical documentation is the RUP (project manager): Engineer Francesca Guidotti.

For location 5 – the technical design has been developed. If the City of Lucca was to choose this location (option 2 for the cycle path, instead of option 1), the technical project would have to be adapted to the indications provided by Smile City for realization of the pilot.

**The exact legal procedure to obtain all the permits for all the locations is:**

1. Preparation of an **executive project** (or variant, if one already exists) in accordance with the relevant national legislation (Legislative Decree 36/2023): general descriptive report, architectural and/or structural design layouts, blueprints, estimated bill of quantities, project economic framework;
2. Services Conference (procedure to obtain all permits) L. 241/90: Management of Constraints and amendment of the project to the requirements, if any;
3. Approval by the City Council;



4. Public procurement procedure;
5. Contract and execution.

The length of these steps would vary, according to the location selection, e.g.

For Location 1:

1. Design: 30/60 days;
2. Services Conference: 45/60 days (minimum);
3. Public procurement procedure;
4. Implementation: To be defined; it depends on the main project time plan.

For Locations 2 and 3:

1. Design: 30 days;
2. Services Conference: 45/60 days (minimum);
3. Public procurement procedure;
4. Implementation: 60 days (estimated).

For Location 4:

1. Design: an executive project was developed; Mix Design to be detailed and certified;
2. Services Conference: 45/60 days (minimum);
3. amendment of the already existing contract;
4. Implementation: 30/60 days (only referred to asphalt laying).

For Location 5:

1. Design/design adjustment variant: 60 days;
2. Services Conference: 45/60 days (minimum); (to be evaluated if needed)
3. Public procurement procedure or amendment of the already existing contract
4. Implementation: 30/60 days (only referred to asphalt laying).

### 3.1.2.3 Operational Criteria

For Location 1 - Executive project draft for the regeneration of the main area is currently in progress. There is enough time to conduct public procurement, but it must be coordinated with the ongoing intervention.

For Locations 2 and 3 – the stage of the implementation of the intervention / wider investment was not clearly defined / scheduled, but it was feasible to conduct a public procurement, do the technical documentation, and carry out the investment in line with the SMILE CITY project dynamics.

For Location 4 - Lot 1 of the main road was under construction in late 2025; Lot 2 works commenced in mid-2026.

For location 5 – Works are in progress. Lot 1 of the main road was under construction in late 2025; Lot 2 works commenced in mid-2026.

### 3.1.2.4 Financial Criteria

The use of additional funds should remain a last resort, and its sustainability and timing should be “politically” assessed. A more precise estimate of the costs for the cities is required first.



The local budget is entirely managed by the Municipality of Lucca, which allocates it to its own offices, based on objectives established by the political side. If the solutions offered by SMILE CITY will confirm expectations, in terms of improved material performances, improved environmental impact and cost efficiency, and users' positive feedback, this could lead the Municipality to allocate greater funds to virtuous choices such as the ones tested in SMILE CITY.

### 3.1.2.5 Socio-political Criteria

Any objections can generally be traced back to the classic objections associated with public works, relating to: architectural design and spatial impact; functionality or environmental issues; size and cost-effectiveness of the financed project, and good maintenance status after realisation.

Currently, there are no specific reasons for the wider citizenry to oppose this project in the proposed locations, except for the car-users, for reducing the parking lots for the e-bike charging station installation.

#### *Overall assessment*

For all the locations, barriers exist, but there are strategies for overcoming them. Most of the criteria have a clear and achievable pathway for implementation within the SMILE City timeline. Based on all careful considerations, the selected locations for e-bike charging station installation are 1 and most probably 2 – Cemetery Parking and Railway Station, and for the cycling lane, Location 4 - Asse Suburbano.

Criteria for site selection:	Location 1	Location 2	Locations 3	Location 4	Location 5
Legal	Green	Green	Green	Green	Green
Technical	Green	Green	Yellow	Green	Yellow
Operational	Green	Yellow	Yellow	Green	Yellow
Financial	Yellow	Yellow	Yellow	Yellow	Yellow
Socio-political	Green	Green	Yellow	Green	Yellow

Scale or grading the implementation preconditions:	Pathway for implementation is clear and achievable within the SMILE City timeline	Barriers exist, but there is a strategy for overcoming them	High-risk for implementation (killer-risk)
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### 3.1.3 Co-creation Activities

Co-creation planning for the City of Lucca was conducted in late 2025.

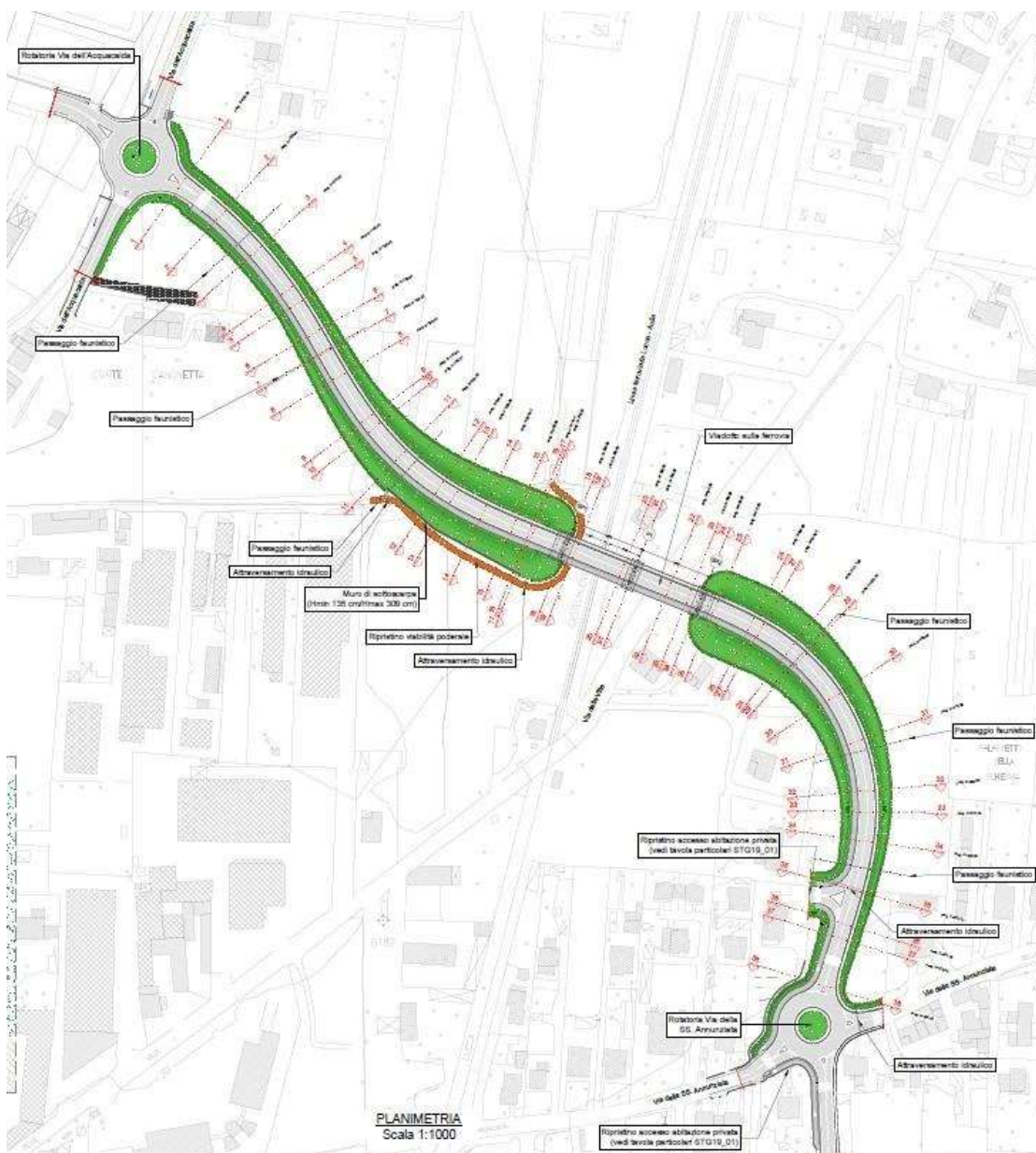
	PLANNING			Links with WP 3			Links with WP 4	Links with WP 5 (&6)
	STEP 1	STEP 2	STEP 3	STEP 6			STEP 7	STEP 8
CO-CREATION PATHWAY STEPS	Identify SMILE CITY pilot area(s)	Map & (initially) engage stakeholders	LAUNCH the LL / Task Force	Co-design: the pilot project(s)			Co-implementation: prototype construction	Co-monitoring: testing the prototype pilot
	Nov '25 - Dec '25	Jan '25 – Feb '26	March '26	April '26	May '26	June '26	Jan '26 – June '28	June '26 – Aug '28
Public Works Department	One-to-one meeting	Focus Group	Focus Group	Workshop / Public Discussion		Task Force Workshop / Public Discussion	Task Force & One-to-one meeting	
Superintendence for Cultural Heritage						Opportunity to share the project idea in advance	Binding advice on architectural project	
Tourists / Citizens		Website / Newsletter				Workshop / Public Discussion		Questionnaire / Survey
Contractor for Asphalt Production				One-to-one meeting	Workshop			

Despite the planning dynamics, due to on/going technical discussions, most of the co-creation activities will be implemented in subsequent phases of the design work.

### 3.1.4 Implementation Preconditions for Prototyping

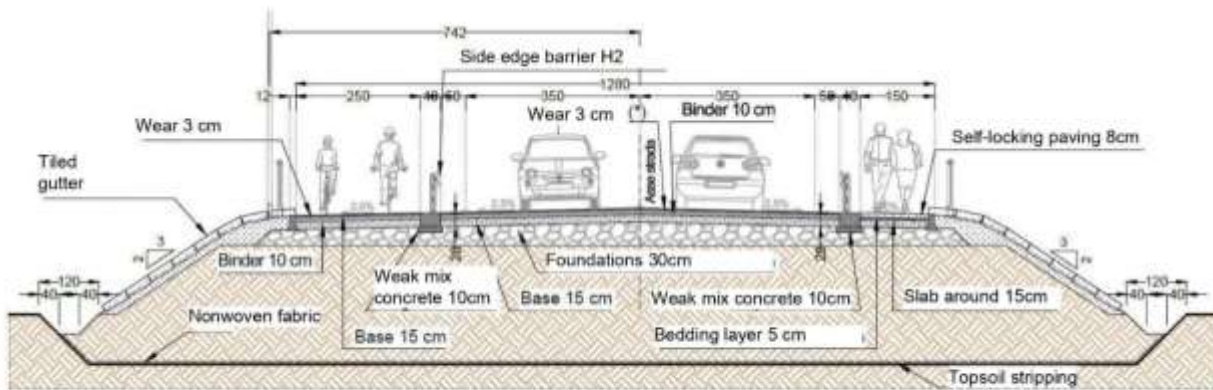
#### 3.1.4.1 Location Conditions

For Location 4 - Asse Suburbano is a new stretch of road that will connect two very important arteries on the immediate outskirts of Lucca. The construction work on the new road has begun, and the viaduct over the railway line has been installed. There will be two roundabouts at the beginning and end of the new section of road.





The entire section of road will include a bike path and pedestrian sidewalk in both directions.



Section 2-2 - Standard section on embankment  
1:100 scale

The area is primarily residential and close enough to Lucca's city centre to be easily reached by bike.

### 3.1.4.2 Public procurement planning

The Contractor will carry out the construction works under Legislative Decree 36/2023. The procedure to be followed and the operational arrangement are specified in the **General Contract Specifications**. Contractor for cycling lane paving will be contracted via amendments and variations of the existing project.

### 3.1.4.3 SMILE CITY systemic solutions for prototyping

City of Lucca has a project baseline: the technical specification already defines a conventional asphalt pavement system with two upper hot-mix asphalt layers: a **binder course** and a **wearing course**. The asphalt is produced as a hot mixture of crushed aggregates, sand, mineral filler, and bitumen, laid by paver and compacted with pneumatic and steel rollers

For the cycle path, the pavement structure is:

**Foundation:** min. 30 cm

**Base:** 15 cm

**Binder course:** 10 cm

**Wearing course:** 3 cm / 30 mm

#### *Existing asphalt mixture requirements in Lucca*

##### **Binder course — current Lucca mix**

The existing binder course is a conventional dense bituminous conglomerate. Its aggregate grading is defined by UNI sieves, with a maximum aggregate size of up to 25 mm. The required bitumen content is **4.5–5.5%** by aggregate weight. The mixture must achieve Marshall stability of at least **900 kg**, Marshall stiffness above **300**, and residual voids between **3–7%**.

Serie crivelli e setacci UNI	Miscela passante: % totale in peso
Crivello 25	100
Crivello 15	65 - 100
Crivello 10	50 - 80
Crivello 5	30 - 60
Crivello 2	20 - 45
Crivello 0.4	7 - 25
Crivello 0.18	5 - 15
Crivello 0.075	4 - 8

##### **Wearing course — current Lucca mix**

The existing wearing course is also a conventional hot bituminous conglomerate. Its grading is defined by UNI sieves with a maximum aggregate size of up to 15 mm. The required bitumen content is **5.0–6.5%** by aggregate weight. The specification requires high mechanical resistance, Marshall stability of at least **1,000 kg**, Marshall stiffness above **300**, and residual voids between **3–6%**.

Serie crivelli e setacci UNI	Miscela passante: % totale in peso
Crivello 15	100
Crivello 10	70 - 100
Crivello 5	43 - 67
Crivello 2	25 - 45
Crivello 0.4	12 - 24
Crivello 0018	7 - 15
Crivello 0.075	6 - 11

**Conclusion:** the Lucca project already contains clear technical requirements for conventional binder and wearing-course asphalt, but it does **not expressly introduce SMA / BBTM mixtures or ELT-derived rubber inputs.**

*Proposed pilot addition by RECYKL, as a project partner - new wearing-course mixture types, to be discussed with the local contractor*

The pilot should not modify the binder course or the overall pavement structure. It should introduce alternative asphalt mixtures **only for the 30 mm wearing course.**

Permitted new wearing-course mixtures:

Existing Lucca solution	Pilot alternative
Conventional wearing-course hot bituminous conglomerate	<b>SMA 5 / SMA 8</b> under EN 13108-5
Conventional wearing-course hot bituminous conglomerate	<b>BBTM 5A / BBTM 8A</b> under EN 13108-2

The tender clause document must require the pilot to be limited to the 30 mm wearing course and permit functional asphalt mixtures SMA 5 / SMA 8 or BBTM 5A / BBTM 8A.

*Example pilot mix concepts with tire-derived products*

The proposed mix concepts may include:

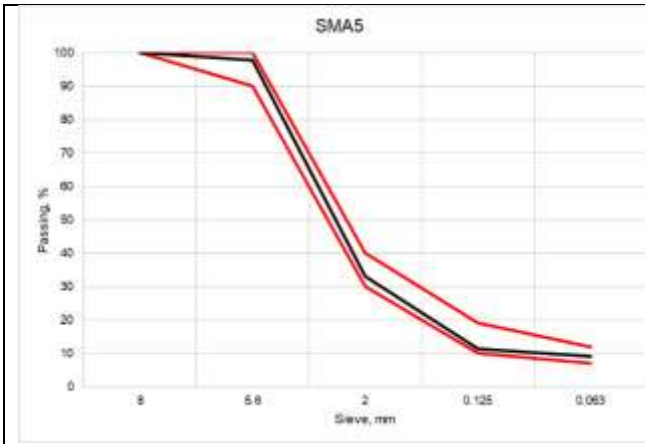
**SMA 5:** crushed stone 2–5 mm, crushed stone 0–4 mm, mineral filler, bitumen 50/70, plus **rubber powder 1.0%** or **ELT fibre 0.6%**.

**SMA 8:** crushed stone 4–8 mm, crushed stone 0–4 mm, mineral filler, bitumen 50/70, plus **rubber powder 1.2%** or **ELT fibre 0.8%**.

**BBTM 5A:** crushed stone 4–8 mm, 2–5 mm and 0–4 mm fractions, mineral filler, bitumen 50/70, plus **rubber powder 0.8%** or **ELT fibre 0.5%**.

**BBTM 8A:** crushed stone 4–8 mm, 2–5 mm and 0–4 mm fractions, mineral filler, bitumen 50/70, plus **rubber powder 1.0%** or **ELT fibre 0.7%**.

### SMA 5

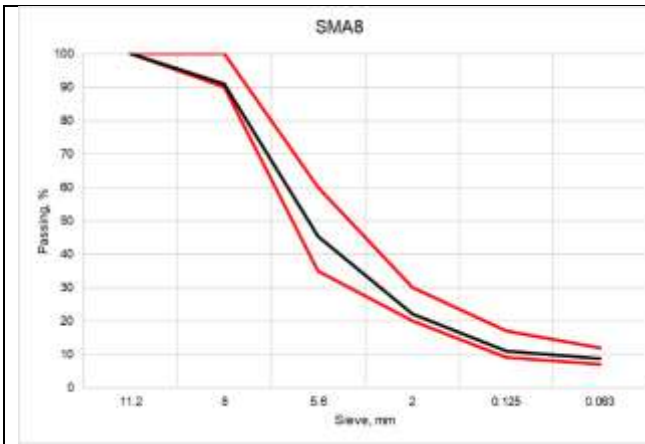


Crushed stone 2-5 mm – 67%  
 Crushed stone 0-4 mm – 24%  
 Mineral filler – 9%  
 Bitumen 50/70 – 6.5%

Rubber Powder – 1.0%  
 or  
 ELT Fiber\* – 0.6%

\* with 20-30% of Rubber Powder

### SMA 8

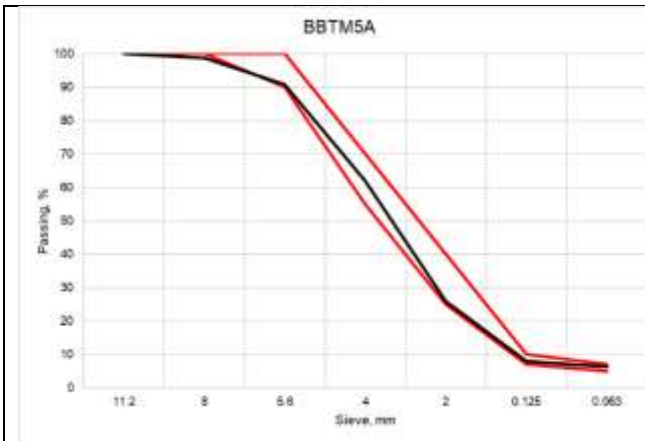


Crushed stone 4-8 mm – 75%  
 Crushed stone 0-4 mm – 16%  
 Mineral filler – 9%  
 Bitumen 50/70 – 6.2%

Rubber Powder – 1.2%  
 or  
 ELT Fiber\* – 0.8%

\* with 20-30% of Rubber Powder

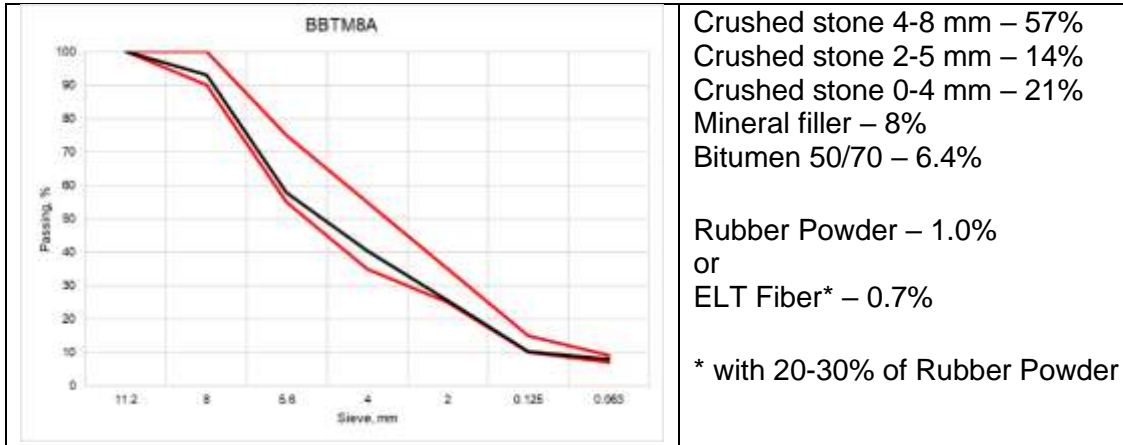
### BBTM 5A



Crushed stone 4-8 mm – 10%  
 Crushed stone 2-5 mm – 67%  
 Crushed stone 0-4 mm – 17%  
 Mineral filler – 6%  
 Bitumen 50/70 – 6.7%

Rubber Powder – 0.8%  
 or  
 ELT Fiber\* – 0.5%

\* with 20-30% of Rubber Powder

**BBTM 8A***How tyre-derived products may be applied*

The addendum should allow the following route:

**Dry process:** crumb rubber powder, rubber compound based on processed crumb rubber powder, or tyre textile fibre is introduced directly into the asphalt mixer.

**Combined route:** product-level and constituent-level routes may be combined where technically justified.

The key point is that the recycled tyre product is not accepted “by name”. The tenderer must prove the **legal status, suitability, dosing method, plant capability and final asphalt mixture performance**.

**3.1.4.4 Prototype Construction – proposed by RECYKL, as project partner**

For the pilot, the contractor should submit:

**Mix design dossier** for the 30 mm wearing course;

**EN 13108-5 compliance** for SMA or **EN 13108-2 compliance** for BBTM;

**EN 13108-20 Type Testing** and **EN 13108-21 Factory Production Control**;

**EAD 230328-00-0108 / EN 14023**, where rubber-modified binder is used;

**CPR / ETA / EAD documentation**, where the tyre-derived input is placed on the market as a construction product;

**constituent qualification dossier**, where rubber powder, rubber compound or tyre textile fibre is used as a manufacturing constituent;

**waste-law, REACH and microplastics statements**;

**test plan** for particle size, voids, water sensitivity, binder drainage, wheel tracking, macrotexture, skid resistance and surface regularity.

The Lucca project already specifies conventional binder and wearing-course asphalt mixtures with defined grading, bitumen content, Marshall stability and void requirements. The proposed pilot addendum does not change the tendered pavement structure; it adds alternative EN-compliant SMA 5 / SMA 8 or BBTM 5A / BBTM 8A mixtures only for the 30 mm wearing course. These mixtures may incorporate crumb rubber powder, rubber compound or tyre textile fibre, provided that the ELT input is legally documented, and the final asphalt mixture demonstrates full technical conformity and performance.

## 3.2 Region of Castilla y León – Local Report

### 3.2.1 Setting up the Urban Living Lab and stakeholders' engagement

The SMILE CITY project in Castilla y León is coordinated by **Fundación Patrimonio Natural de Castilla y León (FPNCyL)**, which acts as the regional enabler and implementation partner for the pilot activities in the region. FPNCyL is responsible for supporting the identification of suitable pilot locations, coordinating with local and regional stakeholders, and ensuring that the proposed interventions respond to real territorial needs.

The Castilla y León pilot focuses on the implementation of circular and sustainable mobility solutions, including the repaving of an existing cycle-lane section with rubberised asphalt, the installation of e-bike charging stations, and the use of bollards or lane dividers made of recycled rubber. These actions are aligned with regional priorities related to sustainable mobility, circular economy, climate resilience, environmental protection and the use of more sustainable construction materials in public infrastructure.

FPNCyL plays a central role in connecting the project with the relevant authorities and stakeholders. This includes coordination with municipalities, Natural Park representatives, regional road and environmental authorities, technical project partners, potential suppliers, contractors and final users. Through this role, FPNCyL helps identify administrative requirements, anticipate implementation barriers, adapt the technical solutions to the local context and support future replication in other rural and urban areas of Castilla y León.

For the pilot development, FPNCyL has established an internal working process involving the regional project team and the relevant technical and administrative actors. This coordination is more intensive during the site selection, technical design, permitting and procurement phases, and will continue during implementation, testing and monitoring.

Depending on the specific pilot unit, the stakeholders involved include the Municipality of Galende, the management of the Lago de Sanabria y Sierras Segundera y de Porto Natural Park, the competent road and environmental authorities, managers of the selected e-bike charging station locations, technical partners specialised in rubberized asphalt and recycled materials, potential regional suppliers, contractors and users such as cyclists, workers, students, visitors and local residents.

External technical support may also be used when necessary, particularly for pavement design, environmental assessment, public procurement, recycled materials and light electric mobility infrastructure. This support helps ensure that the pilot combines technical feasibility, legal compliance, local acceptance and practical usability.

All activities will be managed within the available SMILE CITY project budget. No additional project costs beyond the allocated resources are currently foreseen.

#### 3.2.1.1 Working Framework

The areas considered for the Castilla y León pilots are covered by adopted municipal spatial planning instruments and, where applicable, by environmental and sectoral planning instruments.

For **Location 1 – Vía Verde de Laciana / Pozo María**, the relevant municipal planning framework is the General Urban Development Plan of Villablino. The proposed intervention would also need to



be coordinated with the adopted Pozo María rehabilitation project, which is transforming the former mining site into the Historical Archive of Mining Families.

For **Location 2 – Lago de Sanabria / Galende**, the relevant municipal planning instrument is the Municipal Urban Planning Regulations of Galende. In addition, because the selected cycle-lane section is located in the area of the Lago de Sanabria y Sierras Segundera y de Porto Natural Park, the intervention must also be checked against the applicable environmental planning and protection framework, including the Natural Resources Management Plan (PORN) of Lago de Sanabria y alrededores, approved by Decree 62/2013, and the protection, use and management regime established by Law 1/2017.

For the e-bike charging station locations in **Valladolid**, including PRAE and IES Galileo, the applicable municipal planning framework is the General Urban Development Plan of Valladolid. Since the charging stations are proposed within existing institutional or public premises, no major spatial transformation is expected. However, each installation will still need to comply with the applicable site ownership, local authorisation, electrical, safety and accessibility requirements.

The main stakeholders involved in decisions related to these planning and authorisation frameworks are the corresponding municipalities, the public authorities responsible for the road or public space, the environmental authority where protected areas are involved, and the technical and legal/procurement units responsible for permits and implementation.

For the Galende cycle-lane intervention, the land has been identified as municipal property. Therefore, the work license/construction permit must be processed through the Municipality of Galende. Due to the proximity of the cycle lane to the ZA-104 regional road and to protected natural areas, the municipal permit must be complemented by the corresponding road authorisation and environmental / Natura 2000-related procedure, including IRNA and DAR where applicable.

The technical documentation for the pilot has been prepared through a specific technical project, including the descriptive report, the Material Execution Budget and site plans. This documentation has been signed by a competent technical professional and will support the permitting process.

Implementation activities will be carried out through a public procurement procedure. The contractor and suppliers will be required to demonstrate the technical suitability, traceability and regulatory compliance of the materials used, especially for rubberised asphalt, recycled-rubber bollards or lane dividers, and circular e-bike charging station components. Where waste-derived or recycled materials are used, their legal status and conformity with applicable standards must be properly documented.

Material testing, technical validation and quality control will be carried out where required, using accredited laboratories or authorised bodies according to the applicable regulations for construction and road materials. This combination of planning compliance, technical documentation, material traceability and administrative authorisation will be essential to support implementation and future replication of the SMILE CITY pilot in Castilla y León.

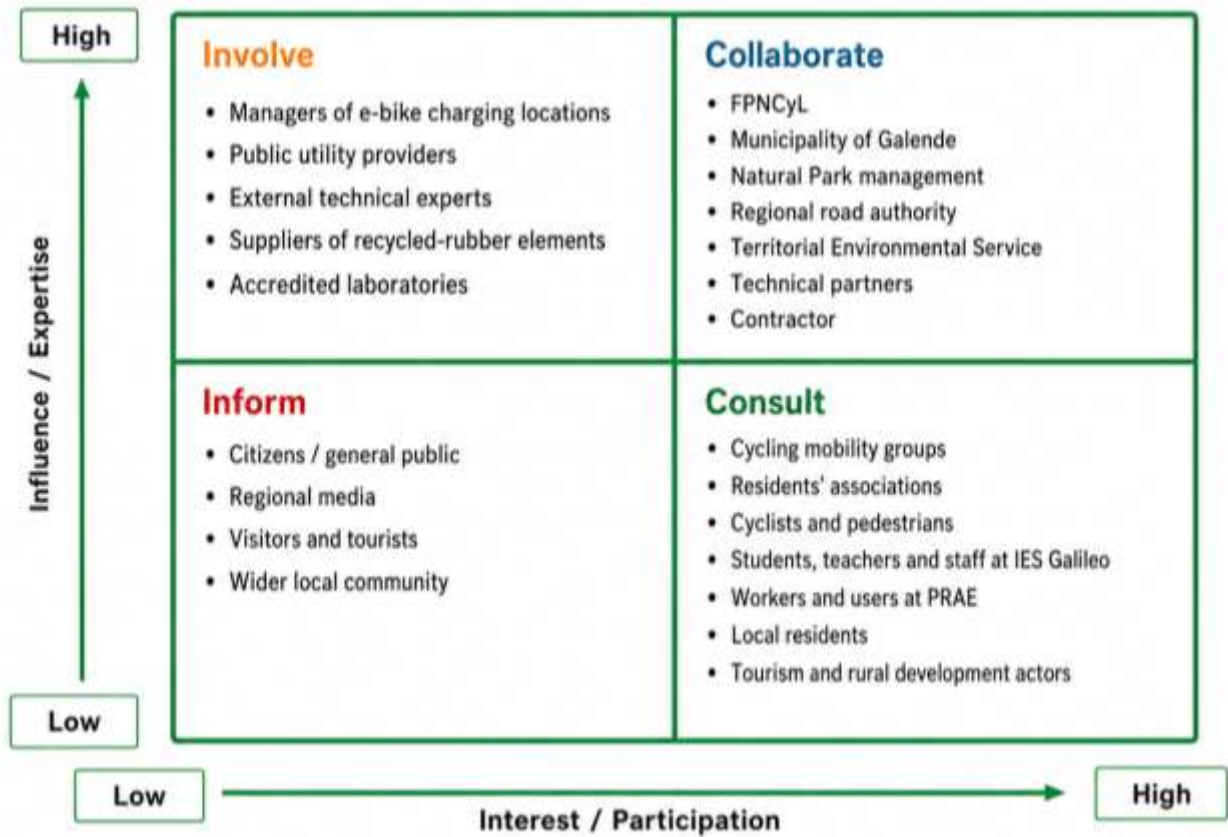
### 3.2.1.2 Mapping the Main Stakeholders

To support the implementation of the SMILE CITY pilot in Castilla y León, the main stakeholders have been identified according to their role in site selection, permitting, technical design, procurement, implementation and future use of the pilot solutions.

The key stakeholders are:



- **FPNCyL**, as the regional enabler and coordinator of the Castilla y León pilot. FPNCyL leads the stakeholder engagement process, coordinates with public authorities and technical partners, and supports the integration of the pilot within regional priorities related to sustainable mobility, circular economy and environmental protection.
- **Municipality of Galende**, as landowner and local authority responsible for the selected cycle-lane section in the Lago de Sanabria area. The municipality is involved in confirming land ownership, supporting the permitting process and issuing the municipal works license.
- **Management of the Lago de Sanabria y Sierras Segundera y de Porto Natural Park**, as a key stakeholder due to the location of the selected cycle lane in a protected natural environment. Its role is relevant to ensure that the intervention is compatible with the conservation and management requirements of the Natural Park.
- **Regional road authority of Castilla y León**, due to the proximity of the selected cycle-lane section to the ZA-104 regional road. This authority is involved in the authorisation for works adjacent to the road and in ensuring compatibility with road safety and maintenance requirements.
- **Territorial Environmental Service**, as the competent authority for the environmental / Natura 2000-related procedure, including IRNA and DAR, where applicable.
- **Managers of the selected e-bike charging station locations**, including PRAE, Pozo María, IES Galileo and the fourth location still to be defined. These stakeholders are involved in confirming the feasibility of installation, site conditions, access, user needs and future operation.
- **Technical project partners**, especially those with expertise in rubberised asphalt, recycled materials and e-bike charging solutions. Their role is to provide technical input, support the definition of specifications and contribute to the validation of the proposed solutions.
- **External technical experts**, including pavement specialists and environmental advisors, who support the adaptation of the pilot to the technical and regulatory context of Castilla y León.
- **Contractors, asphalt producers and suppliers** are to be selected through the corresponding public procurement procedure. They will be responsible for executing the works and supplying the required materials or equipment.
- **Suppliers of recycled-rubber elements and circular mobility components**, including potential regional producers of bollards, lane dividers and other road-safety elements made of 100% recycled rubber.
- **Accredited laboratories or authorised bodies**, where required, to support material testing, technical validation and quality control.
- **Final users**, including cyclists, pedestrians, workers, students, teachers, visitors, tourists and local residents. These users are the direct beneficiaries of the pilot and an important source of feedback on usability, safety and acceptance.





Various stakeholders will be engaged in the process at different stages and with different levels of intensity, depending on their roles in site selection, permitting, technical design, procurement, implementation, communication and final use of the pilot solutions.

LEVEL OF ENGAGEMENT	INFORM			CONSULT	INVOLVE		COLLABORATE
Method of engagement	Website	Newsletter	Questionnaire	Focus Groups	Workshops	One-to-one meetings	Task Force
FPNCyL					X	X	X
Municipality						X	X
Natural Park management						X	X
General Directorate of Roads and Infrastructure						X	X
Territorial Environmental Service						X	X
Managers of e-bike charging station locations			X		X	X	
Technical partners					X	X	X
External technical partners						X	
Contractor					X	X	X
Public utility providers (electricity, water)						X	



Suppliers of recycled-rubber elements and charging station components						X	
Accredited laboratories / authorised bodies						X	
Cycling mobility groups	X	X	X	X			
Residents' associations	X	X	X	X			
Students, teachers and staff at IES Galileo	X	X	X	X	X		
Workers and users at PRAE	X	X	X				
Tourism and rural development actors	X	X	X	X			
Citizens	X	X					
Regional Media	X	X					



### 3.2.1.3 Visioning and Scale-up Potential

The main objective of the pilot in the local context is to demonstrate that circular and environmentally sustainable solutions for mobility infrastructure can be effectively integrated into public spaces in Castilla y León. Through the implementation of innovative paving materials and supporting infrastructure, the pilot aims to provide a real-world testing environment in which technical performance, safety, durability, maintenance requirements, and user acceptance can be assessed under local climatic and operational conditions.

In addition to validating the technical feasibility of the proposed solutions, the pilot seeks to generate practical evidence that can support decision-making by public authorities and other stakeholders. It is expected to contribute to increasing confidence in the use of circular materials, facilitate their incorporation into future planning and procurement processes, and promote greater awareness of sustainable mobility practices. The pilot will also strengthen collaboration among local actors, technical partners, and public administrations, fostering a shared vision for more resilient and resource-efficient infrastructure.

#### **Scale-up potential of the pilot, in the national or EU context**

The pilot presents significant replication and scale-up potential, as it addresses challenges that are common to many municipalities and regions seeking to incorporate circular, low-impact, and climate-resilient solutions into everyday infrastructure. If successful, the experience and lessons learned could be transferred to other urban and rural areas within Castilla y León, extended to other Spanish regions, and contribute to wider European initiatives related to circular economy, sustainable mobility, and green public procurement.

At both national and European levels, the pilot may be relevant for regional and local authorities, infrastructure managers, mobility agencies, circular economy stakeholders, research institutions, and certification or standardisation bodies. Its added value lies not only in the innovative material solutions being tested, but also in the governance approach adopted, the involvement of stakeholders throughout the process, and the practical knowledge generated to support future replication and wider deployment.

## 3.2.2 Multicriteria analysis for sites selection

The site selection process for the SMILE CITY pilot in Castilla y León was carried out as a preliminary multicriteria assessment of two potential locations for the implementation of circular and climate-resilient cycling infrastructure. The analysis focused on identifying a pilot site that could deliver a high-impact demonstration within the available project resources, while ensuring legal feasibility, technical suitability, operational viability, social acceptance and clear replication potential.

Two potential pilot locations were considered:

- 1. Location 1: Vía Verde de Laciana – Laciana Greenway, Zona Alfa, León.**
- 2. Location 2: Lago de Sanabria – Sanabria Lake, Galende, Zamora.**

Both locations were considered strategically relevant for the SMILE CITY project. They are not greenfield development areas, but existing cycling or public-space corridors where the pilot would operate as an upgrade of current infrastructure. This is important because the project aims to demonstrate how circular materials, rubberised asphalt and more resilient construction solutions can be integrated into real mobility infrastructure, with practical value for public authorities and future replication in rural and urban contexts.

The multicriteria analysis was based on five main groups of criteria:

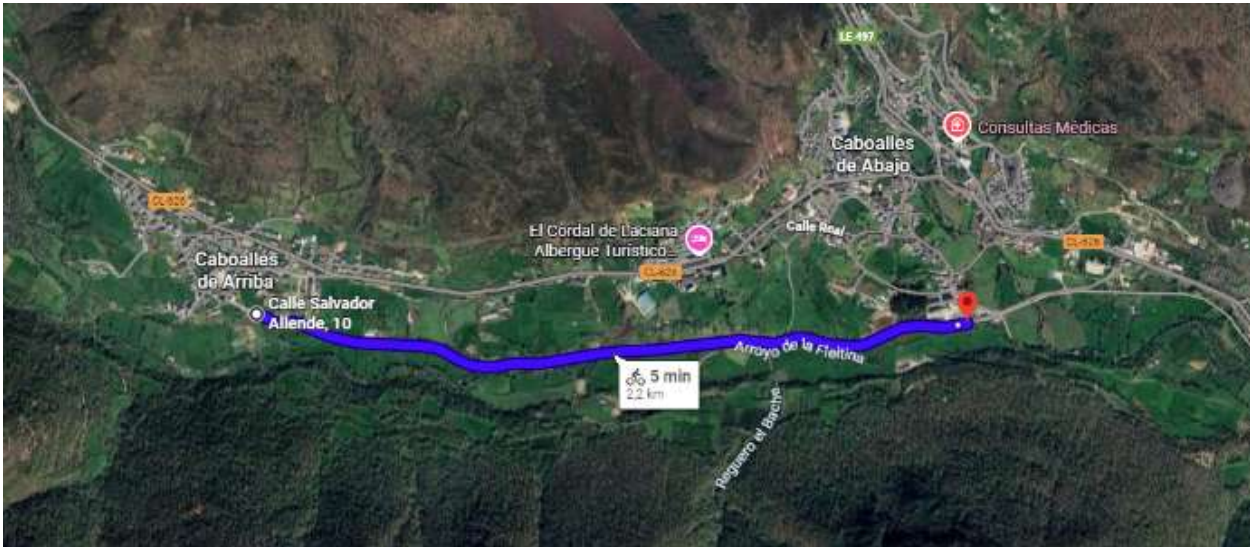
- **Legal criteria:** land ownership, permitting pathway, compatibility with spatial planning, road-domain requirements and environmental constraints.
- **Technical criteria:** suitability of the existing corridor, pavement needs, climate conditions, drainage, accessibility, safety and compatibility with rubberised asphalt, bollards, lane dividers and charging infrastructure.
- **Operational criteria:** implementation complexity, procurement pathway, construction logistics, time schedule, maintenance needs and coordination with local stakeholders.
- **Financial criteria:** expected cost, scale of intervention, compatibility with the available SMILE CITY budget and need for additional funding.
- **Socio-political criteria:** visibility, local acceptance, contribution to sustainable mobility, tourism, environmental awareness, territorial development and future replication.



### 1. Location 1 – Vía Verde de Laciana - Laciana Greenway (Zona Alfa, León):

The first potential pilot site is the Laciana Greenway, located on the former mining railway corridor between Villablino and Caboalles de Arriba. The proposed intervention would connect **Pozo María**, a former coal mine currently being rehabilitated as the Historical Archive of Mining Families, with the **Centro del Urogallo** Nature Interpretation Centre.

The proposed route has an approximate length of **2.2 km** and a width of approximately **2.5 m**. It is an already-consolidated public corridor with strong recreational, cultural and environmental value. The route crosses a landscape of high natural quality, linked to the Biosphere Reserve, forested areas, mountain scenery and the industrial heritage of the Laciana mining area.

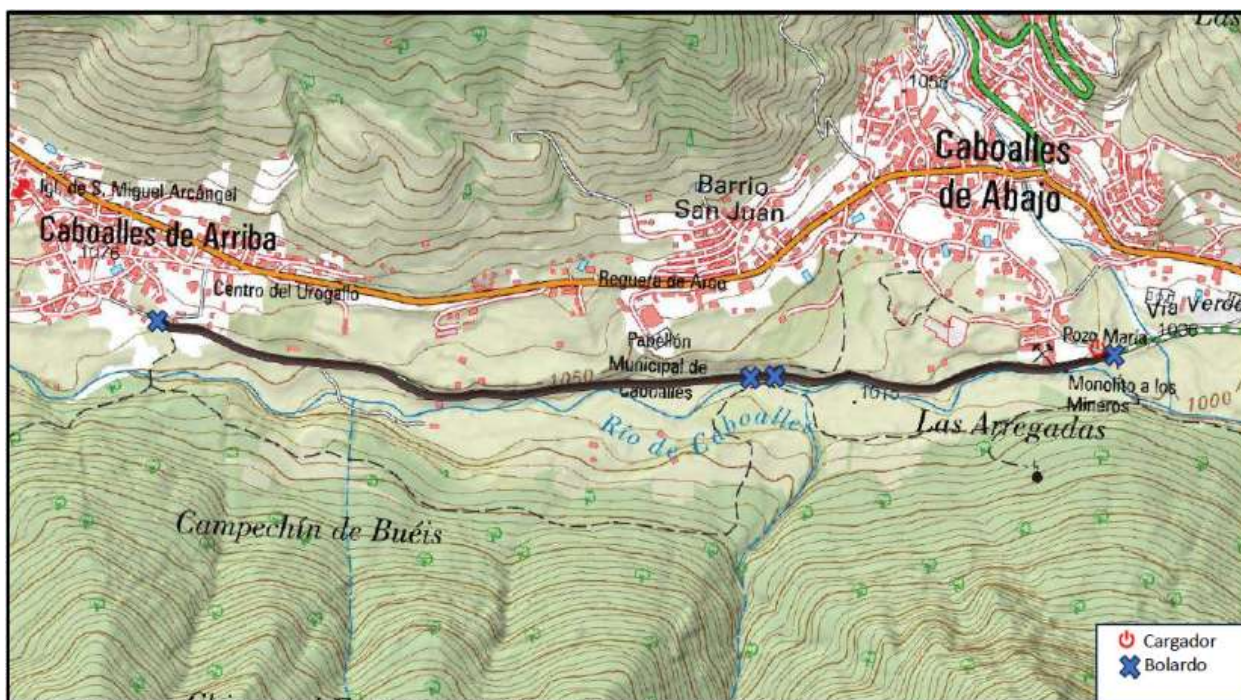


From a strategic perspective, this location offers a compelling narrative for SMILE CITY. It connects circular mobility infrastructure with mining heritage, environmental interpretation and territorial regeneration in a Just Transition area. The Pozo María node and the Centro del Urogallo would provide clear start and end points for the intervention, increasing visibility and educational value. The location could also allow the integration of rubberised asphalt, recycled elements, bollards and e-bike charging infrastructure in a corridor already used by pedestrians and cyclists.

However, Location 1 also presents relevant implementation challenges. The route is significantly longer than the alternative in Sanabria, which increases the amount of material required, the construction cost, the number of elements to be installed and the complexity of the works. In addition, the current pavement condition appears to be more deteriorated than in Location 2. This means that the intervention would require more extensive preconditioning of the existing pavement before applying the new repaving layer proposed by the project.

The required preconditioning works could include local cleaning and clearing, crack treatment, milling or levelling of damaged sections, correction of surface irregularities, repair of unstable areas and improvement of drainage points where necessary. These additional preparation works would increase technical complexity, execution time and cost.

The site would also require a complete permitting pathway, including municipal authorisation, road-authority authorisation due to the parallel alignment or proximity to the road corridor, and environmental / Natura 2000-related assessment, including IRNA and DAR where applicable.



Modificación del pavimento de la Via Verde de Laciana entre el Pozo Maria y el Centro del Urogallo



The installation of bollards is proposed at the starting point of the cycle lane, at its endpoint, and at the intermediate intersection located between both ends of the route. The bollards will be made of 100% recycled rubber and, where possible, supplied by regional producers. Their installation will help improve the visibility, safety and functional delimitation of the cycling infrastructure, while contributing to the orderly coexistence of cyclists, pedestrians and other users of the area.

Intersection with the "Puente de las Campas" bridge:





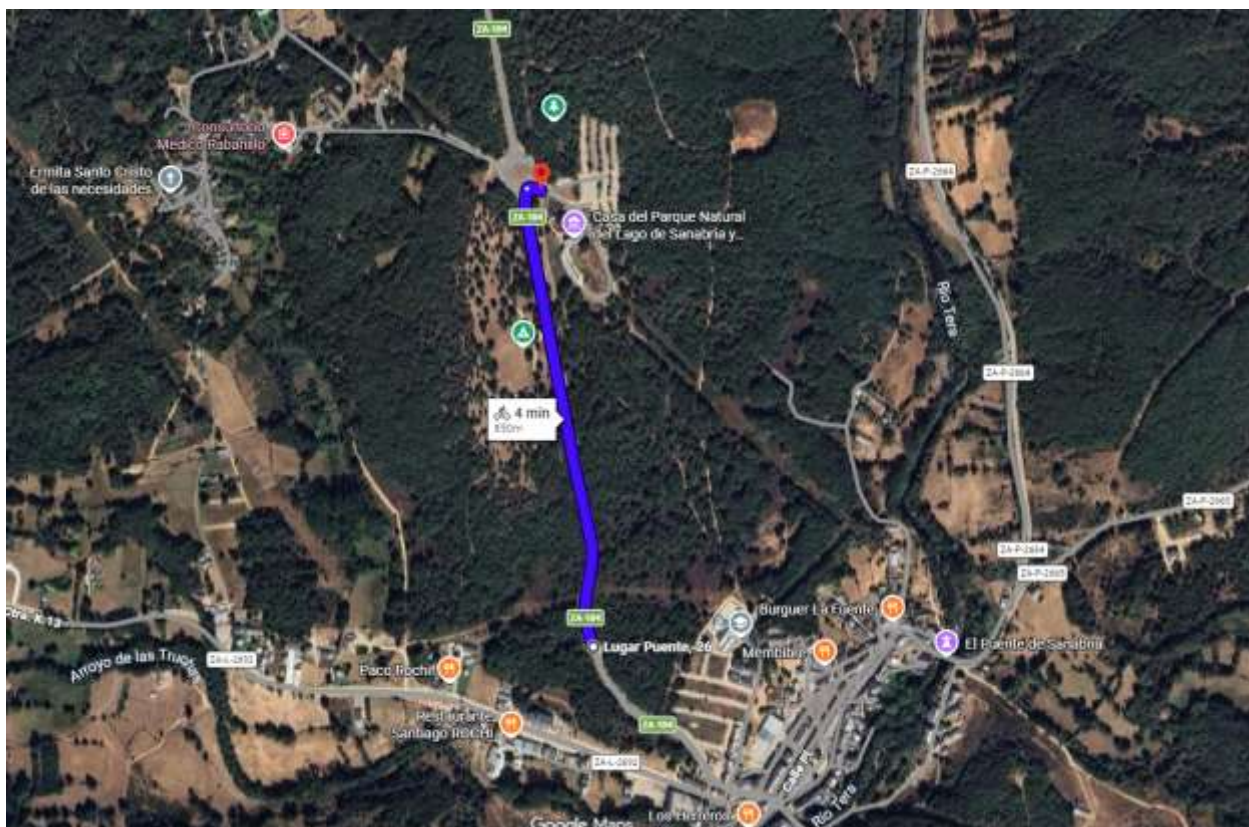
## 2. Location 2 – Lago de Sanabria – Sanabria Lake (Galende, Zamora):

The second potential pilot site is a rural cycling section located in the municipality of **Galende, Zamora**, running parallel to the **ZA-104 road** between the **Lago de Sanabria, the Sierras Segundera, de Porto Natural Park Visitor Centre**, and the village of **Puente de Sanabria**.

The proposed intervention has an approximate length of **850 m** and a width of **3 m**, equivalent to around **2,550 m<sup>2</sup>** of cycling surface. The pilot would consist of the improvement and repaving of an existing cycle-lane section, together with the installation of complementary SMILE CITY elements, such as charging stations, bollards, and lane dividers, in accordance with the final technical design and permitting requirements.

This location is particularly relevant because it is located at the gateway to one of the most emblematic protected natural areas in Castilla y León. The Lago de Sanabria y Sierras Segundera y de Porto Natural Park includes Sanabria Lake, the largest glacial lake on the Iberian Peninsula, and receives a high number of visitors, especially during the tourist season. The Visitor Centre acts as an access, interpretation and environmental-awareness node, while Puente de Sanabria is a nearby settlement and service point.

The route, therefore, has a dual function. On the one hand, it improves a practical local connection for residents, visitors and cyclists. On the other hand, it provides a highly visible demonstration of how circular and climate-resilient materials can be used in sensitive rural and natural contexts. The pilot can show that sustainable mobility infrastructure can be compatible with landscape quality, nature conservation, tourism and local accessibility.



From an implementation perspective, the Sanabria site is more manageable than the Laciana alternative. Its shorter length reduces the amount of material required, limits the construction cost and makes the intervention easier to execute within the available budget and project timetable. Nevertheless, the location also requires careful attention to sectoral permitting, because it is close to a regional road and located in an environmentally sensitive area. The main preconditions are therefore linked to compatibility with the regional road domain, Natural Park and Natura 2000 requirements, drainage, frost resistance, landscape integration and safe coexistence with existing rural uses.

The installation of bollards is proposed at the starting point and at the endpoint of the cycle lane. Additional bollards along the considered section are not deemed necessary, as the route is already clearly defined and further elements would not provide a significant functional or safety improvement. The bollards will be made of 100% recycled rubber and, where possible, supplied by regional producers, reinforcing the circular economy approach of the SMILE CITY pilot.



### 3.2.2.1 Legal Criteria

From a legal standpoint, both proposed locations are considered potentially feasible, but both require a formal permitting pathway before implementation. Since the two sites are located in sensitive rural and natural environments and are connected to existing transport corridors, the legal analysis cannot be limited to the municipal works license. It must also consider sectoral authorisations related to road-domain compatibility and environmental protection.

For **Location 1 – Laciana Greenway**, the intervention would take place on an existing public mobility corridor linked to the former mining railway between Villablino and Caboalles de Arriba. Although the site is already a consolidated greenway and not a new land-consuming development, the implementation of the SMILE CITY pilot would still require confirmation of land ownership, municipal authorisation, and compatibility with the existing use of the corridor.

In addition, as the proposed route runs parallel to or in proximity to the road corridor, an authorisation from the competent road authority would also be required where the intervention affects, borders or may interfere with the regional road domain, road safety conditions, accesses, drainage or visibility. This authorisation would be necessary to ensure that the works are compatible with the applicable road regulations and do not create risks for users or maintenance operations.

Furthermore, due to the environmental sensitivity of the area, the Laciana Greenway would also require the corresponding environmental / Natura 2000-related assessment, including the request for the IRNA and DAR, where applicable. This would allow the competent environmental authority to assess whether the proposed works may affect protected habitats, species, ecological connectivity, landscape values or other environmental features of the area.

The legal pathway for Location 1 would therefore include, at least, the following steps:

- confirmation of land ownership and administrative competence;
- municipal works license or equivalent local authorisation;
- authorisation from the competent road authority, where required due to the proximity or parallel alignment with the road corridor;
- environmental / Natura 2000-related assessment, including IRNA and DAR where applicable;



- coordination with the adopted Pozo María rehabilitation project, as the planned greenway intervention is functionally connected to this broader regeneration initiative.

For **Location 2 – Sanabria Lake**, the legal pathway is similar. The intervention is located in the municipality of Galende, Zamora, and the land has been identified as municipal property. Therefore, the work license must be processed through the Municipality of Galende. However, because the cycle-lane section runs parallel to the ZA-104 regional road, the project also requires authorisation for works adjacent to a regional road. This authorisation is necessary to confirm compatibility with the road domain, safety conditions, access points, drainage and possible maintenance requirements.

In addition, the site is located in a highly sensitive environmental context, at the gateway to the Lago de Sanabria y Sierras Segundera y de Porto Natural Park and in connection with protected natural areas. For this reason, the pilot also requires the corresponding environmental / Natura 2000-related assessment, including the IRNA and DAR procedures where applicable.

The legal pathway for Location 2, therefore, includes:

- Confirmation of land ownership and administrative competence;
- Municipal works license from the Municipality of Galende;
- Authorisation for works adjacent to the ZA-104 regional road;
- Environmental / Natura 2000-related assessment, including IRNA and DAR where applicable.

### 3.2.2.2 Technical Criteria

**Location 1 – Laciana Greenway** offers a technically interesting corridor because it is an existing cycling and walking route with clear start and end points. Its length of approximately 2.2 km would provide a larger demonstration area and strong visibility. However, the current pavement condition appears to be more deteriorated than in Location 2, which means that the intervention would require more extensive surface preparation before applying the new repaving layer proposed by the project.

This preconditioning could include local cleaning and clearing, crack treatment, milling or levelling of damaged sections, correction of surface irregularities, repair of unstable areas and improvement of drainage points where necessary. As a result, the technical complexity of Location 1 would be higher, not only because of the longer length of the corridor, but also because of the greater amount of preliminary pavement preparation required before the rubberised asphalt layer could be installed under proper performance conditions.

The mountain context, the presence of intersections or singular points, and the need to ensure safety, drainage and durability would also require a more detailed technical design. Therefore, although Location 1 has high technical and demonstrative value, its implementation would involve a higher level of technical risk, longer preparation works and potentially higher construction and maintenance costs.

**Location 2 – Sanabria Lake** offers a shorter and more controlled intervention area. The existing cycle lane runs along a defined corridor parallel to the ZA-104 road, with a clear need for pavement improvement, but with a more manageable level of preparatory works. The rural mountain climate makes the site technically relevant for testing a more resilient surface solution. In particular, the pilot can address common problems in cycling infrastructure exposed to winter frost, thermal cracking, summer softening, surface irregularity, drainage issues and accelerated ageing.



The use of rubberised asphalt can therefore be justified not only from a circular economy perspective, but also from the expected improvement in durability, comfort, safety and maintenance performance. In addition, the Sanabria section has an appropriate scale for a pilot demonstration: large enough to generate useful evidence but limited enough to remain technically manageable within the project.

### 3.2.2.3 Operational Criteria

For **Location 1 – Laciana Greenway**, the main operational advantage is the strong alignment with existing cultural and environmental nodes. However, the intervention would be more complex to organise due to its greater length, the more deteriorated condition of the existing pavement, the need for more extensive preconditioning works and the coordination required with the Pozo María rehabilitation process. These factors could increase the risk of delays, especially if the SMILE CITY intervention needs to be synchronised with another public project that is not yet completed.

For **Location 2 – Sanabria Lake**, implementation is more straightforward. The intervention is shorter, the technical scope is clearer, and the project can be structured as an upgrade of an existing cycle-lane section. Public procurement will still be required under the Spanish Public Sector Contracts Law, and the tender documents should include technical requirements related to rubberised asphalt, traceability of recycled materials, construction quality control and previous experience with similar works. However, the overall operational complexity is lower than in Laciana.

The Sanabria site also allows the pilot to be implemented in a way that is compatible with local constraints. Construction planning should avoid periods of maximum tourist pressure where possible, ensure safe management of works next to the ZA-104 road and preserve access to nearby rural and visitor facilities.

#### Timeline

1. Executive project: 30-60 days
2. Works license: 60 days
3. Public procurement: 30 days
4. Implementation: To be defined.

### 3.2.2.4 Financial Criteria

The estimated cost of **Location 1 – Laciana Greenway** is higher due to the greater length of the proposed route and the poorer condition of the existing pavement. With approximately 2.2 km of intervention and a width of around 2.5 m, the total surface area would be significantly larger than in Sanabria. This would increase the amount of asphalt, preparatory works, road-safety elements, bollards, possible charging infrastructure and associated construction operations.

In addition, the greater need for pavement preconditioning in Location 1 would further increase the expected cost. Before applying the new repaving layer, the existing surface would require more intensive preparation works to ensure adequate performance, durability and safety. As a result, the preliminary budget assessment indicated that this alternative would exceed the available budget for the SMILE CITY pilot action, unless the scope were substantially reduced or additional funding were secured.

By contrast, **Location 2 – Sanabria Lake** has an approximate length of 850 m and a width of 3 m. This scale is compatible with the available budget envelope and allows the project to maintain a coherent technical scope. The site can host a meaningful demonstration of rubberised asphalt and complementary cycling infrastructure without requiring additional funds.

Since the project does not foresee additional funding beyond the allocated SMILE CITY budget, financial feasibility is essential. The selected option must be deliverable within the approved resources.

### 3.2.2.5 Socio-political Criteria

**Location 1 – Laciana Greenway** would contribute to the regeneration of a former mining area and would reinforce the connection between sustainable mobility, cultural heritage and environmental interpretation. The pilot would support the transformation of a territory affected by industrial transition and could become a visible example of how circular infrastructure can contribute to new uses of former mining landscapes.

**Location 2 – Sanabria Lake** offers a different but equally relevant socio-political value. It is located in a highly visible natural and tourism area, where sustainable mobility can help improve the visitor experience. The pilot would support safer and more attractive cycling and walking conditions between Puente de Sanabria and the Natural Park Visitor Centre. It would also provide a practical demonstration of how circular construction materials can be used in protected rural environments without compromising landscape or environmental quality.

No significant opposition is expected for either location, provided that the intervention is presented as an upgrade of existing infrastructure rather than a new land-consuming development. In both cases, early communication with local authorities, residents, users and relevant environmental stakeholders will be important to ensure acceptance.

#### Overall assessment

Criteria for site selection	Location 1 – Laciana Greenway	Location 2 – Sanabria Lake
<b>Legal</b>	Feasible, but with a clear permitting pathway: municipal license, road authorisation, and IRNA/DAR.	Feasible, with a clear permitting pathway: municipal license, road authorisation, and IRNA/DAR.
<b>Technical</b>	Suitable, but longer and with more deteriorated pavement requiring greater preconditioning.	Suitable, shorter and technically more manageable.
<b>Operational</b>	More complex due to length, pavement condition and coordination needs.	More straightforward due to smaller scale and clearer scope.
<b>Financial</b>	Limited by higher cost and additional preparatory works.	Compatible with the available SMILE CITY budget.
<b>Socio-political</b>	High value linked to mining heritage and Just Transition.	High value linked to sustainable tourism, Natural Park access and rural mobility.

Both locations are relevant for the SMILE CITY pilot and offer strong demonstrative value. However, **Location 1 – Laciana Greenway** presents higher implementation complexity due to its longer length, more deteriorated pavement, greater preconditioning needs, higher cost and coordination requirements with the Pozo María rehabilitation project.

By contrast, **Location 2 – Sanabria Lake** offers a more balanced and feasible option. It provides high environmental, social and tourism visibility, while remaining technically manageable and compatible with the available SMILE CITY budget.



For these reasons, the final selected site for the SMILE CITY pilot in Castilla y León is:

### **Location 2 – Lago de Sanabria / Sanabria Lake, municipality of Galende, Zamora.**

This location provides the best balance between impact, feasibility, budget compatibility and replication potential, allowing the project to demonstrate circular and climate-resilient cycling infrastructure in a sensitive rural and protected environment.

#### **3.2.2.6 Selection rationale for e-bike charging station locations**

In addition to the selection of the cycling lane section for repaving, the Castilla y León pilot also includes the identification of suitable locations for the installation of e-bike charging stations. The objective is to place the charging points in strategic locations where they can support daily mobility, visitor mobility and the progressive uptake of light electric mobility in different territorial contexts.

Four charging station locations are foreseen within the SMILE CITY pilot. At this stage, three locations have already been identified:

1. **PRAE building, Valladolid**
2. **Pozo María site, municipality of Villablino, León**
3. **IES Galileo premises, Valladolid**

The fourth location is still pending definition and will be identified during summer 2026, following the same criteria of accessibility, visibility, expected use, feasibility of installation and contribution to sustainable mobility.

The selected locations respond to different but complementary use cases. Together, they allow the project to test the charging station solution in institutional, educational, rural and tourism-related environments.

#### *PRAE building, Valladolid*

The PRAE site has been selected because it is a consolidated institutional and working environment with regular daily activity. Approximately 200 people come to the building every day to work in the offices and facilities located there. Some of these users already commute by bicycle, and the availability of an e-bike charging station could improve the convenience and reliability of this mode of transport.

At the selected location within the PRAE premises, there is currently an existing bicycle parking area. However, this parking area is scarcely used because it is exposed to direct sunlight throughout most of the day, making it uncomfortable for users, especially during the warmer months. For this reason, the site is considered particularly suitable for the installation of an e-bike charging station equipped with photovoltaic panels, as the infrastructure would not only provide charging capacity but also improve user comfort by creating a shaded and more attractive parking area.



### Ubicación 1

Recinto PRAE  
Cañada Real, 306  
Valladolid

Aparcamiento interior, junto al acceso sur  
del edificio PRAE



Currently, the PRAE premises lack a dedicated charging station for electric bicycles. Installing this infrastructure would support bicycle commuting and light electric mobility among workers, visitors and occasional users of the site, while also providing a visible demonstration point in a public facility strongly linked to environmental education and sustainability. The charging station could therefore help encourage a gradual shift from private car use towards bicycles, e-bikes and, where technically compatible, other light electric mobility options.

### *Pozo María site, municipality of Villablino, León*

The Pozo María site has been selected because it combines rural mobility, tourism potential, cultural heritage and territorial regeneration. The site is linked to the former mining landscape of Laciana and to the rehabilitation of Pozo María as a cultural and interpretative facility. It is also connected to the Laciana Greenway and to routes with strong cycling and recreational potential.



### Ubicación 2

Recinto «Pozo María»  
Avenida de los Mineros, 1  
Caboalles de Abajo-Villablino (León)

Aparcamiento interior, detrás del vallado  
junto al letrero de la puerta de acceso.



Installing an e-bike charging station at Pozo María would provide a useful service for cyclists and visitors travelling through the area. Users could stop to charge their bicycles while visiting the cultural facility, resting, or accessing nearby routes and interpretation points. This is particularly relevant in rural and mountain areas, where longer distances, slopes and dispersed services can limit the use of conventional bicycles and make e-bikes a more attractive option.

The charging station would therefore support sustainable tourism, local accessibility and the reuse of former mining heritage as a new public and visitor-oriented space. At present, the site does not have a dedicated e-bike charging point, so the installation would add a new service aligned with low-impact tourism and rural mobility.

### *IES Galileo premises, Valladolid*

The IES Galileo site has been selected because it is a public secondary education and vocational training centre located in Valladolid, with a high daily concentration of potential users. It is estimated that between 750 and 950 people attend the centre physically on a regular day, including students, teachers and non-teaching staff. Many students and staff already use bicycles, scooters or other forms of light mobility to access the centre, so the installation of an e-bike charging station would improve the conditions for this type of mobility and could help consolidate more sustainable commuting habits.



### Ubicación 3

Recinto IES Galileo  
Carretera de Villabáñez, 52  
47012 Valladolid

Aparcamiento interior, detrás del vallado  
junto a la puerta de acceso



This location is also particularly relevant because IES Galileo has acted as one of the Urban Living Labs involved in Task 3.6 of the SMILE CITY project. The centre has actively collaborated in the co-design process and has been closely involved in the development of the concept for a charging station equipped with photovoltaic panels. Installing one of the pilot charging stations at the school would therefore provide continuity to this participatory process and would recognise the effort and commitment shown by the educational community.

In addition, the pilot has clear educational value. Given the vocational and practical training profile of the centre, students could potentially be involved in selected non-critical activities related to the installation, assembly support, monitoring or demonstration of the charging station, always under appropriate technical supervision and in compliance with safety, procurement and liability requirements. This would turn the pilot into a hands-on learning opportunity, directly connected to renewable energy, sustainable mobility, circular economy and applied technical training.

At present, IES Galileo does not have a dedicated charging station for electric bicycles. The proposed installation would therefore fill an existing gap, support cleaner, more accessible mobility around the centre, and strengthen the school's role as an active demonstrator within the SMILE CITY pilot.

The fourth charging station location will be selected in the coming weeks, applying the same criteria and seeking to complement the territorial and functional coverage of the pilot. The final set of locations will provide useful demonstrative value for future replication in other public facilities, educational centres, rural tourism nodes and mobility corridors across Castilla y León.



### 3.2.3 Co-creation Activities

The co-creation activities for the Castilla y León pilot, until the end of June 2026, have focused on confirming the feasibility of the selected sites, clarifying administrative requirements and adapting the technical solutions to the local context.

For the cycle-lane pilot in Galende, Zamora, FPNCyL held several exchanges with the **FPNCyL technical officer responsible for the Sanabria area**. This contact was useful to better understand the local context and to reach the Director of the Lago de Sanabria y Sierras Segundera y de Porto Natural Park, where the proposed cycle lane is located. **The Director of the Natural Park** was informed about the proposed repaving intervention and gave a positive preliminary opinion, provided that the required administrative and environmental procedures are followed.

FPNCyL also contacted the **Municipality of Galende** to clarify land ownership. The municipality confirmed that the land where the cycle lane is located is municipal property and gave a preliminary verbal agreement to continue with the necessary permitting steps.

Since the cycle lane is located in a Natural Park, FPNCyL also consulted its **internal environmental reporting department**. This helped define the correct procedure for requesting the environmental assessment of the intervention, including the IRNA and DAR procedures where applicable.

In parallel, FPNCyL participated in workshops and joint meetings **with other SMILE CITY pilot cities**. These meetings were useful to share progress and discuss common issues related to permitting, procurement, technical specifications and implementation risks.

For more specific technical questions, FPNCyL held one-to-one meetings with **the technical partners** specialised in rubberised asphalt (RECYKL and KERIDIS). These meetings helped define how materials derived from end-of-life tyres, such as rubber powder and/or textile fibres, could be incorporated into the asphalt mixture proposed for the pilot.

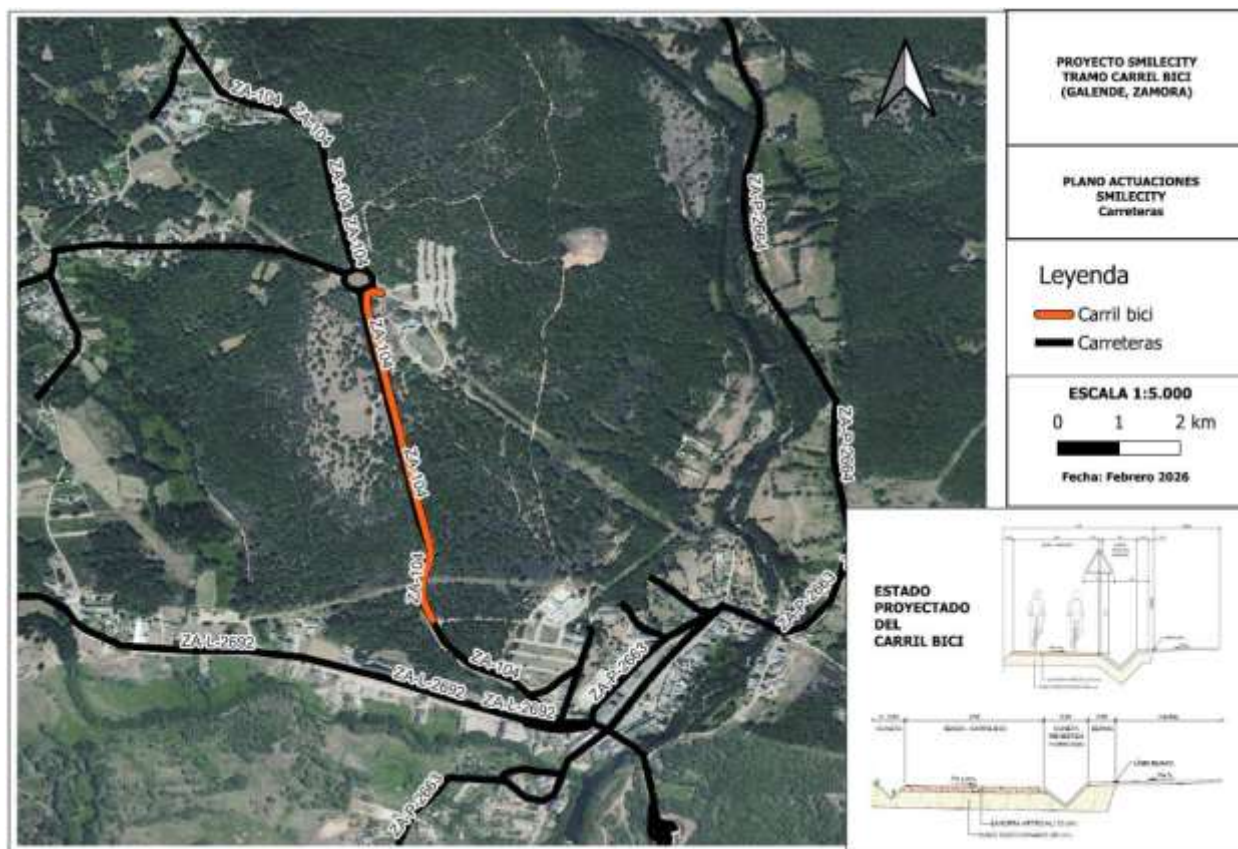
FPNCyL also consulted an **external pavement expert** from Castilla y León. This expert explained the conventional pavement solutions normally used in the region for cycling infrastructure and provided guidance on possible asphalt mixture options. Based on this input, and with the support of RECYKL, the proposed solution was adapted to include materials derived from end-of-life tyres, in line with the objectives of SMILE CITY.

Finally, FPNCyL reviewed several **websites** and supplier sources to identify **regional companies** that manufacture bollards, lane dividers and other road-safety elements made from recycled materials, particularly 100% recycled rubber. This work confirmed that there are potential regional solutions that could be considered during the public procurement process, subject to technical suitability and compliance with procurement rules.

### 3.2.4 Implementation Preconditions for Prototyping

#### 3.2.4.1 Location conditions

Significant progress has already been made regarding the technical documentation required for the location and works permits, for the intervention in **Location 2: Zamora**, in the municipality of Galende.



Using the cadastral reference of the site, FPNCyL identified the landowner, which is the local municipality. In order to apply for the corresponding works license/permit from the municipality, a technical project has been prepared. This technical project includes a technical report, the Material Execution Budget and site plans.

Based on this technical project, the following permit applications have been prepared and submitted:

1. **Authorisation for works adjacent to a regional road**, to be processed through the Electronic Office of the Regional Government of Castilla y León.
2. **Environmental assessment / Natura 2000-related request**, in order to obtain the corresponding IRNA and DAR from the Territorial Environmental Service.
3. **Works license/permit application** submitted to the Municipality of Galende, Zamora.

At this stage, the applications have been submitted, and FPNCyL is currently awaiting the three corresponding resolutions or authorisations. Regarding the need for a stamp or formal validation by a licensed technical engineer, the technical project has been signed by a qualified forestry engineer, as the documentation requires the signature of a competent technical professional. This ensures that the technical documentation meets the formal requirements for the permitting process. FPNCyL is closely following the procedure to ensure that it runs smoothly and that any additional documentation requested by the competent authorities can be provided promptly.

FPNCyL needs to launch a public tender, but it has spoken with some local construction companies that produce asphalt with rubber from end-of-life tyres sourced within the region. However, a direct award is not possible under the applicable public procurement rules. However, existing rubberised asphalt on the market can be used in Castilla y León complying with the applicable technical and regulatory requirements.



### 3.2.4.2 Public procurement planning

The procurement process will ensure transparency, equal treatment of bidders, technical quality and compliance with the project requirements.

The procurement process will be organised in the following phases:

- **Preparation Phase:** This phase will include the definition of the technical and functional needs of the pilot, the preparation of the Technical Specifications and the Specific Administrative Clauses, and the identification of the required documentation from bidders. Where necessary, preliminary market consultations may be carried out to confirm the availability of suitable solutions, especially for rubberised asphalt, recycled rubber elements and e-bike charging infrastructure.
- **Tendering Phase:** The tender will be published on the Spanish Public Sector Procurement Platform. During this phase, interested companies will submit their bids according to the requirements established in the tender documents.
- **Award Phase:** The submitted bids will be evaluated according to the criteria defined in the procurement documents, including both automatic criteria and quality-based criteria where applicable. The award proposal will then be issued, and the contract will be formalised with the selected contractor.
- **Execution Phase:** Once the contract has been formalised, the works and installations will be carried out under technical supervision. This phase will include the preparation of the existing surface, the application of the rubberised asphalt, the installation of complementary recycled-rubber elements and, where applicable, the installation of e-bike charging stations. Quality control, material traceability and compliance with the approved technical specifications will be monitored during execution.

There are companies in Castilla y León with previous experience in the production and application of asphalt mixtures containing rubber from end-of-life tyres. For this reason, it is not considered necessary to require the selected contractor to carry out an additional preliminary pilot section before implementation. Instead, a new procurement process will be launched specifically for the SMILE CITY pilot, and one of the technical requirements of the tender will be proven experience in the application of this type of asphalt or equivalent technically validated solutions.

In addition, regional companies have been identified that manufacture bollards and other road-safety elements made of 100% recycled rubber. These companies and products will be considered during the technical preparation of the pilot and the market analysis for the implementation of the recycled-rubber elements. In any case, their possible participation will be subject to the applicable public procurement rules, ensuring open competition, transparency and compliance with the technical specifications.

The tender documents will require the contractor or suppliers to demonstrate the traceability, technical suitability and regulatory compliance of the recycled materials used, particularly in relation to rubber from end-of-life tyres, recycled-rubber bollards and lane dividers. This will help ensure that the pilot is not only innovative, but also technically reliable, legally compliant and replicable in future public works.

### 3.2.4.3 Relevant Legal Framework for Prototyping

#### European regulations on environmental protection and construction products

- Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora, particularly with regard to the prevention of impacts on habitats and species of Community interest.
- Regulation (EU) No 305/2011 laying down harmonised conditions for the marketing of construction products and CE marking, as well as the new Regulation (EU) 2024/3110, which establishes harmonised rules for the marketing of construction products and progressively repeals Regulation (EU) No 305/2011.

#### National environmental and nature conservation regulations

- Law 42/2007 of 13 December on Natural Heritage and Biodiversity, and Law 33/2015 of 21 September, amending the former.
- Law 21/2013 of 9 December on environmental assessment.
- Royal Decree 139/2011, which develops the List of Wild Species under the Special Protection Regime and the Spanish Catalogue of Threatened Species, with the aim of avoiding impacts during the execution of the works on protected species, sensitive breeding periods, refuge areas or feeding areas.
- Law 43/2003 on Forestry, whose purpose is to guarantee the conservation and protection of Spanish forests and to promote their restoration, improvement and sustainable use.
- Royal Legislative Decree 1/2016, approving the consolidated text of the Law on Integrated Pollution Prevention and Control, shall be considered mainly in relation to the industrial facilities that manufacture or supply the bituminous mixtures, where such facilities are subject to integrated environmental authorisation or other environmental control instruments.

#### Regional regulations and specific regulations for the Sanabria area

- Law 4/2015 of 24 March on the Natural Heritage of Castilla y León, which establishes the framework for the conservation of natural heritage in the Autonomous Community.
- Legislative Decree 1/2015 of 12 November, approving the consolidated text of the Environmental Prevention Law of Castilla y León.
- Decree 62/2013, approving the Natural Resources Management Plan, and Law 1/2017, which extends its boundaries, modifies its name and establishes its protection, use and management regime, as well as its relationship with the SPA ES4190009 and SAC ES4190105 Lago de Sanabria and surrounding areas sites.
- Law 3/2009 on Forestry in Castilla y León.
- Decree 83/1991 of 22 April on quality control in construction.

#### Regulations on waste, circular economy and recycled materials

- Royal Decree 105/2008 on the production and management of construction and demolition waste.
- Law 7/2022 on waste and contaminated soils for a circular economy.
- For the use of rubber from end-of-life tyres, the traceability of the material, its origin, technical characteristics, absence of impurities and compliance with the applicable criteria shall be required. Where rubber powder or granulated rubber that has reached end-of-waste status is used, compliance with Order TED/1522/2021 shall be demonstrated. This Order includes, among other uses, the use of rubber from end-of-life tyres in bituminous mixtures.

### Technical regulations on pavements, bituminous mixtures and signage

- From a technical perspective, the PG-3, General Technical Specifications for Road and Bridge Works, shall be adopted as a reference, especially the articles relating to granular materials, tack coats, hot bituminous mixtures, discontinuous mixtures for wearing courses, material control, laying and acceptance. Order FOM/2523/2014 updates certain articles of the PG-3 and refers, among others, to Articles 531, 542 and 543, which are relevant to this action.
- The asphalt solution shall be classified within a standardised family of bituminous mixtures of the UNE-EN 13108 series. Depending on the final solution selected, BBTM or SMA-type mixtures may be considered, modified with materials derived from end-of-life tyres and validated through performance tests.
- For the use of recycled rubber in bituminous mixtures, Circular Order 21/2007, Circular Order 21bis/2009 and the CEDEX Manual for the Use of End-of-Life Tyres in Bituminous Mixtures shall be considered as technical references.
- With regard to geometric design and signage, Standard 3.1-IC on Road Layout, Standard 8.1-IC on Vertical Signage and Standard 8.2-IC on Road Markings shall be taken as supplementary references and adapted to cycling infrastructure. Signage shall be adapted to cycling use, the natural environment and coexistence with pedestrians and other users.

In addition to the above regulations, the technical recommendations developed within the framework of the European SMILE CITY project will be taken into account, especially in relation to the use of materials derived from end-of-life tyres in cycling infrastructure.

#### 3.2.4.4 SMILE CITY systemic solutions for prototyping

The Castilla y León pilot will demonstrate the application of SMILE CITY systemic solutions in real mobility infrastructure, combining circular materials, light electric mobility and climate-resilient design. The pilot includes three complementary units:

- **A. E-bike charging stations**
- **B. Cycling tracks from rubberised asphalt**
- **C/D. Curbs and/or bollards from recycled rubber**

##### A. E-bike charging stations

The pilot foresees the installation of four e-bike charging stations in Castilla y León. At this stage, three locations have already been identified: PRAE premises in Valladolid, Pozo María in Villablino, León, and IES Galileo in Valladolid. The fourth location is still pending definition and will be selected in the coming weeks, based on the criteria of accessibility, visibility, expected use, technical feasibility, and contribution to sustainable mobility.

The charging stations will be designed to support the use of e-bikes and light electric mobility in different real-world contexts: workplace mobility, educational mobility, and rural tourism mobility. Where technically feasible, the stations will maximise the use of reused or recycled components, such as second-life photovoltaic panels, recovered batteries from used vehicles and recycled concrete bases.

## B. Cycling tracks from rubberised asphalt

SMILE CITY systemic solutions will improve the business-as-usual approach to cycling-lane paving by moving from a conventional resurfacing logic to a more climate-resilient, circular and performance-oriented intervention.

In Castilla y León, the standard construction sequence for a bike lane normally includes subgrade preparation, a granular base and drainage layer, a prime coat, an asphalt layer and, in many cases, a final coloured surface treatment. However, the long-term performance of the pavement depends strongly on the quality of the lower layers and on the interface between the asphalt layer and the surface treatment. If the subgrade is not properly prepared, if drainage is insufficient, or if the asphalt layer cracks due to frost or thermal stress, the coloured surface treatment will simply reproduce the underlying damage.

## Typical bike-lane paving in Castilla y León and upgrade priorities

### Standard Construction Sequence In Castilla y León:



This is particularly relevant in rural continental climates such as Castilla y León, where bike lanes are exposed to winter freeze - thaw cycles, thermal cracking, summer heat, rutting, surface ageing and local drainage problems. In this context, the pilot will not only apply a new surface layer but will also address the critical technical points that determine pavement durability: preparation of the existing surface, correction of damaged areas, adequate bonding between layers, proper compaction and improved resistance to climatic stress.



- 1 Improve resistance to **freeze–thaw damage** and **thermal cracking** during winter
- 2 Reduce **softening, rutting** and **accelerated ageing** during summer heat
- 3 Better **surface regularity, skid safety** and **drainage**
- 4 Lower **maintenance needs** and longer service life than a conventional asphalt bike lane

Initially, the use of a BBTM/BTMMA-type mixture modified with materials derived from end-of-life tyres was considered, as this type of solution is commonly used in Castilla y León for cycling-lane applications. However, following technical consultation with the material specialist (Recykl), an SMA-type mixture was identified as a more suitable option for this pilot, due to its expected better performance under climatic exposure and its greater robustness as a wearing course.

The proposed solution for the pilot section, therefore, consists of the execution of a new wearing course using an SMA 8 Surf bituminous mixture modified with materials derived from end-of-life tyres, applied over the existing pavement after inspection, repair, cleaning and tack-coat treatment.

The final choice between an **SMA 8 Surf ELT Fibre formulation** and an **SMA 8 Surf ELT Rubber formulation** will be made before the start of the works, depending on material availability, asphalt plant capacity, logistics, validation of the job-mix formula and the technical indications of the SMILE CITY project partners.

As an alternative or reserve solution, a **BBTM/BTMMA mixture modified with materials derived from end-of-life tyres** may be considered, provided that a validated job-mix formula and the necessary tests are available before execution to ensure technical suitability, durability, safety and compatibility with cycling use.

In all cases, the wearing course will have an indicative compacted **thickness of 3 to 4 cm**, depending on the final condition of the existing support and the approved job-mix formula. This solution is expected to improve surface regularity, riding comfort, user safety and pavement durability, while maintaining a low-impact intervention without significant modification of the existing level.

The expected benefits include higher resistance to freeze–thaw damage and thermal cracking, reduced softening and rutting during summer heat, better surface regularity, improved skid safety and drainage, and lower maintenance needs over the service life of the bike lane. This approach is especially relevant for rural and natural areas, where maintenance interventions are often more costly and disruptive.



### **C/D. Curbs and/or bollards from recycled rubber**

The pilot will also include the installation of bollards and/or lane dividers made of 100% recycled rubber derived from end-of-life tyres, preferably supplied by regional producers where technically and legally feasible.

For the Galende cycle-lane section, the installation of bollards is proposed at the starting point and at the endpoint of the cycle lane. Additional bollards along the considered section are not deemed necessary, as the route is already clearly defined and further elements would not provide a significant functional or safety improvement.

These elements will contribute to improving the visibility and functional delimitation of the cycling infrastructure, while avoiding unnecessary occupation of the route. Their use will also reinforce the circular economy approach of the pilot by replacing conventional road-safety elements with recycled-rubber products.

The intervention will be completed with the necessary horizontal and vertical signage, as well as with the installation of lane dividers, bollards or other auxiliary elements, preferably made of recycled rubber or other recycled materials.

### **Technical and administrative readiness**

The SMILE CITY systemic solutions proposed for Castilla y León are technically feasible and fully aligned with existing regional capabilities. For the Galende cycle-lane intervention, the technical project has already been finalised, including the descriptive report, the Material Execution Budget (PEM), and the detailed site plans. The documentation has been formally signed by a competent certified professional and has been used to support the necessary permit applications.

At this stage, the applications for the regional road authorisation, the environmental and Natura 2000-related clearances (including the relevant *IRNA* and *DAR* procedures), and the municipal works license have all been submitted. Construction works will strictly commence only after the required authorisations have been officially granted and the corresponding public procurement procedure has been concluded.

In parallel, the technical preparation of the pilot is steadily progressing. This includes market engagement to identify suitable regional solutions for rubberised asphalt, recycled-rubber safety components, and circular e-bike charging stations. These elements will be detailed further in the procurement and construction sections of this report.

### **3.2.4.5 Prototype Construction**

Construction of the Castilla y León prototype will begin only after the required municipal permit, sectoral authorisations, and the public procurement procedure have been completed. The main construction works will be carried out in **Location 2 – Lago de Sanabria / Sanabria Lake**, in the municipality of Galende, Zamora, where the selected cycle-lane section will be repaved using rubberised asphalt.

The prototype construction will include the following main activities:

**1. Site preparation and safety arrangements.**

Before the works begin, the contractor will organise the construction area, define temporary safety measures and ensure safe coexistence with nearby road users, pedestrians, cyclists and local accesses. Special attention will be paid to the proximity of the ZA-104 regional road and to the sensitive natural context of the intervention area.

**2. Preconditioning of the existing cycle-lane surface**

The existing pavement will be inspected and prepared before applying the new repaving layer. This may include cleaning and clearing of the affected margins, local milling or levelling of damaged areas, crack treatment, correction of irregularities and preparation of the surface to ensure proper bonding and durability of the new asphalt layer.

**3. Application of the rubberised asphalt layer**

Once the surface has been prepared, the rubberised asphalt mixture will be applied according to the technical specifications defined in the project. The objective is to demonstrate the use of asphalt modified with recycled rubber from end-of-life tyres as a circular and climate-resilient solution for cycling infrastructure.

**4. Installation of complementary recycled-rubber elements**

The prototype will also include the installation of bollards and/or lane dividers made of 100% recycled rubber, preferably supplied by regional producers where technically and legally feasible. These elements will be installed only where they provide a clear functional or safety benefit, avoiding unnecessary occupation of the cycle-lane section.

**5. Installation of e-bike charging stations**

In parallel with the repaving pilot, e-bike charging stations will be installed in the selected strategic locations within Castilla y León. These locations include PRAE premises, Pozo María and IES Galileo, while a fourth location remains pending definition. The installation works will be adapted to the specific conditions of each site, including electricity connection, photovoltaic panel integration where applicable, safety requirements and user accessibility.

**6. Quality control and technical supervision**

During construction, the works will be supervised to verify compliance with the technical project, procurement specifications and applicable regulations. Quality control will focus on the traceability and suitability of recycled materials, correct surface preparation, asphalt application conditions, compaction, bonding between layers, drainage and the proper installation of recycled-rubber elements and charging infrastructure.

**7. Final inspection and pilot activation**

Once the works are completed, a final inspection will be carried out before opening the prototype for use. This will include verification of the pavement surface, safety elements, signage, accessibility, charging station functionality and compliance with the authorisations granted by the competent authorities.

At the current stage, the prototype has not yet entered the construction phase. The technical project for the Galende cycle-lane intervention has already been prepared and signed by a competent technical professional, and the required permit applications have been submitted. FPNCyL is currently awaiting the corresponding resolutions for the regional road authorisation, the environmental / Natura 2000-related procedure, including IRNA and DAR where applicable, and the municipal works license from the Municipality of Galende.



Therefore, construction works will only start once the required authorisations have been granted and the corresponding public procurement procedure has been completed. In parallel, FPNCyL is advancing the identification of suitable solutions for recycled-rubber bollards and lane dividers.

## 3.3 City of Manresa – Local Report

### 3.3.1 Setting up the Urban Living Lab and stakeholders' engagement

The SMILE CITY project in the City of Manresa is coordinated by the Manresa City Council, with the role of a Pilot Host and implementing partner. The City of Manresa is responsible for providing the site for testing (specifically focusing on the connection between a neighbouring city and Manresa via an industrial estate) with sustainable mobility solutions. It will process the administrative permits (where applicable), tender and design the civil works, and coordinate the on-site installation of e-bike charging stations and high-performance rubberised asphalt.

The coordination will be led by the Urban Projects and Territorial Infrastructure Service (Servei de Projectes Urbans i Infraestructures Territorials). Manresa City Council has appointed an internal working group from this service, comprising staff from the Public Space Projects Section and the Mobility Projects Section, to liaise with the various stakeholders and other departments involved, and primarily to oversee the installation of the SMILE CITY pilot areas from inception to completion. The role of this internal task force is to ensure the SMILE CITY pilot aligns with Manresa's "Pla de Mobilitat Urbana Sostenible" (Sustainable Urban Mobility Plan) and other urban plans of the city.

External facilitators might be engaged to ensure a neutral and professional co-creation process, to leverage expertise from both within and outside the consortium:

1. Consortium Partners: technical guidance and facilitation support is expected from partners such as ITeC (as a local Spanish partner with expertise in circular construction) and CEUS (in Task 2.3 for Living Lab methodology).
2. Local Innovation Ecosystem: The City Council considered engaging local experts in urban mobility or social mediation, if needed, to bridge the gap between technical requirements and citizen needs, but during the planning phase, it managed the process using internal capacities.
3. Internal Facilitation: The project will be co-facilitated by the Public Space Projects Section to ensure that the outcomes of the co-creation sessions are technically and administratively feasible within the municipal framework.

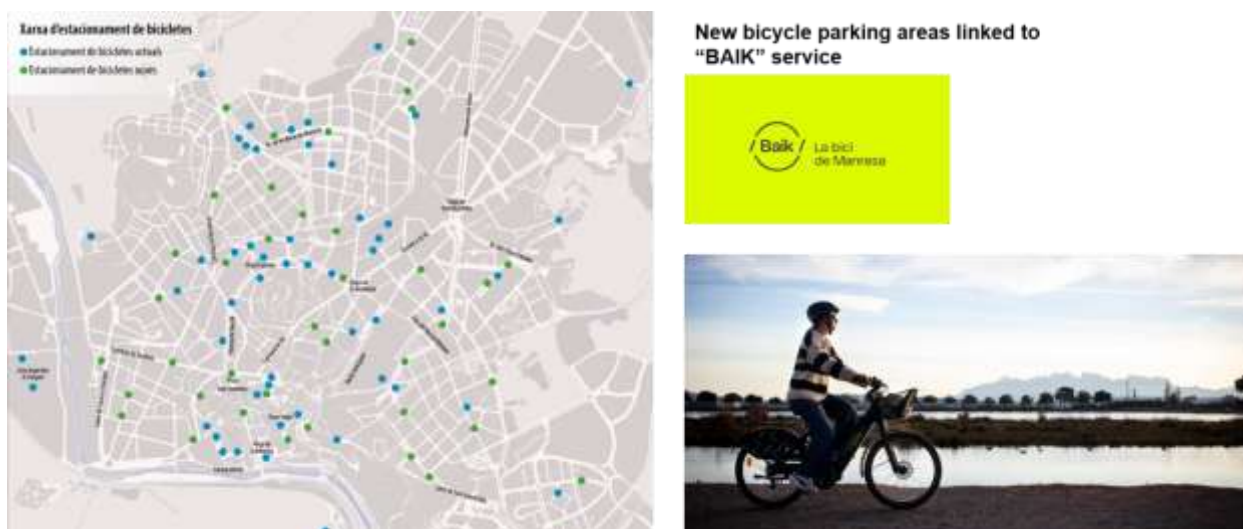
#### 3.3.1.1 Working Framework

The pilot area for SMILE CITY intervention is governed by two main planning instruments currently in force:

- POUM (Pla d'Ordenació Urbanística Municipal): The General Urban Plan of Manresa, which defines the industrial land use for the Pont Nou areas and establishes the regulatory framework for infrastructure improvements and public space interventions.
- PMUS (Pla de Mobilitat Urbana Sostenible): The Sustainable Urban Mobility Plan, which specifically identifies the need to improve the connectivity between the city centre and industrial estates, and also neighbouring cities. It promotes the expansion of the cycling network and the transition towards carbon-neutral transport modes, which is directly aligned with the SMILE CITY objectives.

Other relevant plans approved and in force are: the Director Plan of Public Space of Manresa (1997), and the Design study for Manresa's cycle lanes and assessment of technical and economic feasibility within the municipality (2025).

Additionally, a new pilot project, BAIK - a public service for renting electric bicycles, was recently introduced. This pilot project, focused on the implementation of e-bike charging stations and sustainable paving, is designed to execute and test the specific goals set out in these high-level strategic plans. It provides an excellent operational framework for testing SMILE CITY innovative solutions.



The land on which SMILE CITY solutions will be tested is owned by Manresa City Council. The Public Space Projects Section will draw up the technical specifications and detailed designs for internal approval (in coordination with stakeholders regarding the technical requirements for rubberised asphalt and charging station specifications). Furthermore, the procurement process can be managed by internal staff following municipal procedures, with final approval granted by the City Council.

The construction works must be carried out by a contractor via public procurement; however, given the estimated contract value, a simplified procedure can be used.

Obtaining "End-of-Waste" status for the recycled rubber and innovative materials used in the Manresa pilot will be the responsibility of the industrial partners and material suppliers within the SMILE CITY consortium. Manresa Municipality will ensure that the public procurement and the technical specifications of the pilot contract require the contractor to provide all necessary certifications and "End-of-Waste" compliance documents before installation.



Technology Providers (e.g. COMSA/ITeC and RECYKL) as technical partners will support ensuring that the rubberised asphalt and circular materials meet the European and national technical standards to be declassified as waste.

The final administrative validation of the End-of-Waste status in Manresa territory falls under the jurisdiction of the ARC (Waste Management Agency of Catalunya), following the criteria set by the Spanish Ministry for the Ecological Transition and the EU Waste Framework Directive.

For the material to be formally integrated into municipal works, it must hold an ETA (European Technical Assessment) or a national technical suitability certificate (such as the DAU provided by ITeC). The Manresa City Council's Technical Services acts as the certifying authority at the project level, ensuring that the materials delivered on-site comply with the project specifications and the required CE markings or equivalent certifications before the final acceptance of the works.

Currently, there is no possibility for direct co-financing within the municipal budget, thus SMILE CITY innovative solutions will be implemented as stand-alone pilots.

### 3.3.1.2 Mapping the Main Stakeholders

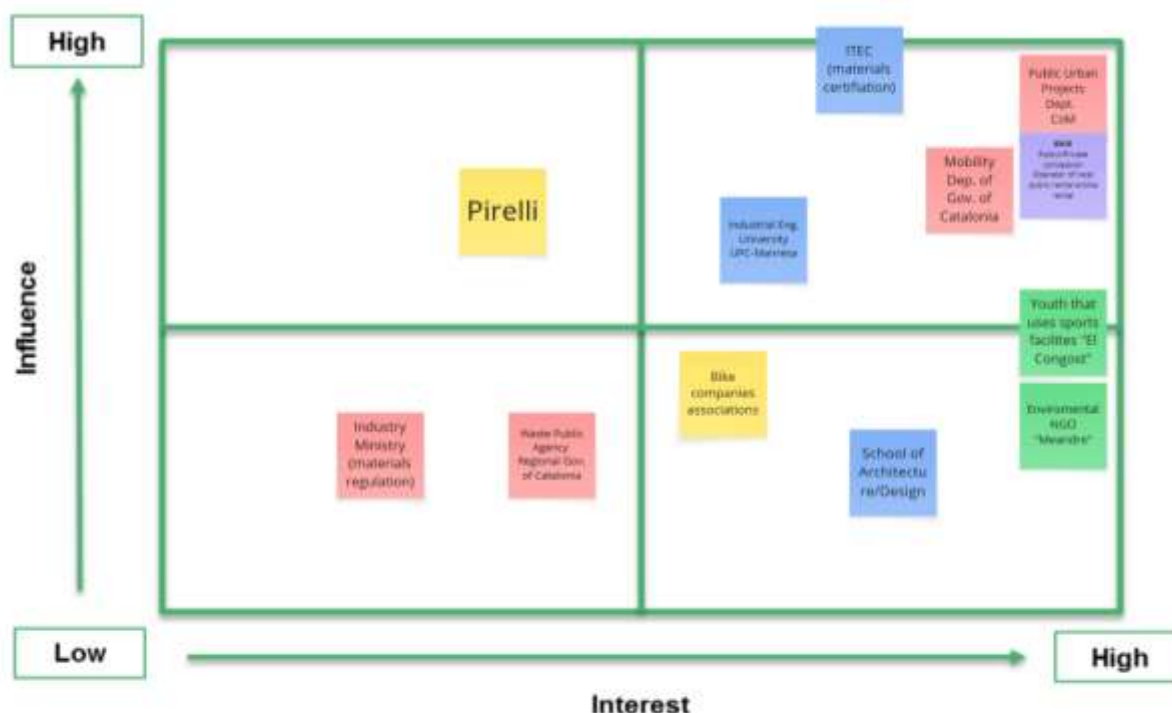
To ensure the successful implementation of the SMILE CITY pilot in Manresa, the following key stakeholders have been identified and mapped:

1. **Public Administration:** Manresa City Council (Urban Projects and Territorial Infrastructures Service): Lead implementers, responsible for site selection, permits, and long-term maintenance, with high influence and high interest.
2. **Technical & Industrial Partners:** Consortium Partners (ITeC, COMSA, RECYCL): Provide technical expertise in rubberised asphalt and circularity certifications.
3. **Local Construction Contractors and Asphalt companies:** Companies that will execute the paving works under municipal supervision.
4. **Civil Society:** Cycling Associations (e.g. Bages per la Mobilitat) that could assess the design from a user-experience perspective and test the results.

The stakeholders with the strongest influence on the project outcomes are those with decision-making power over the urban space, regulatory compliance, and technical validation. Specifically:

**Manresa City Council Executive Body (Department of Urban Projects):** As the host and owner of the public space, the municipality has the ultimate authority to approve designs, grant internal permits, and allocate municipal resources. The leadership of the Councillor for Urban Planning is critical for political backing and administrative agility.

**SMILE CITY Technical Partners (IteC, COMSA, RECYCL):** Their influence is technical but decisive. If the innovative materials (rubberised asphalt) do not meet safety or durability standards during the analysis phase, the pilot cannot proceed. Their role in certifying the "End-of-Waste" status is a prerequisite for legal implementation.



LEVEL OF ENGAGEMENT	INFORM		CONSULT	INVOLVE		COLLABORATE
Method of engagement	Website	Newsletter	Focus Groups	Workshop	One-to-one meetings	Task Force
Department of Urban Projects					X	X
Department of mobility					X	X
Cyclist Organizations			X	X		
Citizens/ Tourists	X	X				

Local Businesses located on the periphery of the pilot zone that might experience temporary disruptions in access or parking during the paving work are the most vulnerable and subject to potential adverse impacts.

Occasionally, due to the proximity of the El Congost Municipal Stadium, where professional sporting events take place, the area may experience temporary disruptions during construction works due to high public attendance.

During the co-creation and validation process, Technical Schools and Universities might be included, e.g. UPC Manresa – EPSEM, by engaging students in engineering or environment to monitor the pilot's performance, especially the charging station.



Youth who use sports facilities “El Congost” and social media influencers focused on environmental sustainability and active mobility might also be an important target group of beneficiaries.

### 3.3.1.3 Visioning and Scale-up Potential

The city of Manresa has been working on a modal mobility shift for several years. Multiple strategic plans have been approved to enhance active mobility, focusing on pedestrian and cycling networks and their integration with public transport. Our objective is not only to transform the mobility habits of Manresa’s citizens but also to improve regional connectivity with neighbouring cities.

In this context, the Department of Urban Projects has developed several projects for new cycling lanes. While some sections are already completed, there is still significant work ahead to complete the network.

Furthermore, Manresa Municipality is highly concerned about the sustainability of its paving solutions. The city is actively working to mitigate issues such as the Urban Heat Island (UHI) effect and soil impermeability, while promoting the use of recycled materials in our construction projects to foster a circular economy.

Additionally, Manresa City Council has recently launched a new electric bike rental service called “BAIK”, which already counts 200 active users.

Within this framework, the SMILE CITY pilot represents a double strategic opportunity. On one hand, a new strategic cycle lane will be developed to link Manresa with the neighbouring city of Sant Joan de Vilatorrada. This will be complemented by a bicycle charging station—an infrastructure that does not yet exist in the city and will perfectly support the expansion of the “BAIK” service through intermodality. On the other hand, it provides a unique opportunity to test innovative paving materials with a significantly lower carbon footprint.

### Scale-up potential of the pilot, in the national or EU context

The SMILE CITY pilot in Manresa holds significant potential for scalability and replication at local, national and European levels, supported by the city’s active involvement in multiple strategic cooperation networks:

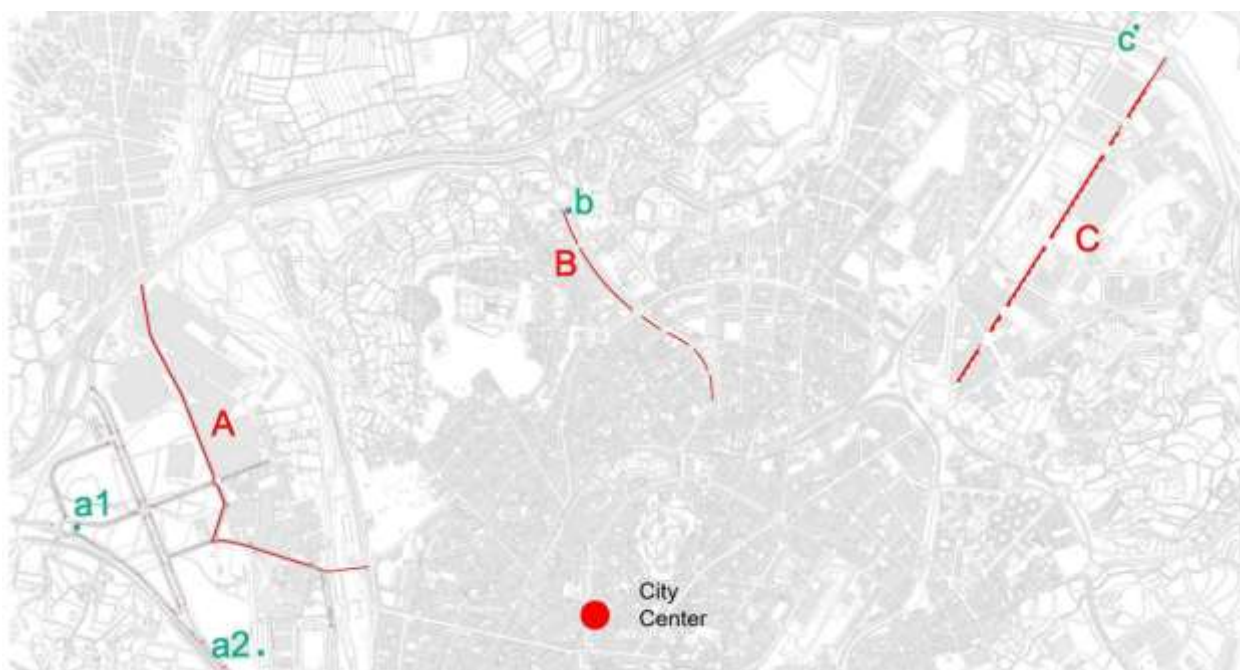
1. **Local Replication:** If the pilot proves successful, the City Council intends to replicate this sustainable construction solution across the city. This will not only improve urban infrastructure but also foster the local green economy by encouraging local companies to adopt and produce these innovative circular materials.
2. **Regional and National Knowledge Sharing:** At the local level, we will share the knowledge gained with academic institutions, including UManresa (the Manresa Campus of the University of Vic - Central University of Catalonia) and UPC (Polytechnic University of Catalonia). Furthermore, Manresa will disseminate results through the Eurecat network, the ACM (Associació Catalana de Municipis), and the Diputació de Barcelona network, providing a proven model for other Catalan and Spanish municipalities.
3. **Synergies with ongoing EU Projects:** Manresa is currently leading or participating in several European projects that allow for high-level knowledge exchange:

- PROXIMITIES (Interreg Europe): the focus is on making peripheral urban areas greener and more accessible, directly linking with the pilot's goal of sustainable connectivity.
  - NETCO 2.0 (CERV): A network led by Manresa involving 23 partners from 14 countries to foster collaborative housing.
  - Be.SHARE (EUI): Focused on carbon-neutral heating and cooling networks, where Manresa acts as a transfer city.
  - URBACT CITISENSE: Improving urban safety and perception, which complements the social well-being goals of SMILE CITY.
4. European Innovation Networks: Manresa's active membership in the EIT Urban Mobility network provides a strategic platform to showcase the pilot's success to a wide ecosystem of European cities and innovation stakeholders.

### 3.3.2 Multicriteria analysis for site selection

In Manresa, three potential pilot locations were considered for **Cycle Lane and Charging Station Locations**:

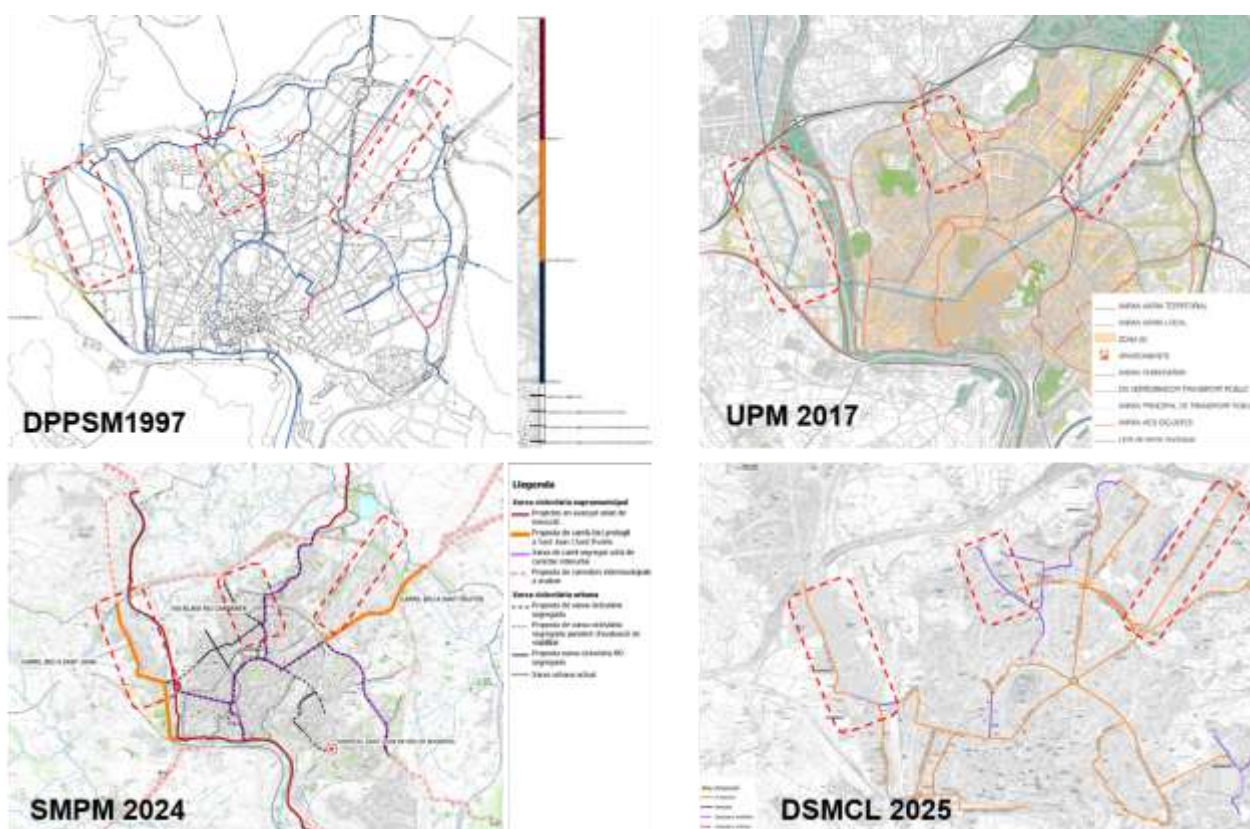
1. **Pilot 1: Manresa-SJV**
2. **Pilot 2: Universitat**
3. **Pilot 3: Sallent**



The SMILE City project aligns with Manresa City's existing strategic framework on sustainable urban mobility, climate policies, and **strategic plans for bike lane planning**.

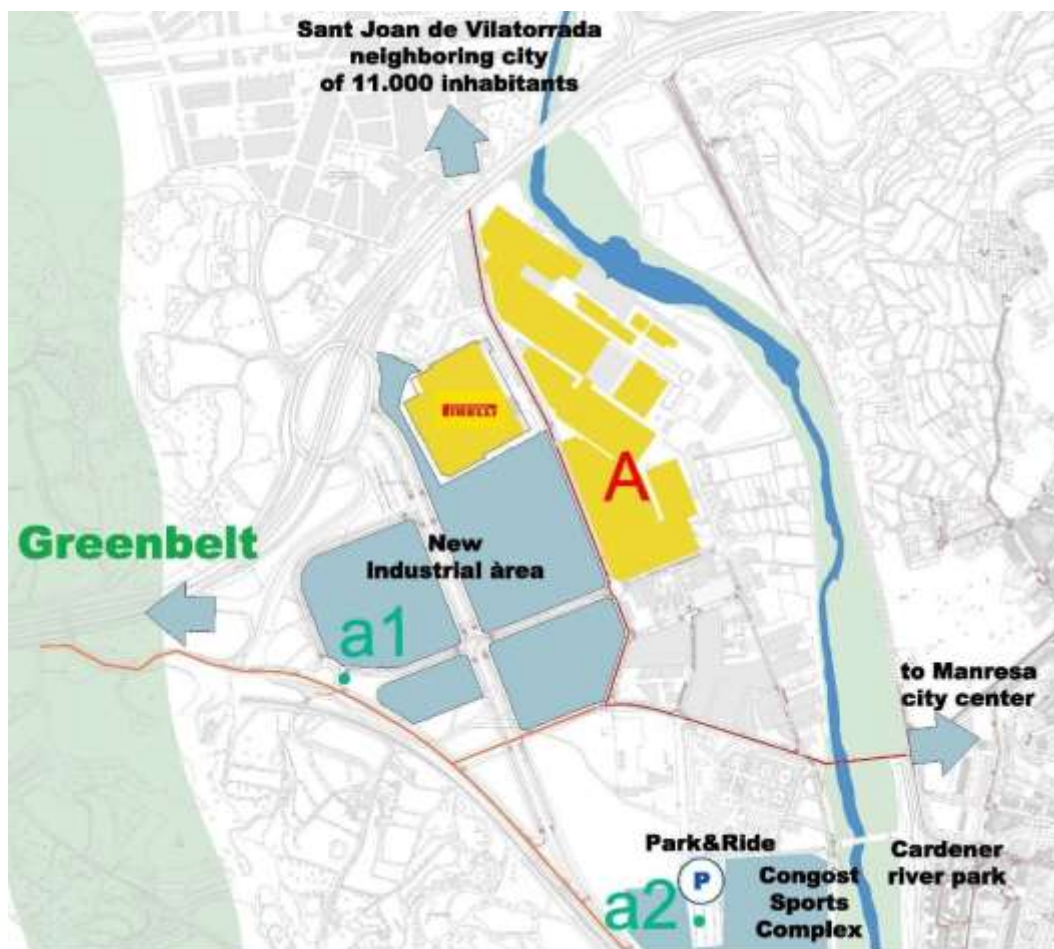
Approved strategic plans **for bike lane planning in Manresa** are the following:

- Director Plan of Public Space of Manresa (DPPSM) (1997);
- Urban Plan of Manresa (UPM) (2017);
- Sustainable Mobility Plan of Manresa (SMPM) (2024);
- Design study for Manresa's cycle lanes and assessment of technical and economic feasibility within the municipality (2025) (DSMCL);
- BAIK - a public service of rental electric bicycles (starting in 2025/26).



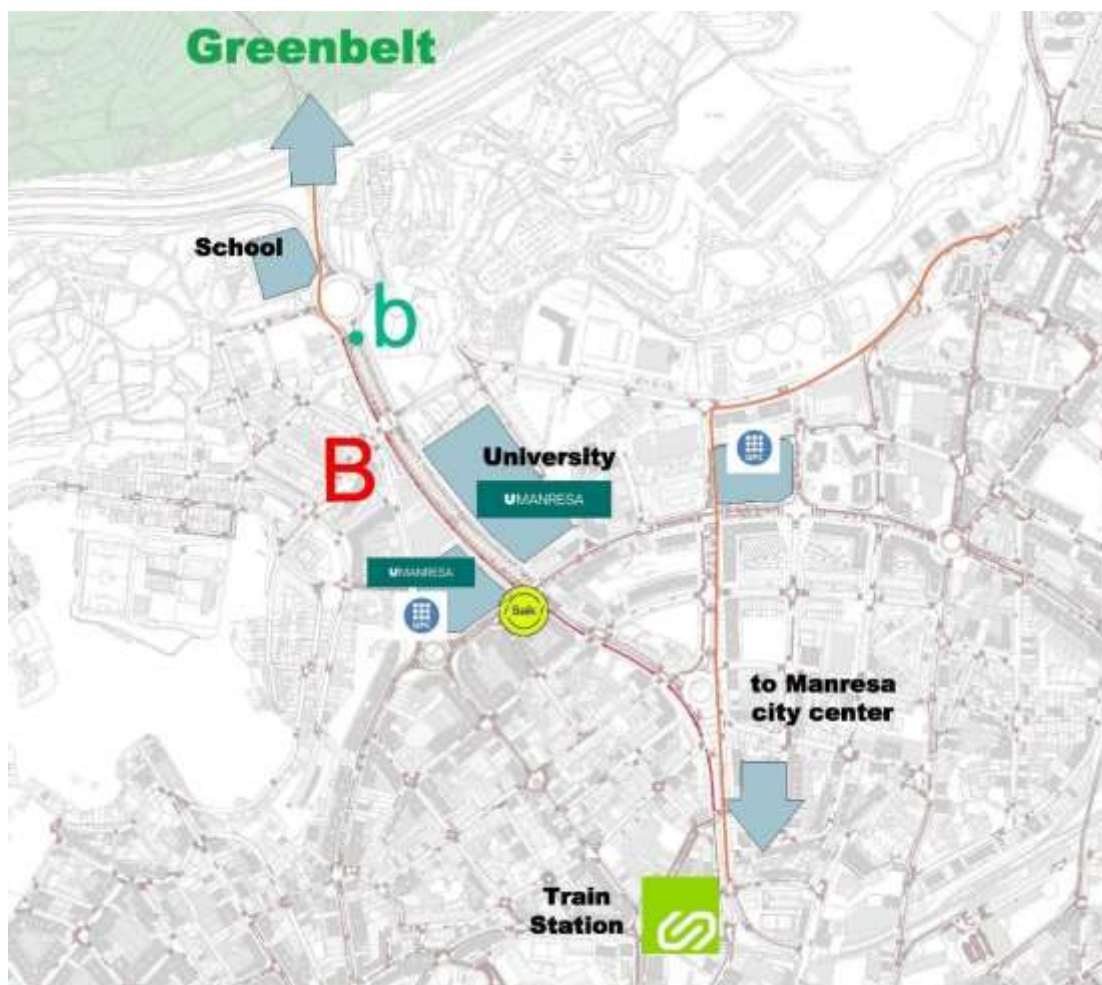
### 1. Location A – Manresa-SJV:

- New Bike lane near the old Pirelli factory – it would have **nostalgic and historical significance**;
- **Connector lane** with neighbouring city (part of the lane is already planned);
- **New industrial area** connected by bike lanes to the city centre;
- Near a Sports Complex and the biggest park of the city (Cardener River Park), and connects the city with its Greenbelt;
- **Helps promote an active lifestyle and sports**;
- Near two proposed locations for a **charging station**.



## 2. Location B – Universitat:

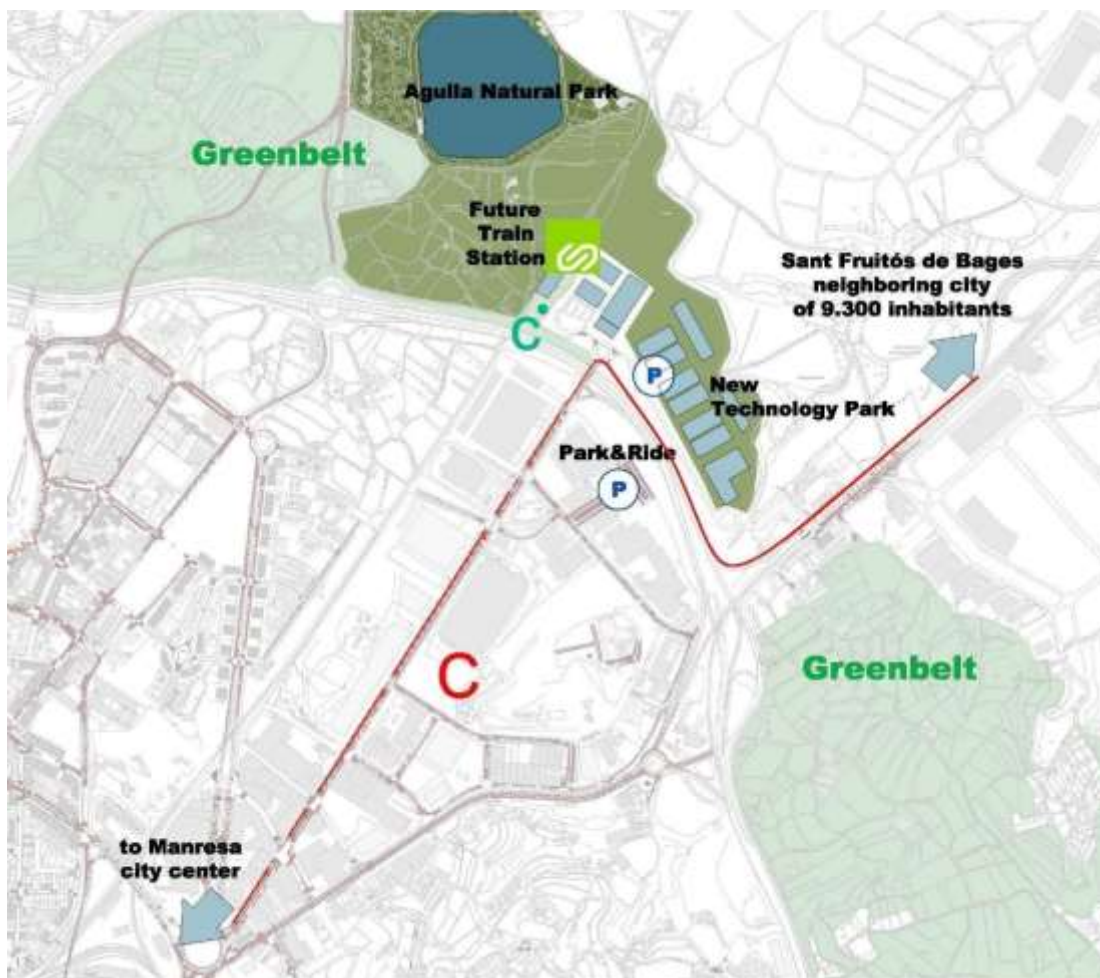
- Renovation of an existing urban lane near the **university area**;
- Connects the city centre with the university and with the Greenbelt;
- It **helps promote an active lifestyle**;
- **New “Baik” station** in the area (a public electric bike-sharing service);
- Close to a **main railway station**;
- Near a proposed location for the **charging station**.



### 3. Location C – Sallent:

- New urban lane connecting the city with a **Technology Park**;
- Connects the city to the region's most important park: Parc de l'Agulla and the Greenbelt;
- **Helps promote an active lifestyle**;
- A **future railway station** is planned, which will connect the future train station with the centre;
- Connects the city centre with two **Park&Ride**

- Near a proposed location for a **charging station**.





### 3.3.2.1 Legal Criteria

All locations have adopted adequate urban plans, so there are no issues with compliance with the city's urban plan. There is no need to modify urban planning, since all the locations are under Classification: Urban developed land, and Zoning: A1 – Road System. All three possible bike lanes are foreseen in the city's strategic plans, which can allow smooth implementation and thus fulfil the legal criteria.

### 3.3.2.2 Technical Criteria

Within the scope of the SMILE City project, the technical project is under development by municipal technicians (internal staff). The project will be approved by the Municipality – no other permits are required - and will be open to public participation for at least one month.

### 3.3.2.3 Operational Criteria

The procurement of the contractor will be implemented according to the strict rules of the Public Procurement Law. **The public procurement procedure** is what will take the most time and effort.

### 3.3.2.4 Financial Criteria

As the project budget is limited – there is an available amount of **30.000€**, the estimated feasible length of the new cycling lane is **100m**.

For Location A, the optimal length is 800 m, but it can be phased.

For Location B, the optimal length is 400 m, but it can be phased.

For Location C, the optimal length is 1000 m, and it cannot be phased easily.

### 3.3.2.5 Socio-political Criteria

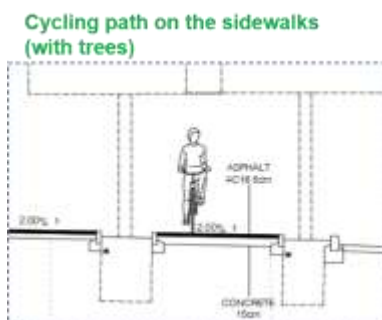
The proposed pilot areas are generally foreseen without opposition regarding the development of new sustainable mobility infrastructure. However, **Location C could face citizen opposition** due to the need to eliminate several parking spaces on the street.

#### *Overall assessment*

Across all locations, the implementation pathway may encounter challenges regarding technical and operational criteria. Location C/3 is more challenging in terms of financial and social factors as well. Based on all careful considerations and political priorities, the selected location is A/1 – **Manresa-SJV**:

Criteria for site selection:	Location A - Manresa-SJV		Location B - Universitat		Location C - Sallent	
<b>Legal</b>	Urban plan approved	City owns the landarea	Urban plan approved	City owns the landarea	Urban plan approved	City owns the landarea
<b>Technical</b>	Project already pre-designed	Get the innovative material certification	Simple maintenance project	Get the innovative material certification	Technical project still not developed	Get the innovative material certification
<b>Operational</b>	Tender & procurement local supplier	Engage local supplier/ builder	Tender & procurement local supplier	Engage local supplier/ builder	Tender & procurement local supplier	Engage local supplier/ builder
<b>Financial</b>	Not enough funds to cover all the intended scope	The execution can be phased	Not enough funds to cover all the intended scope	The execution can be phased	Not enough funds to cover all the intended scope	The execution can not be phased
<b>Socio-Political</b>	Big demand for cycle lanes infrastructure	Site of significance near the old Pirelli factory	Big demand for cycle lanes infrastructure	Lower political priority - existing bike lane	Strong citizen opposition due to the loss of parking spaces	Lower political priority - train station still in planning phase

Manresa-SJV, as the final selection of the pilot site in Manresa, will be improved in comparison to the business-as-usual regarding cycling lane paving:





### Priority for improvement with the use of rubberised asphalt

more interest



less interest

- **Cheap & Durable:** Improve pavement durability; reduce cracking and the effects of thermal fluctuations.
- **Anti-Splash:** Enhance user experience by reducing water spray in wet weather conditions.
- **Anti-Slip:** Mandatory; it must be included in the standard specifications for rubberized asphalt to comply with local and EU regulations.
- **Noise pollution reduction:** Not required for this specific location, though potentially applicable in other contexts.

### 3.3.3 Co-creation Activities

The co-creation process for the SMILE CITY pilot in Manresa has been developed through active participation in international consortium plenaries, local industrial task-forces, and strategic matchmaking sessions with innovative technological partners.

SMILE CITY Annual Meeting (Rome, January 28-30, 2026): Co-organized by ETRA and CNR at the CNR headquarters. Manresa actively participated in this international workshop aimed at coordinating the 35 consortium partners, reviewing the progress of the first 12 months, and co-defining upcoming actions on sustainable urban mobility.

SMILE CITY General Meeting (Brussels, March 24-26, 2026): Organized by ETRA, this international exhibition and workshop focused on innovations in tyre recycling. The event served to build consensus on technical developments, participate in roundtables, and network with European circular economy stakeholders.

Technical Matchmaking with SORIGUÉ (possible local producer) (May 20, 2026): A private, in-person working session was held with the possible local contractor. The discussion focused on exploring industrial synergies, technical capabilities for the bicycle lane milling, and the logistics of incorporating rubberized asphalt into the regional project site.

On June 12, 2026, Manresa held three strategic bilateral online meetings coordinated alongside EIT Urban Mobility to evaluate advanced technical solutions for the pilot's ecosystem:

Battery Circularity (with NOWOS): Explored battery repair and recycling solutions for e-bikes, analyzing how neighboring towns' existing e-bike infrastructure could be integrated into a joint, scaled-up regional project.

Smart EV Charging Infrastructure (with AGEVOLT): Assessed a smart charging ecosystem where the municipality retains data control and platform management (unlike traditional utility monopolies), identifying it as an ideal solution for Manresa's municipal bus fleet and future e-bike hubs.

Bike Lane Safety Data Analytics (with LANE PATROL): Evaluated a specialized SaaS platform designed to collect and analyze bicycle lane safety data, acting as a predictive planning tool to prioritize future sustainable mobility investments.

Looking ahead, stakeholder engagement mechanisms will remain active throughout the project's lifecycle. Plans are in place to organize further bilateral working sessions, technical site inspections, and co-evaluation workshops involving municipal technicians, infrastructure operators, and sector experts. The purpose of these actions is to optimize the development of the pilot phase, closely monitor success indicators, and enhance the transfer of project knowledge.



### 3.3.4 Implementation Preconditions for Prototyping

#### 3.3.4.1 Public Procurement Planning

The procurement strategy for the SMILE CITY pilot in Manresa will strictly adhere to the Spanish Public Sector Contracts Law (**Ley de Contratos del Sector Público - LCSP**). Although preliminary market consultations indicate that local suppliers in Catalonia have experience working with rubberised asphalt derived from end-of-life tyres (ELTs), a direct award is legally unfeasible for this type of public intervention. Consequently, an open or simplified public tender will be launched by the Municipality of Manresa.

The procurement process is structured into four distinct phases:



- **Preparation Phase:** Definition of technical needs, drafting of the Technical Specifications (Plec de Prescripcions Tècniques - PPT), and the Specific Administrative Clauses (Plec de Clàusules Administratives Particulars - PCAP). Technical criteria will explicitly require bidders to demonstrate prior experience in the execution of sustainable or rubberised pavements.
- **Tendering Phase:** Publication of the tender on the Public Sector Procurement Platform (Plataforma de Serveis de Contractació Pública), receipt of bids, and opening of administrative and technical envelopes.
- **Award Phase:** Evaluation of criteria (both automatic and value-judgment based), formal award proposal by the contracting board, and contract signing.
- **Execution Phase:** Supervision of the civil works, reallocation of urban space, and laydown of the validated rubberised asphalt mixture.

As the total cost of this project is under €40,000, it qualifies as a minor contract under current regulations. This enables us to adopt the most straightforward tendering procedure. In doing so, we significantly cut down on the required statutory waiting periods and formal phases, ensuring a highly efficient procurement cycle.

### 3.3.4.2 Relevant Legal Framework for Prototyping

#### 3.3.4.2.1 European Regulations on Environmental Protection and Construction Products

- **Directive 2008/98/EC** on waste (Waste Framework Directive), promoting the recycling and recovery of materials to foster a circular economy.
- **Regulation No 305/2011** and the transition to the new Regulation 2024/3110, laying down harmonised conditions for the marketing of construction products and CE marking for the asphalt components.

#### 3.3.4.2.2 National and Regional Urban and Environmental Regulations

- **Law 7/2022** on waste and contaminated soils for a circular economy.
- **Law 9/2003, of June 13, on Mobility of Catalonia (Llei de mobilitat de Catalunya):** This regional law establishes the legal framework for the planning and management of sustainable mobility. It prioritises active transport (walking and cycling) over motorised vehicles and acts as the legal mandate requiring medium-sized and large municipalities to deploy institutional tools like the PMUS.
- **Decree 209/2023** on the Accessibility Code of Catalonia, ensuring that the design of the new cycling infrastructure respects the priority, safety, and routing of pedestrians with reduced mobility.
- **Decree 89/2010** (and its amendment Decree 64/2014) of the Generalitat de Catalunya, regulating the ecomanagement of construction and demolition waste (CDW) in urban works.

#### 3.3.4.2.3 Local Regulations

**Manresa Municipal Urban Development Plan - Pla d'Ordenació Urbanística Municipal (POUM):** The municipal urban plan that regulates land use and urban configurations.



**Sustainable Urban Mobility Plan of Manresa - Pla de Mobilitat Urbana Sostenible de Manresa (PMUS):** The strategic framework defining the expansion and connectivity of the municipal cycling network.

**Manresa Cycle and Personal Mobility Vehicle (VMP) Circulation Ordinance:** Dictating the speed limits, dimensions and safety distances for urban cycling lanes.

#### 3.3.4.2.4 Technical regulations on project documentation

**ROAS - Regulation of Works, Activities, and Services of Local Authorities (Decree 179/1995):** This regulation sets the legal and technical framework for contracting and executing municipal public works. For an urban bike lane, the ROAS determines the mandatory structure and minimum content of the technical project, regulates coordination with affected utility companies (water, electricity, gas), and defines the conditions for the final acceptance of the works.

**Catalan Accessibility Code (Decree 209/2023):** This decree establishes the accessibility conditions for urban public spaces. In the project design, it directly affects intersections, bus stops, and traffic islands, mandating the use of tactile paving, ensuring minimum clear pathways for pedestrians, and guaranteeing that bike lane separators do not create architectural barriers or tripping hazards.

**General Traffic Regulations (Royal Decree 1428/2003):** This serves as the fundamental regulatory framework for road safety, traffic management, and road users. At the project level, it dictates the right-of-way at intersections, the implementation of bicycle crossings, the design of traffic light phasing, and establishes the legal validity of the proposed signage.

**Bicycle Path Design Guidelines (Government of Catalonia / AMB):** Although they are technical manuals, they are adopted as mandatory reference standards in technical specifications. They define strict geometric parameters for the layout: minimum widths for one-way or two-way lanes, turning radii, maximum allowable slopes, safety clearances from parked vehicles, and standard solutions for traffic calming.

#### 3.3.4.2.5 Technical regulations on waste management

**Decree 89/2010 (Government of Catalonia):** Approving the Construction Waste Management Program of Catalonia (PROGROC), this decree serves as the regional framework. It categorises milled asphalt as construction and demolition waste (CDW), establishing mandatory requirements for **Waste Management Studies and Plans to ensure proper traceability**, recycling, and authorised final disposal during works.

**Royal Decree 105/2008 (Government of Spain):** This decree sets the overarching legal regime for CDW production and management, strictly mandating at-source material separation. Crucially for asphalt, it enforces classification under the European Waste List (EWL), distinguishing between standard reusable bituminous mixtures and hazardous tar-containing pavements that require specialised toxic waste protocols.

**Order ACC/9/2023 (Government of Catalonia):** Establishing criteria for utilising recycled aggregates, this order promotes the circular economy in the regional construction sector. Relevant to paving actions, it mandates incorporating at least **5% recycled materials** in structural layers, directly driving demand and regulatory compliance for reusing milled asphalt in new bases.

### 3.3.4.2.6 Technical regulations on pavements, bituminous mixtures and signage

**PG-3 General Technical Specifications for Road and Bridge Works** shall be adopted as a reference, especially the articles related to granular materials, tack coats, hot bituminous mixtures, discontinuous mixtures for wearing courses, material control, laying and acceptance. Order FOM/2523/2014 updates certain articles of the PG-3 and refers, among others, to Articles 531, 542 and 543, which are relevant to this action.

### 3.3.4.2.7 European Regulations on Environmental Protection and Construction Products

**Directive 2008/98/EC** on waste (Waste Framework Directive), promoting the recycling and recovery of materials to foster a circular economy.

**Regulation (EU) No 305/2011** and the transition to the new **Regulation (EU) 2024/3110**, laying down harmonised conditions for the marketing of construction products and CE marking for the asphalt components.

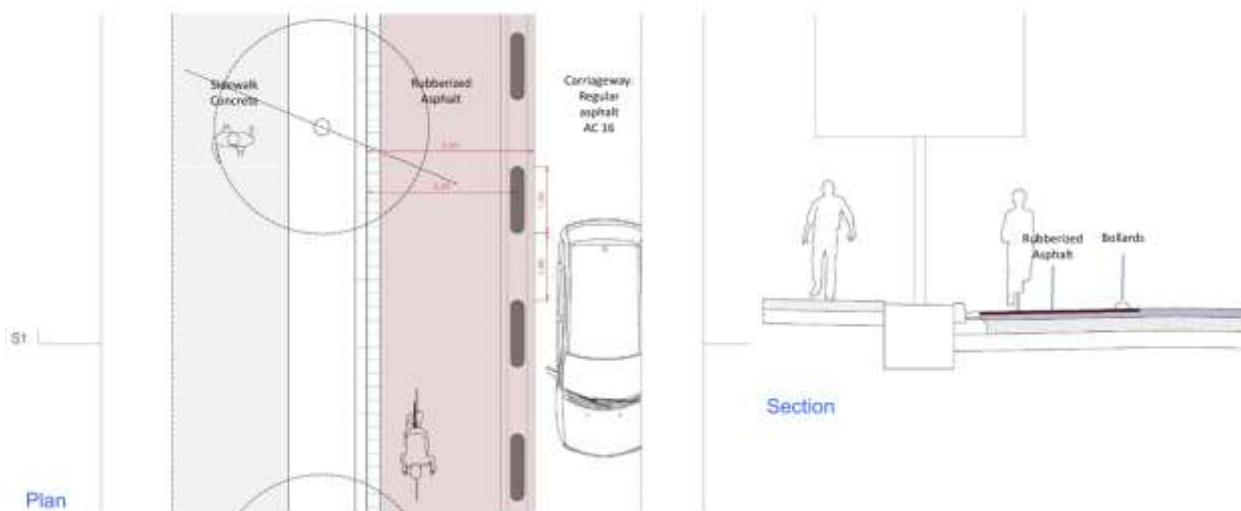
### 3.3.4.3 SMILE CITY systemic solutions for prototyping

At present, the technical documentation required for the project is under active development. A key advantage of this approach is that the technical project can be drafted entirely by the municipality's own technical staff.

#### Manresa Pilot Project Development



### Manresa Pilot Project Development



### Manresa Pilot Project Development: milling → paving → painting → bollards



**Manresa Pilot Project Development: milling → paving → painting → bollards**



**Manresa Pilot Project Development: milling → paving → painting → bollards**








Manresa asphalt regular solution track lanes were intended to be hot-mix asphalt (HMA) pavement, dense-graded composition (AC16 surf D), with granitic aggregate and penetration-grade bitumen, spread and compacted to 98% of the Marshall test density.

The use of this material is regulated by Articles 542 and 543 PG-3 of the General Technical Clauses and Conditions for Road and Bridge Construction.

The technical comparison was analysed for AC (Asphalt Concrete) in accordance with Art. 542 – Conventional, and BBTM / PA according to Art. 543 – Discontinuous paving (Gap-Graded):

## Technical Comparison: AC vs. BBTM

Major differences between Article 542 (Continuous) and Article 543 (Gap-Graded)  
PG-3 Standards FOM, 2023/2014 Update

Requirement	AC (Asphalt Concrete) Art. 542 - Conventional	BBTM / PA Art. 543 - Discontinuous
 Grading Curve	Continuous. Well-graded particles for maximum density and stability.	Gap-Graded. Missing middle sizes to create macrotexture and voids.
 Air Voids (Vm)	3% – 6% (Dense/Closed)	12% – 18% (BBTM A) or >20% (PA) Must be strictly maintained.
 Binder Type	Conventional B 35/50 or B 50/70 (PMB only for heavy T00-T0)	Mostly PMB (Modified) to prevent binder drainage and improve cohesion.
 Aggregate Quality	L.A. Abrasion < 25 – 30 (Moderate)	High resistance L.A. Abrasion < 15–25. 100% crushed faces mandatory.
 Surface Texture	MTD (Texture) <b>not critical</b> . Focus on evenness.	MTD > 1.2 – 1.5 mm. Mandatory for safety/friction.
 Layer Thickness	Variable: 4 – 10 cm per layer (Structural).	Very thin: 2 – 3.5 cm (Surface functional layer).

While there is a higher requirement for discontinuous mixtures in Spanish regulation, BBTMs are reserved for high-performance surface courses, such as highways. For the cycling lane, Asphalt Concrete (AC) was considered an adequate choice by the Manresa project team, but it will consult about implementing environmentally sustainable options like AC asphalt with rubber modification or dry method with powder.

### Material & Sustainability Options Evaluated:

- **Dry Process:** Replaces aggregate with crumb rubber. Higher elasticity, lower weight, requires bitumen modification. No minimum tonnage.
- **Semi-Wet Process:** Pre-blended crumb rubber + bitumen. Higher durability, lower impact, but higher cost. No minimum tonnage.
- **Wet Process:** Hot-blended rubber and bitumen. More homogeneous mix. No minimum tonnage.

**Innovation Alternative:** Looking into recycled plastic, which is currently showing excellent results.

### Validation & Expert Consensus

Following a deep-dive technical meeting, external local technical consultants confirmed that AC is the superior choice for Manresa's urban environment.













**Environmental Impact Note:** Standard mix typologies such as AC 6 or AC 11/16 have a lower initial carbon footprint than high-impact mixes (SMA/BBTM). Additionally, they provide a smoother surface, resulting in a more comfortable and pleasant riding experience for the cyclists.

**Accreditation:** Easier paths to certification for municipal standards.

**Innovation:** Expertise in AC modification via dry/wet rubber blending.

**Sustainability:** Lower absolute pollution per installed square meter.

**Material Alternatives:** Regarding recycled components, Sorigué noted that rubber powder from end-of-life tyres is not their preferred choice for asphalt modification. Instead, they strongly consider other innovative and technically viable alternatives, such as recycled plastics and textile fibres.

Evaluation Criteria	BBTM / SMA (Discontinuous Mixtures)	AC (Continuous Mixture)
Urban Suitability & User Experience	 Designed for <b>interurban highways</b> to reduce high-speed tire rolling noise and increase drainage. The surface is more irregular.	 <b>Optimized for urban areas, streets, and bike lanes.</b> Provides a smooth, regular, and comfortable riding surface for cyclists.
Regulatory Feasibility (Spain)	 <b>High Complexity:</b> Bound by a strict regulatory framework designed primarily for national highway networks.	 <b>Standard &amp; Feasible:</b> Easy to accredit, certify, and implement under current municipal urban regulations.
Material Efficiency (Bitumen)	 <b>High Demand:</b> Requires a high volume of bitumen, which must strictly be modified bitumen.	 <b>Resource Efficient:</b> Requires a moderate volume of bitumen and allows for the use of standard (non-modified) bitumen.
Footprint Reduction (Rubberized Asphalt)	 <b>High Relative Reduction:</b> Notable carbon footprint reduction specifically due to the higher baseline use of bitumen in the mixture.	 <b>Moderate Relative Reduction:</b> Moderate reduction directly proportional to the lower overall volume of bitumen required.
Absolute Energy & Carbon Footprint (Pilot Specific)	 <b>Moderate:</b> Despite the reduction of the asphalt footprint, this solution requires a complete pavement milling and a larger absolute quantity of new asphalt.	 <b>Low:</b> Promotes waste reduction by reusing well-conserved existing infrastructure, together with the reduction of the pollution emitted by the asphalt, significantly lowering the total carbon footprint of the project.
Scalability & Replication Potential	 <b>Low:</b> Milling the entire pavement layer is an uncommon practice when constructing urban bike lanes.	 <b>Exceptionally High:</b> easy integration into regular cycle lane projects in Manresa, ensuring long-term scalability.

After careful and detailed considerations, **the Manresa City Council proposes and advocates for the use of AC6 asphalt mixture integrating textile fibres to improve sustainability.**

**Collaboration Strategy:** Once the project core is fully secured with the main executor, upon the public procurement, the City will host a dedicated session for industry stakeholders.

**Target Partners:** Present the project to companies in the sector, specifically **Pirelli**, to gather feedback and foster long-term synergy.

#### Immediate Action Items:

- Arrange a technical visit to potential contractors' facilities.
- Inspect physical product samples.
- Finalise the exact technical specifications and choose the best asphalt typology for the Manresa pilot.

Finally, the administrative procedure is exceptionally straightforward. The project is subject to direct approval by the local government, eliminating the need to secure external licenses or third-party permits. As per standard regulatory requirements, the proposed project will undergo a mandatory public exhibition period of at least one month before final authorisation is granted.

#### 3.3.4.4 Prototype Construction

For the Manresa pilot, the official document required to initiate the works in the public space is the approval of the project by the local government (Ajuntament de Manresa); there is no need for authorisation in this case.



In this specific case, as it is an entirely urban intervention executed on existing municipal streets, the procedures are managed internally through the Public Space Projects Section.

The process is as follows:

1. **Preparation of the technical project:** This includes the descriptive report of the new bicycle lane, the Material Execution Budget (Pressupost d'Execució Material - PEM), urban alignment plans, and cross-sections of the streets where the rubberised asphalt will be applied. The technical project will be signed by a qualified technician from the internal staff of the Public Space Projects Sections.
2. **Identification of land ownership:** Through consultation with the urban cadastre, it has been certified that the entire section of the intervention is part of the public road domain under the jurisdiction of the Municipality of Manresa.
3. **Submission of the project to Urban planning:** The technicians have already confirmed that the land qualification set by the Municipal Urban Planning Plan (POUM) aligns with the project's aim (the land is qualified as A1). Street Network, which allows the use of cycle lanes. The project is also aligned with the Sustainable Urban Mobility Plan (PMUS) and other strategic plans of the city.
4. **Application for the mobility and traffic impact report:** during the development of the project, an internal meeting with the Mobility Projects Section will be held to manage the temporary traffic disruption and detour plans (if needed) during the asphalt milling and laying phases.
5. **Issuing the approval resolution:** The tender of the works can only begin once the project receives definitive administrative approval, and it is exhibited to public consultation for at least a month.
6. **Tender and construction works:** The tender procedure will start with the approval of the project, and it is foreseen to be a minor contract according to the budget of the pilot. The estimated duration of the procedure is approximately 3 months. One month after the contract awards, the contractor must start the work.



## 3.4 Istanbul Metropolitan Municipality – Local Report

### 3.4.1 Setting up the Urban Living Lab and stakeholders' engagement

The SMILE CITY project in the Istanbul Metropolitan Municipality is coordinated by the Parks and Gardens Department. Within the scope of the project, implementation is planned in two designated pilot areas. In Avcılar Coastal Park, approximately 800 m of bicycle lane will be reconstructed, using recycled materials (rubber asphalt), along with the installation of one photovoltaic bicycle charging station, and the implementation of rubber-based urban furniture elements, including bollards and bicycle lane separators. Another bicycle charging station will be implemented in Caddebostan Coastal Park.

Relevant local stakeholders and partners have been identified, relevant institutions and departments have been informed through official correspondence about the project, and responsible contact persons have been requested. In addition, meetings are organised with stakeholders to ensure co-creation, implementation, coordination, and collaboration.

External facilitators are planned to be involved in subsequent co-creation processes, related to the details of the pilots and urban furniture. In this context, collaboration is envisaged with universities, private sector representatives, start-ups, technology providers, non-governmental organisations, and relevant platforms.

In this way, the aim is to develop innovative, implementable solutions through a multi-stakeholder, inclusive approach.

#### 3.4.1.1 Working Framework

The urban plan for the areas considered for the pilots is adopted by the Zoning Directorate of Istanbul Metropolitan Municipality. The areas considered for the pilot sites are under the responsibility of the Istanbul Metropolitan Municipality.

Technical designs related to engineering and infrastructure have been carried out in cooperation with the Directorate of Road Maintenance and Infrastructure Coordination, İSFALT, taking into account the technical opinions and recommendations of the relevant units. Transportation and mobility planning were shaped by evaluations and consultations with the Directorate of Transportation and the Traffic Branch Directorate. Following these processes, the Parks and Gardens Directorate is in the process of granting the final approval, and implementation will proceed accordingly.

Execution of works will be conducted by a private asphalt company, upon public procurement. The rubber raw material to be used within the scope of the project will be procured by the contractor from end-of-life tyre recycling facilities that have been granted environmental permits and licenses by the Ministry of Environment, Urbanisation, and Climate Change. Certification of the new construction materials tested will be requested from the contractor. Istanbul Metropolitan Municipality will provide the use permit. Co-financing for the SMILE CITY systemic solution is ensured in the public budget.

### 3.4.1.2 Mapping the Main Stakeholders

There are multiple stakeholders who will have roles in pilot development, with various interests and influence in the Istanbul Living Lab.

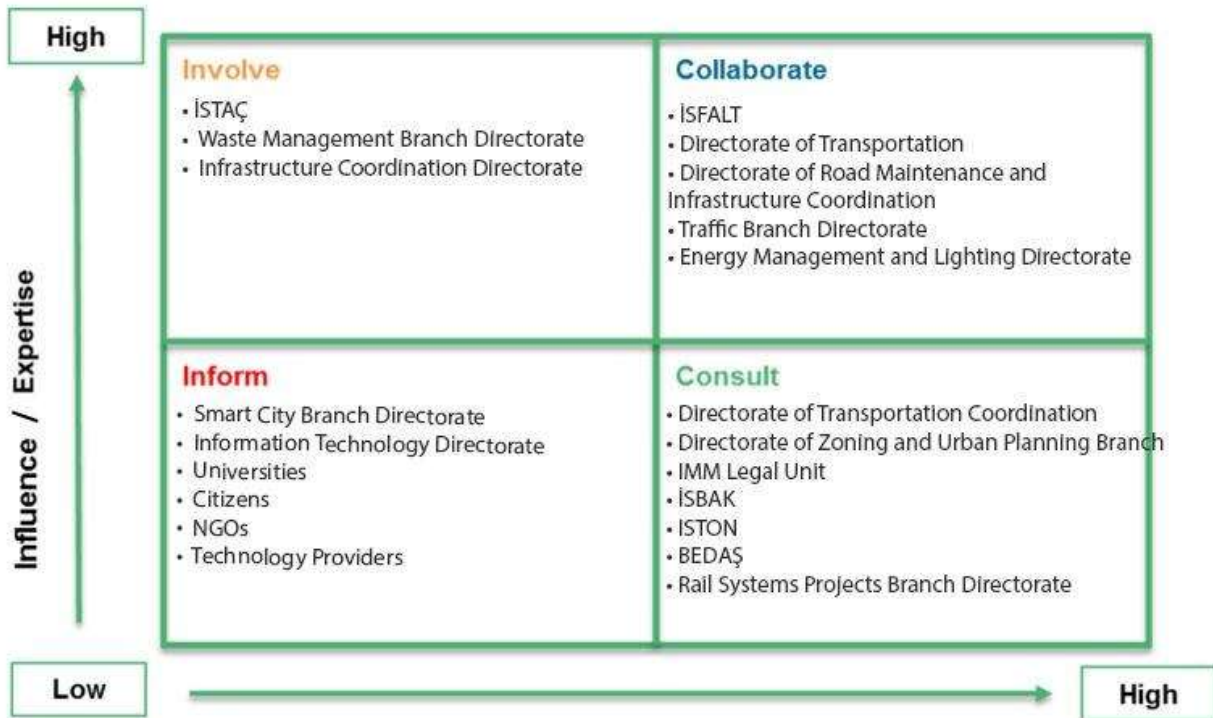
The stakeholders which yield the most influence to affect project outcomes are:

- Directorate of Road Maintenance and Infrastructure Coordination
- İSFALT
- Directorate of Transportation
- Traffic Branch Directorate
- Energy Management and Lighting Directorate.

Other stakeholders include local neighbourhood residents, neighbourhood headmen, park users, and local businesses. Unexpected impacts are generally not critical and are mostly limited to temporary, manageable effects that may arise during implementation.



### TOOL 2.3: Mapping. Stakeholder Quadrant Template



Various stakeholders will be engaged along the process, in different stages and in different ways:

LEVEL OF ENGAGEMENT	INFORM	CONSULT	INVOLVE	COLLABORATE
<b>Method of engagement</b>	<b>Website</b>	<b>Focus Groups</b>	<b>One-to-one meetings</b>	<b>Task Force</b>
İSTAÇ			X	
Waste Management Branch Directorate			X	
Infrastructure Coordination Directorate			X	
İSFALT				X
Directorate of Transportation				X
Directorate of Road Maintenance and Infrastructure Coordination				X
Traffic Branch Directorate				X
Energy Management and Lighting Directorate				X



Smart City Branch Directorate	X			
Information Technology Directorate	X			
Universities	X			
Citizens	X			
NGOs	X			
Technology Providers	X			
Directorate of Transportation Coordination		X		
IMM Legal Unit		X		
Directorate of Zoning and Urban Planning Branch		X		
Rail Systems Projects Branch Directorate		X		
İSBAK		X		
BEDAŞ		X		
ISTON		X		

The most vulnerable stakeholders and beneficiaries, subject to potential adverse impacts, during the project's implementation phase are certain groups which may be more vulnerable to impacts such as noise, dust, or temporary access restrictions resulting from construction activities. These groups may include children, elderly individuals, people with disabilities, local neighbourhood residents, park users, and nearby small businesses.

To minimise potential adverse effects, measures will be implemented within the project, including ensuring construction site safety, maintaining pedestrian access, providing advance information to local communities, and carrying out construction activities within appropriate working hours.

### 3.4.1.3 Visioning and Scale-up Potential

Within the framework of the SMILE CITY Project, this pilot in Istanbul aims to co-create, implement, and test safe, inclusive, and low-carbon cycling and micromobility infrastructure on existing carriageways using the Urban Living Lab (ULL) approach. The pilot is designed to accelerate the transition toward sustainable urban mobility in Istanbul, a rapidly growing megacity characterised by high density, complex multimodal transport patterns, and significant environmental challenges.

The primary objective is to reduce private car dependency for short urban trips by promoting active and shared mobility options while improving traffic safety and urban livability. In this context, the pilot will:

- Establish physically separated or traffic-calmed on-street cycling infrastructure
- Enable safe and regulated use of micromobility modes, including e-bikes and e-scooters
- Improve integration with public transport to support seamless multimodal travel
- Provide accessible mobility options for all user groups, including women, children, elderly people, and persons with disabilities.
- Noise pollution and greenhouse gas emissions

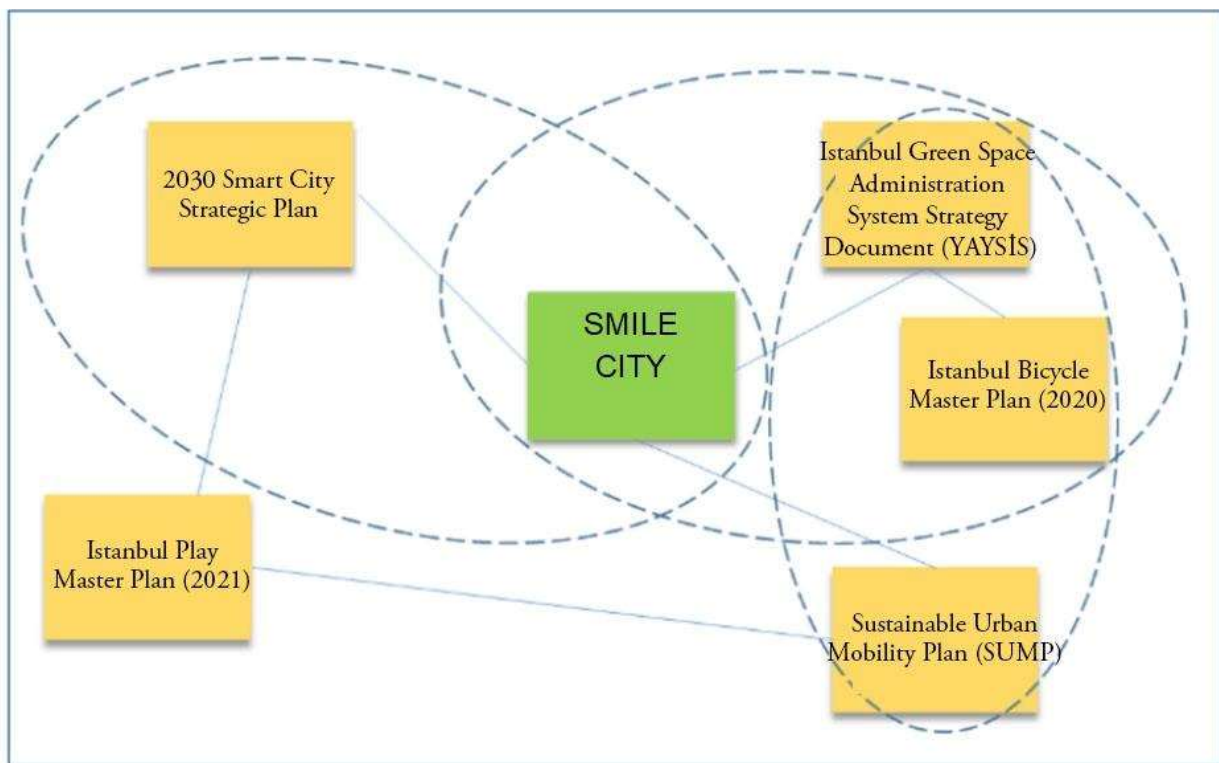
- Enhance public space quality and social interaction
- Generate real-world data on usage patterns, safety performance, and environmental impacts

Given Istanbul's structural challenges—severe congestion, limited public space, air pollution, and climate risks—the pilot represents not only a transport intervention but also a strategic action for urban resilience, public health, and quality of life.

The pilot will directly affect a wide range of local stakeholders, including residents, commuters, students, local businesses, logistics operators, and vulnerable road users. Through the Urban Living Lab approach, these groups will actively participate in co-design, implementation, and evaluation processes, becoming co-creators rather than passive beneficiaries.

Special attention will be given to disadvantaged and underrepresented groups to ensure equitable access to safe mobility. This includes women, children, elderly citizens, low-income populations, and individuals with reduced mobility.

Furthermore, the pilot will foster cross-departmental collaboration within the Istanbul Metropolitan Municipality (e.g., transport planning, traffic management, infrastructure, environment, safety), as well as partnerships with academia, civil society, and private sector actors.





### *Scale-up potential of the pilot, in the national or EU context*

The pilot demonstrates strong scalability at both national and European levels due to its cost-effective, rapidly deployable, and high-impact approach to sustainable urban mobility, validated in a complex megacity context.

Many Turkish cities face similar challenges related to congestion, air quality, safety, and lack of active mobility infrastructure. The methodologies, design standards, governance models, and stakeholder engagement practices developed through the pilot can be readily adapted to other urban contexts.

Potential national stakeholders for scaling include:

- Ministry of Transport and Infrastructure
- Ministry of Environment, Urbanisation, and Climate Change
- Metropolitan and municipal authorities
- Union of Municipalities of Türkiye
- National road and transport agencies
- Universities and research institutions
- Professional chambers and civil society organisations

At the European level, the pilot aligns closely with major policy frameworks such as the European Green Deal, the Sustainable and Smart Mobility Strategy, and climate neutrality targets. Implementation in Istanbul — a major metropolitan hub with strong socio-economic ties to Europe — provides valuable insights transferable to other large cities.

Relevant EU-level actors may include:

- European Commission directorates responsible for mobility, climate, and urban affairs
- European city networks and municipal platforms
- Research and innovation initiatives in sustainable mobility and micromobility
- Funding bodies supporting urban transition
- Standardization and policy advisory organizations

Through the Urban Living Lab methodology, the pilot will generate not only physical infrastructure but also transferable knowledge, including participatory governance models, monitoring tools, and evaluation frameworks.

Key outputs enabling replication will include:

- Design and implementation guidelines
- Safety and performance indicators
- User behaviour data
- Policy recommendations
- Digital monitoring tools

These outputs can be adapted to cities with diverse socio-economic conditions, spatial structures, and governance systems.

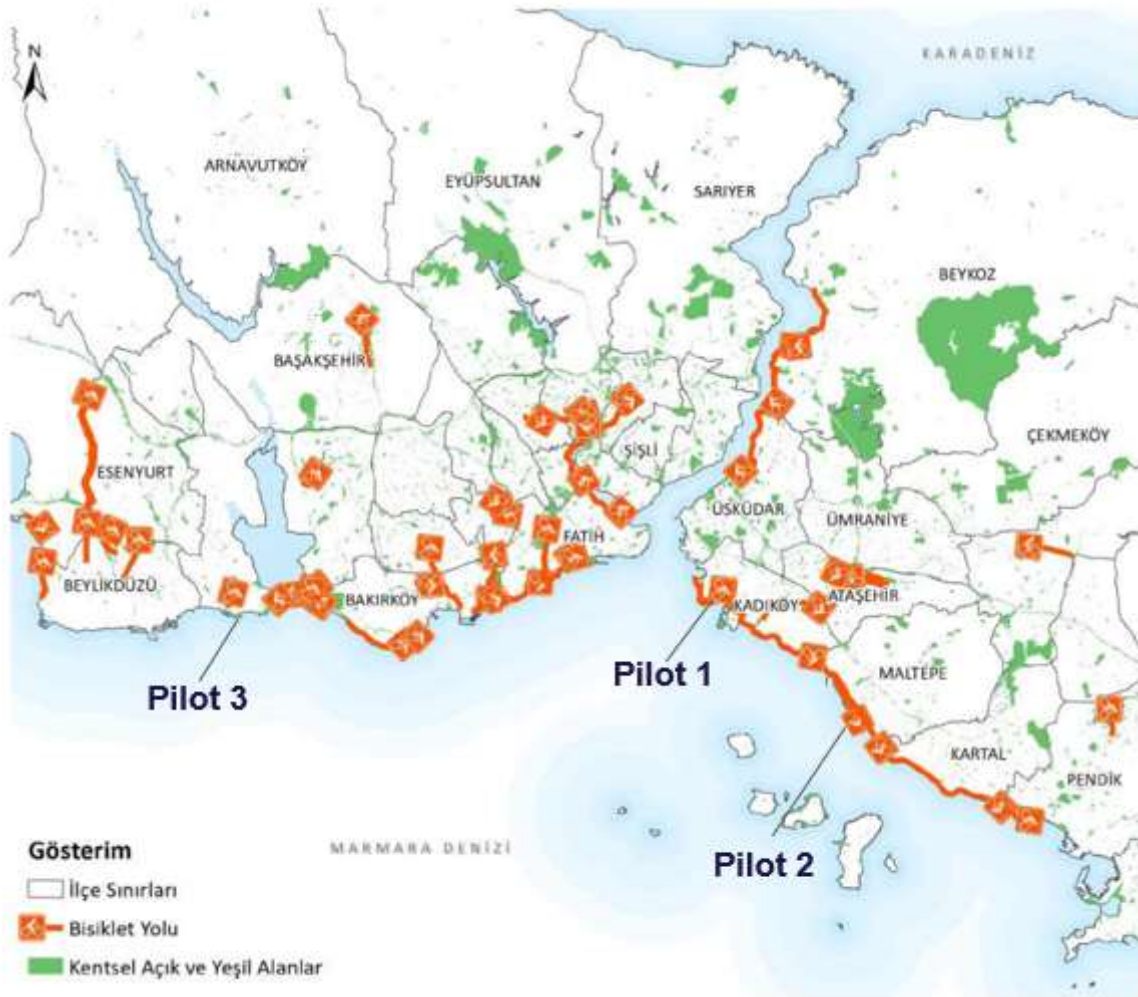
Ultimately, the pilot provides a scalable model for accelerating the adoption of active mobility, reducing carbon emissions, and supporting the transition toward healthier, more inclusive, and climate-resilient cities across Türkiye and Europe.

S STRENGTHS	W WEAKNESSES	O OPPORTUNITIES	T THREATS
<ul style="list-style-type: none"> <li>• Presence of specialized municipal units and stakeholders</li> <li>• Majority of potential implementation areas are within the authority of the municipality</li> <li>• Existing know-how in rubber asphalt production and applications</li> <li>• Availability of strategic documents (e.g., Bicycle Master Plan)</li> <li>• Strong citizen support for new bike lanes</li> </ul>	<ul style="list-style-type: none"> <li>• Insufficient budget</li> <li>• Lengthy bureaucratic tendering and approval processes</li> <li>• Lack of rubber-based urban furniture applications</li> <li>• Limited use of bicycles for transportation purposes</li> </ul>	<ul style="list-style-type: none"> <li>• Increasing interest in sustainable and smart city practices</li> <li>• Support for environmentally friendly transportation (e.g., cycling)</li> <li>• Development of new technologies and innovative materials</li> </ul>	<ul style="list-style-type: none"> <li>• Economic fluctuations and reduced financial resources</li> <li>• Changes in legislation and administrative procedures</li> <li>• Compliance risks with personal data protection laws (data stored on EU servers)</li> </ul>

### 3.4.2 Multicriteria analysis for site selection

In Istanbul, three potential pilot locations were considered:

1. **Pilot 1: Şehit Kadir Yıldırım Park (Caddebostan Coastal Park)**
2. **Pilot 2: Orhangazi City Park**
3. **Pilot 3: Avcılar Coastal Park**



The SMILE City project is aligned with the Istanbul Metropolitan Municipality's existing policies and strategies on sustainable urban mobility, the promotion of active transport, and climate-friendly urban solutions. Within this framework, there is a clear institutional commitment to the implementation of the project. All the pilot possibilities were assessed from legal, technical, operational, socio-political and financial criteria. All the potential pilots are also aligning with the existing strategic framework, addressing Istanbul's vision of becoming a sustainable, innovative, and livable city through different thematic perspectives.:

- The **Istanbul Bicycle Workshop** promotes the use of bicycles in urban transportation, contributing to the development of a sustainable mobility culture.
- The **Istanbul Sustainable Urban Mobility Plan** provides a roadmap for creating environmentally friendly, accessible, and integrated transportation systems.
- The **2030 Istanbul Smart City Strategic Plan** aims to enhance the quality of urban life through digital technologies and data-driven solutions.
- The **Istanbul Play Master Plan** seeks to develop inclusive, creative, and safe play environments for children and young people.

- The **Istanbul Green Space Management System Strategy Document** offers a strategic framework for protecting the city's natural assets, supporting biodiversity, and ensuring the effective management of green spaces.



The following locations are considered for piloting:

### Pilot 1: Şehit Kadir Yıldırım Park (Caddebostan Coastal Park)

Total Park Area: 214.000 m<sup>2</sup>  
Coordinate: 40.9629° N, 29.0614° E



### Pilot 2: Orhangazi City Park

Total Park Area: 1.205.000 m<sup>2</sup>  
Coordinate: 40.9402° N, 29.1079° E



### Pilot 3: Avclar Coastal Park

Total Park Area: 292.249 m<sup>2</sup>

Coordinate: 40.9709° N, 28.7211 E



#### 3.4.2.1 Legal Criteria

All the locations have adequate urban plans adopted and operations, which can allow smooth implementation and thus fulfil the legal criteria. All three potential pilot areas are covered by a 1/5000-scale Master Development Plan and a 1/1000-scale Implementation Development Plan and are designated for park use.

#### 3.4.2.2 Technical Criteria

Within the scope of the SMILE City project, preliminary technical designs and conceptual documentation were prepared for the pilot areas, under the responsibility of the Istanbul Metropolitan Municipality, primarily led by the Department of Parks and Gardens.

The planned cycling tracks, e-bike charging stations and accompanying urban furniture within the pilot areas can be implemented in accordance with the existing zoning plans and legal framework. Following the completion of internal institutional approvals, the implementation phase will be initiated.

#### 3.4.2.3 Operational Criteria

The project timeline for the preparation of technical documentation, the public procurement procedure and the on-site implementation of the investment will be aligned with the SMILE City project dynamic plan without challenges.

#### 3.4.2.4 Financial Criteria

As the project budget is insufficient, the interventions are planned to be managed using internal public resources. The implementation and management of the pilot areas are the responsibility of the Istanbul Metropolitan Municipality, Department of Parks and Gardens. The maintenance of the proposed pilot areas is already carried out by the Istanbul Metropolitan Municipality.

The solutions implemented under the SMILE City project are eligible to be financed under existing investment, maintenance and repair budget lines for park and cycling infrastructure and



can be sustainably continued within the municipality's routine maintenance budgets after the completion of the project.

### 3.4.2.5 Socio-political Criteria

The proposed pilot areas are located within publicly accessible parks and recreational areas with high levels of public use, and the interventions focus on improving cycling infrastructure and user safety. The planned actions are expected to generate public benefit and positive incentives, with users anticipated to demonstrate a favourable attitude towards innovative, safe and environmentally friendly solutions.

#### *Overall assessment*

For all the locations, the pathway for implementation was assessed as clear and achievable within the SMILE City timeline regarding legal, technical and socio-political criteria. Regarding operational and financial criteria, barriers exist, but there is a strategy for overcoming them.

Criteria for site selection:	Location 1	Location 2	Location 3
Legal	Pathway for implementation is clear and achievable	Pathway for implementation is clear and achievable	Pathway for implementation is clear and achievable
Technical	Pathway for implementation is clear and achievable	Pathway for implementation is clear and achievable	Pathway for implementation is clear and achievable
Operational	Barriers exist, but there is a strategy for overcoming them	Barriers exist, but there is a strategy for overcoming them	Barriers exist, but there is a strategy for overcoming them
Financial	Barriers exist, but there is a strategy for overcoming them	Barriers exist, but there is a strategy for overcoming them	Barriers exist, but there is a strategy for overcoming them
Socio-political	Pathway for implementation is clear and achievable	Pathway for implementation is clear and achievable	Pathway for implementation is clear and achievable

The final pilot site selection - **Avcılar Coastal Park**- was done in consultations with the technical partners, in line with paving baseline conditions.

Avcılar Coastal Park was selected as the final pilot site because it combines a clear implementation pathway with high strategic impact.

The area reflects several of Istanbul's key urban challenges, including high population density, traffic congestion, limited open space availability, and significant seismic vulnerability. As a result, the coastal corridor serves not only as a recreational area but also as an essential public open space and urban breathing corridor for local communities.

From an implementation perspective, legal, technical, and socio-political conditions were assessed as clear and achievable within the SMILE City project timeline. While operational and financial barriers were identified, feasible mitigation strategies and institutional capacity exist to address them.

Beyond mobility, the project contributes to healthier lifestyles, social interaction, accessibility, and urban resilience. It directly supports **SDG 11 (Sustainable Cities and Communities)**, **SDG 13 (Climate Action)**, and **SDG 3 (Good Health and Well-being)**.

Therefore, Avcılar Coastal Park was selected because it offers the strongest combination of implementation feasibility, stakeholder readiness, public benefit, and replication potential. The pilot can serve as a scalable model for future cycling infrastructure, coastal parks, and green corridor projects across Istanbul.

**Avcılar Coastal Park, as the final selection of the pilot site in Istanbul, is presented with maps and images:**





800 mt rubberised asphalt







### 3.4.3 Co-creation Activities

The Istanbul Metropolitan Municipality, Department of Parks and Gardens, has a clear vision for strategic stakeholders' management, and establishment of long-term collaboration arrangements with various stakeholders and knowledge-holders, in all phases and aspects of the innovation development: planning, governance, implementation and production.



The implementation team has already implemented a lot of individual meetings with key stakeholders and local partners.



The implementation team has already conducted a series of coordination meetings and technical workshops with key stakeholders and local partners in Istanbul to support the preparation and implementation of the project.

On 2 March 2026, a coordination workshop was held between the Istanbul Metropolitan Municipality and the Transportation Planning Branch Directorate – Bicycle Unit. Discussions focused on sustainable, safe, and innovative urban mobility solutions, the identification of pilot implementation areas, and internal preparation processes. The meeting also reviewed on-road bicycle lane designs, measures to improve bicycle accessibility, and the potential pilot application of rubberised asphalt to assess user experience and performance.

On 18 March 2026, a coordination workshop was organised with the Traffic Branch Directorate. Discussions covered traffic regulations, road safety measures, and interdepartmental coordination. The meeting evaluated the use of recycled rubber materials in transport infrastructure and urban furniture, as well as the development of scooter and e-bike parking facilities, including solar-powered and smart city-integrated solutions. Potential pilot locations with strong public transport connections and high accessibility were also identified.

On 23 March 2026, technical meetings were held with İSFALT Inc. to discuss the production techniques, raw material supply processes, and field application methods of rubberised asphalt (RAC). Laboratory testing results related to flexibility, wear resistance, and ageing performance were reviewed. Alternative pavement solutions, including porous asphalt, were assessed, while **modified rubber asphalt** was identified as the preferred option for pilot applications due to its operational and maintenance advantages.

On 27 March 2026, a coordination workshop was conducted with the Anatolian Side Road Maintenance and Repair Directorate. The discussions focused on maintenance requirements, implementation processes, and the long-term performance of pavement materials. Particular attention was given to the potential of rubberised asphalt to enhance pavement durability, flexibility, and resistance to wear, thereby reducing maintenance frequency and lifecycle costs.



Transportation Planning Branch Directorate



İSFALT AŞ.



Traffic Directorate



Road Maintenance and Repair Branch Directorate

Future stakeholder engagement activities will continue throughout the project implementation period and will include additional bilateral meetings, technical workshops, site visits, and pilot implementation evaluations involving municipal departments, infrastructure operators, mobility stakeholders, and technical experts. These activities will support the refinement of pilot actions, monitoring of implementation results, and the wider dissemination of project outcomes.

### 3.4.4 Implementation Preconditions for Prototyping

#### 3.4.4.1 Location Conditions

The pilot site has been selected as Avcılar Coastal Park and its connected bicycle and pedestrian corridor, located along the Ambarlı–Denizköşkler coastal band in the Avcılar District of Istanbul. The area is a linear public open space system situated along the Marmara Sea, consisting of the existing coastal park, pedestrian pathways, bicycle routes, recreational areas, parking facilities, and neighbourhood connection axes. The site functions as a significant public transition and open space spine linking the urban fabric of Avcılar to the band.

The pilot area is currently an actively used coastal recreational space and has been subject to various renovation and development projects implemented by the Istanbul Metropolitan Municipality at different periods.

Within this scope, the pilot implementation includes the use of recycled rubber asphalt concrete (RAC) on existing bicycle paths and associated low-speed mobility surfaces. The rationale for selecting this area is summarized as follows:

- Availability of existing bicycle path infrastructure,
- Presence of an coastal corridor with pedestrian and bicycle usage,
- High level of public visibility,

- Alignment with the Istanbul Metropolitan Municipality's strategic documents on green infrastructure and sustainable transportation.

When the urban development stage of the site is assessed, the area is not a newly developing zone but rather an existing public open space system located within a completed and established urban fabric. Therefore, the pilot project constitutes the rehabilitation of existing infrastructure, its renewal using sustainable materials, and the strengthening of climate-friendly transportation infrastructure.

Prior to the pilot implementation, the following planning and technical documents will be reviewed with the relevant authorities:

- 1:1000 scale Implementation Zoning Plan and plan notes,
- Coastal use decisions and provisions related to the coastal boundary line,
- Bicycle path project for the pilot area,
- Existing infrastructure capacity data (stormwater, sewerage, potable water, energy),
- Property ownership and jurisdictional boundaries of the park area,
- Soil conditions, drainage, and load-bearing capacity data.

The proposed **800-meter RAC bicycle lane pilot** within the coastal park corridor offers an opportunity to demonstrate both sustainable infrastructure innovation and broader urban benefits. RAC technology supports low-carbon construction, resource efficiency, and minimal intervention to existing site conditions, making it a suitable solution for the project context.

## Conclusion

Avçılar Coastal Park and its connected coastal corridor are considered a suitable, feasible, and scalable site for the pilot implementation of recycled rubber asphalt concrete (RAC), due to their current intensity of use, existing bicycle infrastructure, high public visibility, and potential for sustainable transformation.



### 3.4.4.2 Public procurement planning

Within the scope of the pilot project, the public procurement process for the implementation of recycled rubber asphalt concrete (RAC) will be planned to cover the phases of preparation, technical



design, procurement, implementation, performance monitoring, and reporting. The objective is not only the supply of materials, but also the on-site testing of an innovative solution, the development of local capacity, and the establishment of a model that can be replicated in the future.

## 1. Pre-Tender Preparation Phase

Prior to the tender announcement, the following activities will be completed:

- Finalization of the pilot implementation area,
- Analysis of the existing road/ground conditions,
- Estimation of the approximate cost,
- Preparation of the financing plan,
- Development of the implementation schedule,
- Preparation of technical specifications and tender documents.

## 2. Scope of the Tender

### Single-Package Tender

- Preparation of application (implementation) projects,
- Production of rubberised asphalt,
- Supply and transportation of materials,
- Implementation at the pilot site,
- Quality control testing,
- Performance monitoring.

## 3. Proposed Timeline

### Months 1–3

Preparation, technical analysis, and finalisation of financing

### Months 4–6

Preparation of tender documents, approval processes, and announcement

### Months 7–9

Bid submission, evaluation, and contract

### Months 10–13

Commencement of works and completion of on-site implementation

## 4. Conclusion

Public procurement planning for the pilot project will be designed as an innovative model incorporating technical specifications, implementation, and monitoring components.

### 3.4.4.3 Relevant Legal Framework for Prototyping



Within the scope of the pilot project, the implementation of recycled rubber asphalt concrete (RAC) is planned along Avcılar Coastal Park and its connected bicycle/pedestrian routes. As the application will be carried out on an existing public open space, coastal zone, and transportation infrastructure, it is necessary to assess the relevant national legislation, local government authorities, technical standards, and permitting processes prior to prototyping.

The key legislation to be considered within the scope of the project is outlined below:

### 1. Municipal Law No. 5393

#### Relevant Provisions:

- Article 14: Responsibilities of municipalities for local services such as transportation, environment, parks, roads, and infrastructure
- Article 15: Municipal powers and privileges (road construction, maintenance, urban infrastructure arrangements)
- Article 18: Decision-making authority of the municipal council
- Article 34: Executive committee decisions regarding implementation and procurement

#### Project Relevance:

Provides the legal basis for implementing the pilot project within the scope of municipal services.

### 2. Metropolitan Municipality Law No. 5216

#### Relevant Provisions:

- Article 7: Duties of metropolitan municipalities regarding roads, squares, parks, green areas, transportation master planning, and infrastructure services

#### Project Relevance:

Defines the authority of the Istanbul Metropolitan Municipality in coastal areas, transportation networks, and public spaces.

### 3. Zoning Law No. 3194

#### Relevant Provisions:

- Article 5: Definition of public use areas such as roads, green spaces, and parks
- Article 21: Works subject to permits
- Article 26: Structures to be constructed by public institutions
- Article 32: Procedures for unauthorised/unlicensed constructions

#### Project Relevance:

In most cases, no construction permit is required if no new structure is built; however, permanent superstructure works, expansions, or new facilities may require evaluation.

### 4. Coastal Law No. 3621

#### Relevant Provisions:

- Article 5: Coasts are open to equal and free use by all
- Article 6: Principles of construction and use along coastal areas
- Article 7: Conditions of use beyond the coastal boundary line

#### Project Relevance:

As Avcılar Coastal Park is located within a coastal zone, this is a critical regulation. The implementation must not restrict public access or limit coastal use.

### 5. General Directorate of Highways / Transportation Technical Standards

#### Relevant Regulations:

- Bicycle path design standards
- Road pavement technical specifications



- Horizontal marking standards
- Skid resistance and drainage criteria

**Project Relevance:**

Should be taken as a reference for pavement performance and geometric standards.

**6. Public Procurement Law No. 4734**

**Relevant Provisions:**

- Open tender procedure
- Preparation of technical specifications
- Principles of competition, equal treatment, and transparency

**Project Relevance:**

Applies to material procurement and construction works.

**7. Public Procurement Contracts Law No. 4735**

**Project Relevance:**

Regulates contract conditions with the contractor, including warranty periods, penalties, and acceptance procedures.

**8. Environmental Law No. 2872**

**Relevant Provisions:**

- Waste management
- Noise control
- Prevention of environmental damage

**Project Relevance:**

Important for the recycling of waste tires and minimizing environmental impacts.

**9. Regulation on the Control of End-of-Life Tires**

**Project Relevance:**

It is recommended that rubber granules be sourced from licensed recycling facilities.

**10. Accessibility Legislation**

**Relevant Regulations:**

- Accessibility standards for persons with disabilities
- TS 12576 and related accessibility standards

**Project Relevance:**

Bicycle/pedestrian paths, ramps, and transitions must be accessible to all users.

**11. Regulation on the Implementation of Procurement of Construction Works**

**Procurement Relevance:**

Required for assessing the professional, technical, financial, and economic qualifications of bidders and for managing tender procedures.

**Technical Standards and Implementation Documents**

In addition, the following technical documents should be reviewed:

- Sample technical specifications,
- Turkish Standards Institute (TSE) asphalt standards,
- EN / ASTM test standards,
- Municipal road maintenance standards.

**Pre-Prototyping Permit / Control Process**

1. Determination of ownership and authority,



2. Review of zoning plans and coastal use conditions,
3. Obtaining institutional opinions,
4. Approval of technical project,
5. Procurement process,
6. Site permits,
7. Implementation and supervision.

As the responsibility for the potential pilot area lies with the Parks and Gardens Department, no specific permit is required for the site. However, formal written opinions will be requested from the relevant institutions, and the received feedback will be shared with the contractor. The contractor will prepare the technical documentation by taking these opinions into consideration.

The technical documents will be prepared and approved by a licensed technical engineer within the contractor's organization; subsequently, they will be reviewed by the supervising engineers of the Parks and Gardens Department and subjected to a final approval process.

In order to ensure that the technical documentation process is carried out effectively and without disruption, regular coordination meetings will be held with all relevant stakeholders. All requirements and requests will be systematically recorded, and a sustainable control and monitoring mechanism will be established.

#### **3.4.4.4 SMILE CITY systemic solutions for prototyping**

Within the scope of prototyping, the process for the local production of recycled rubber asphalt concrete (RAC) will be carried out through the transformation of existing asphalt production infrastructure and a capacity development approach. In accordance with Public Procurement Law No. 4734, the contractor will be determined based on the applicable procurement method.

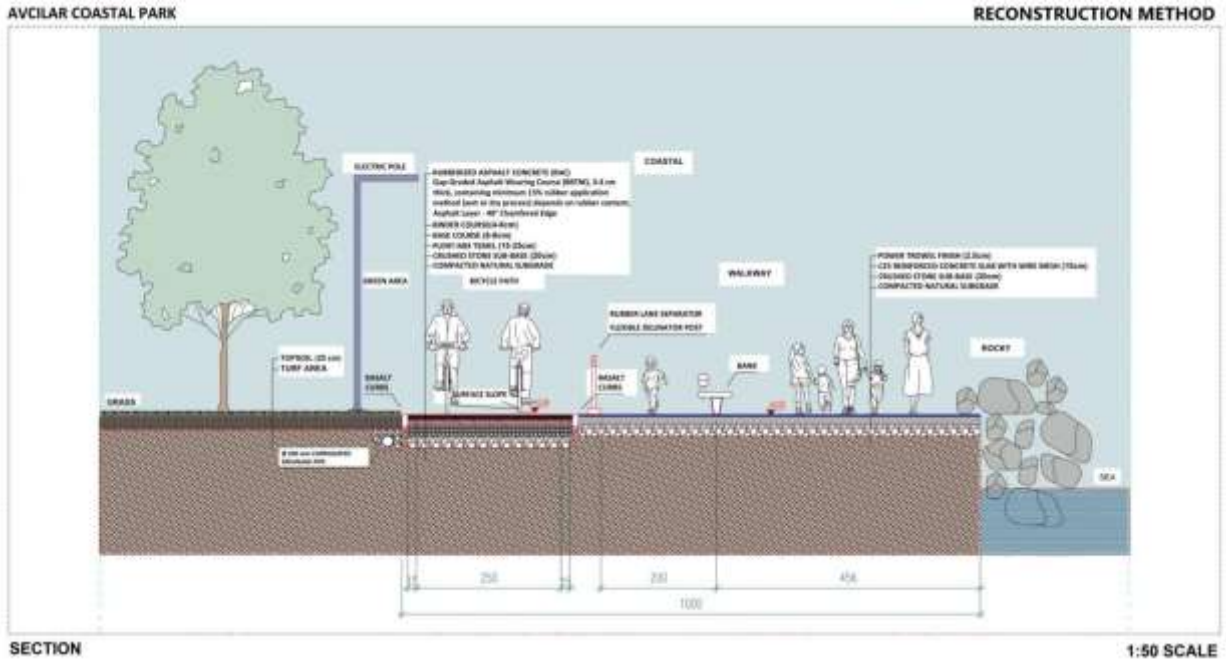
The necessary steps for the local production of recycled rubber asphalt concrete (RAC) will be detailed by the contractor.

Rubberized asphalt can be procured from the market; however, the expectation of the SMILE CITY Project from pilot cities is the use of recycled rubber materials. The application of recycled rubber asphalt concrete (RAC) has recently been implemented in highway projects in Türkiye, particularly in Istanbul. Nevertheless, no specific application example has been identified for bicycle paths. In this respect, once implemented, the SMILE CITY Project will serve as a precedent example.

#### **APPLICATION METHOD**

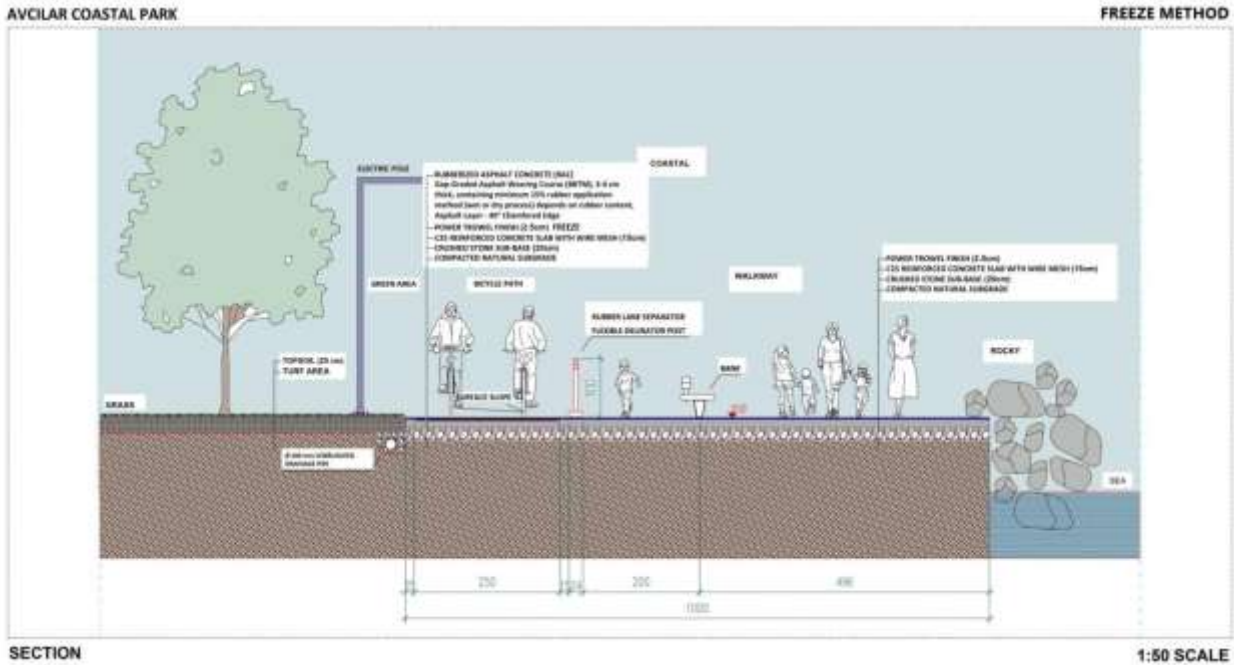
In this project, three alternative construction methods have been evaluated.

The first option is full reconstruction, where the existing concrete pavement is completely removed and rebuilt. Although this provides the highest structural performance, it is not preferred due to high cost, long construction time, and significant intervention in the site.

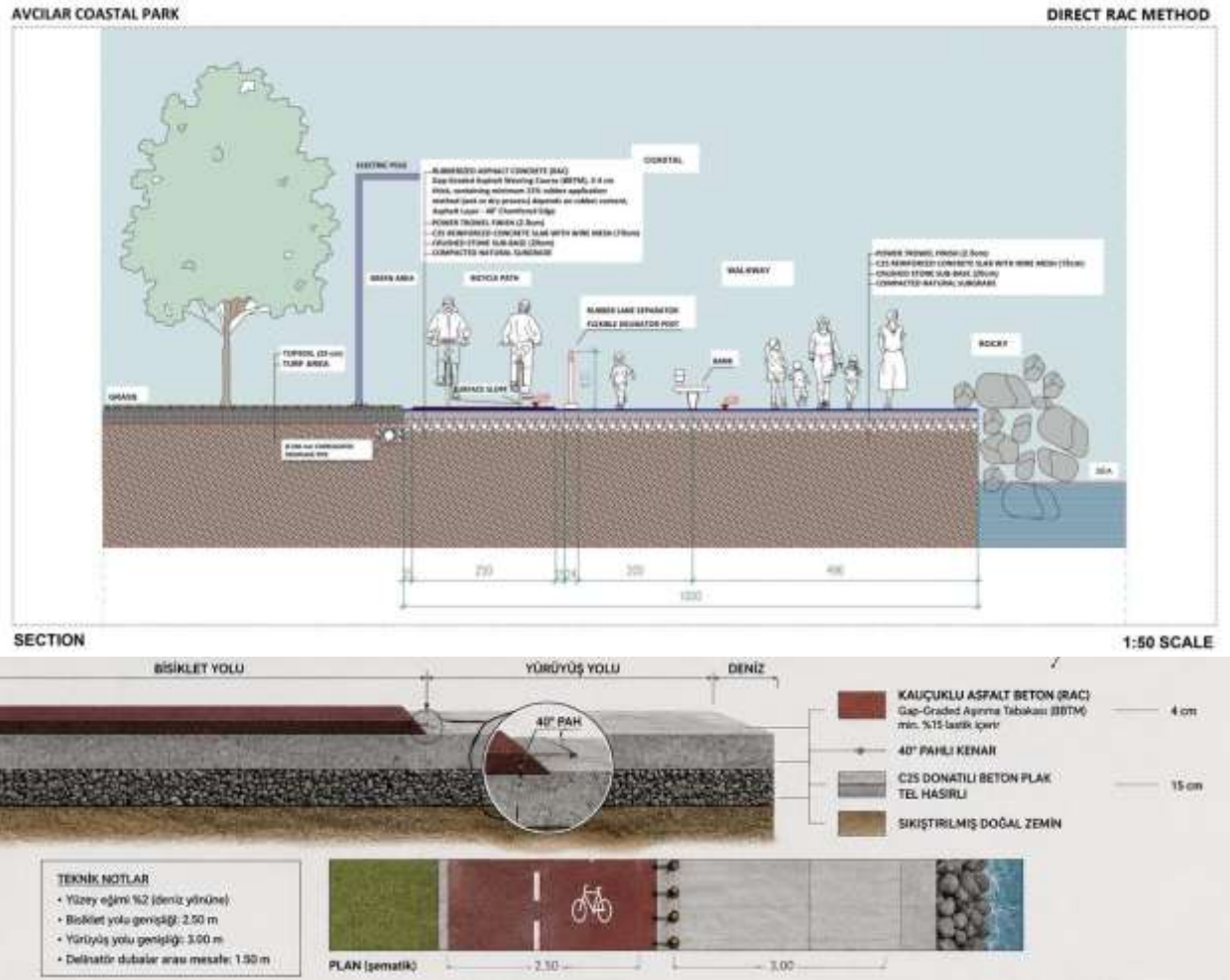


The second option is milling the existing concrete surface by 3 to 5 centimeters, followed by the application of a Rubber Asphalt Concrete overlay. This approach preserves the existing structure,

improves surface adhesion, delays cracking, and offers a balanced solution in terms of cost, performance, and sustainability. Therefore, it is identified as the recommended option.



The third option is direct application of a 5-centimeter RAC layer without milling. While this method is fast and cost-effective, its performance is highly dependent on the condition of the existing surface, making it a less reliable long-term solution.



In conclusion, the milling and RAC overlay strategy provides the most appropriate technical and sustainable solution for this coastal corridor.

### Comparative Assessment Matrix

Criterion	Full Reconstruction	Milling + RAC	5 cm RAC
Cost	Very high	Moderate	Low
Construction Duration	Long	Moderate	Short
Service Life	Very long	Moderate-long	Moderate-short
Sustainability	Low	High	High
Structural Risk	Low	Low	Moderate
Ease of Application	Low	Moderate	High
User Comfort	High	Very high	High

The existing Avçılar Coastal Park corridor is constructed on a reinforced concrete slab that is actively used and also subjected to heavy vehicle service loads. In the proposed application, the existing structural concrete system is preserved, and no demolition or reconstruction is carried out.

Within this scope, the 5 cm milling (frezeleme) operation will be applied solely for surface leveling and to improve adhesion, without any intervention to the structural load-bearing capacity of the system. This process will be carried out in a controlled and rapid manner by adapting the cutting drum/milling head configuration of the asphalt milling machine to be suitable for concrete surface cutting. After milling, a proper surface preparation followed by an appropriate tack coat application will ensure full adhesion bonding of the RAC (Rubberized Asphalt Concrete) wearing course to the existing concrete surface.

The RAC pavement system, with its flexible behavior, high fatigue resistance, and crack-bridging capacity, provides long-term performance on the existing reinforced concrete infrastructure. Therefore, the system is designed to safely accommodate bicycle traffic, pedestrian use, and service/maintenance vehicle loads.

As a result, in the proposed solution the structural system is preserved and only surface improvement is performed; therefore, no negative impact on load-bearing capacity is expected. The system is both structurally safe and offers sustainable maintenance advantages.

#### 3.4.4.5 Prototype Construction

##### Required Official Documents to Commence Works in a Public Area

Within the scope of the pilot project, the RAC asphalt application to be carried out along Avçılar Coastal Park and the bicycle path is planned within an existing park area. Therefore, no construction



permit is required, and the works will be considered within the scope of maintenance and repair activities. The required permissions and procedures are as follows:

**Required documents:**

- Administrative approval (Istanbul Metropolitan Municipality – IMM) confirming the feasibility of the project within the designated area,
- Zoning plan compliance check,
- Obtaining institutional opinions,
- Decision of the Transportation Traffic Regulation Commission,
- Approval of the prepared technical project.

Procedure and timeline of planned construction works are as follows:

For the pilot RAC application, the typical workflow following the procurement process is as follows:

**Phase 1 – Site and Infrastructure Preparation (0–2 months)**

**Phase 2 – RAC Application (2–5 months)**

**Phase 3 – Monitoring (5–17 months)**

**Roles of Relevant Stakeholders**

**Municipality (IMM)**

- Project approval
- Site handover
- Supervision
- Public coordination

**Contractor**

- Asphalt production and paving
- Equipment and labor provision
- Quality control
- Occupational health and safety management
- Performance evaluation.

No official documentation is required for the operation of the bicycle path. However, in relation to the operation of the charging stations, there are certain legal constraints regarding the use of the mobile application to be developed by our technology development partners.

In this context, the storage of personal data collected from users on servers located in Europe has been evaluated under the provisions of the Personal Data Protection Law (PDPL) and has not been deemed appropriate by the higher authorities of our institution.

## 3.5 Bursa Metropolitan Municipality – Local Report

### 3.5.1 Setting up the Urban Living Lab and stakeholders' engagement

Bursa Metropolitan Municipality (BBB) is responsible for establishing and operating an Urban Living Lab (ULL) to co-design, implement, test, and validate circular systemic solutions in real-life urban environments.

Within Task 2.3, the municipality will pilot:

- The construction of approximately **800 meters of rubberised asphalt cycling lanes** on Naim Süleymanoğlu Boulevard,
- The installation of two **off-grid e-bike charging stations** at Hüdavendigâr City Park and its surroundings.

These solutions will utilise recycled materials such as End-of-Life (EoL) tyres and second-life EV batteries.

It is anticipated that one or both charging stations will be installed at locations near mobility hubs such as metro stations to maximise intermodality.

A dedicated Task Force was established within the Bursa Metropolitan Municipality, strategically coordinated by the **Transportation Coordination Branch Directorate** (UKOME). This Task Force brings together key municipal departments, including the Department of Transportation Planning, Department of Infrastructure Coordination, Department of Parks and Gardens, Department of Road Construction, and Department of Road Maintenance and Repair. The role of this Task Force is to assess the suitability of pilot locations, guide the preparation of technical documentation, and ensure that cross-departmental operations run smoothly during the prototyping and testing phases. Overall, the **Transportation Planning Branch Directorate** serves as the primary coordination partner for implementation throughout the process, while UKOME participates in matters related to the application and approval procedures. This coordination process applies specifically to the activities for which pilots will be implemented. However, overall project coordination is managed by the **Research, Development and Innovation Branch Directorate**, while project execution is carried out by the Transportation Planning Branch Directorate.

External stakeholders from the local innovation ecosystem and consortium partners have been highly engaged in the co-creation process. Locally, this includes a local asphalt company for technical collaboration, local cycling associations for practical user feedback, and several academic institutions for consultations and survey distribution.

#### 3.5.1.1 Working Framework

The areas considered for the Bursa pilots are covered by adopted municipal spatial planning documents. Various departments of City Administration make decisions on these plans:

- Transportation Coordination Branch Directorate (UKOME),
- Department of Transportation Planning,
- Department of Infrastructure Coordination,
- Department of Parks and Gardens, Department of Road Construction,
- Department of Road Maintenance and Repair,
- Planning Agency,



- UEDAS - electricity distribution company (if grid-connected alternatives are considered),
- Energy Market Regulatory Authority (if grid-connected alternatives are considered).

The owner of the land for the areas considered for the pilots is Bursa Metropolitan Municipality, while the technical documentation, detailed designs, and layouts will be prepared, managed, and approved by the Bursa Metropolitan Municipality's Transportation Department.

The execution of the construction works will require a new public procurement procedure. The works will be carried out by an external contractor (a private company) selected through municipal public procurement. This procedure will be strictly coordinated in accordance with the Turkish Public Procurement Law No. 4734. For the asphalt paving, the project's technical specifications for rubberised asphalt will be directly integrated into the municipality's routine asphalt procurement tender.

The End-of-Waste status for recycled rubber materials and other innovative materials will be regulated at the national level in accordance with Turkish environmental legislation.

- The Ministry of Environment, Urbanisation, and Climate Change is the competent authority responsible for defining and approving End-of-Waste criteria.
- Relevant provincial directorates may also be involved in implementation and supervision processes.

In practice, material suppliers (e.g. recycling companies or asphalt producers such as Simge Mat) will need to ensure compliance with national regulations and obtain the necessary certifications before use in public infrastructure.

In urban contexts, metropolitan municipalities are authorised to permit the use of innovative materials within their jurisdictions, particularly in pilot or demonstration projects. In addition, the Ministry of Environment, Urbanisation, and Climate Change ensures that construction materials comply with national building regulations and environmental legislation.

The primary municipal body responsible for preparing, managing, and issuing the technical documentation and contributing to the permitting process is the Transportation Department – Transportation Planning Branch Directorate. The exact legal procedure requires initially contacting the **Transportation Coordination Branch Directorate (UKOME)** to establish a specialised sub-committee. This sub-committee, which includes relevant units like the Department of Zoning and Urban Planning and the Department of Transportation, will assess the suitability of the selected locations and facilitate the use permits. Because the targeted pilot areas are municipally owned, this internal process is expected to be streamlined without jurisdictional conflicts.

While direct co-financing is not explicitly allocated at this stage, Bursa Metropolitan Municipality ensures institutional and operational support through in-kind contributions (personnel, infrastructure, coordination). In case of successful pilot validation, the municipality foresees integrating these solutions into future municipal investment programs, thereby securing long-term financial sustainability.

### 3.5.1.2 Mapping the Main Stakeholders

The main stakeholders involved in the pilot planning, design, and implementation in Bursa include:

- **Bursa Metropolitan Municipality**
  - Core implementing authority



- Responsible for coordination, procurement, and permitting
- **Transportation Planning Branch Directorate**
  - Leads technical design, specifications, and pilot integration
- **UKOME (Transportation Coordination Branch Directorate)**
  - Ensures interdepartmental coordination and approvals
- **Municipal Departments**
  - Infrastructure Coordination
  - Parks and Gardens
  - Road Construction
  - Road Maintenance and Repair
    - Responsible for implementation and operational integration
- **Private Sector (e.g. Simge Mat)**
  - Provides technical expertise on rubberised asphalt production and application
- **Universities**
  - Bursa Uludağ University
  - Bursa Technical University
  - Bursa Mudanya University
    - Support with analysis, validation, and stakeholder engagement
- **Cycling Associations / NGOs**
  - Provide user feedback and support co-creation
- **Citizens / End-users**
  - Direct beneficiaries and testers of the solutions
- **Energy-related stakeholders (if grid-connected options considered)**
  - UEDAŞ
  - Energy Market Regulatory Authority (EPDK)

**Additional relevant stakeholders also include:**

- Tourism stakeholders (bike-friendly city initiatives)
- Local neighborhood representatives / muhtars
- Environmental NGOs
- EU-level networks (e.g. ECF – European Cyclists' Federation)
- Standardisation bodies and innovation clusters.

The Transportation Planning Branch Directorate has the strongest influence, as it controls technical documentation, permit issuance, and the integration of SMILE CITY specifications into public tenders. Contractors like Simge Mat also yield a strong technical influence regarding the feasibility and formulation of the rubberised asphalt.

The local citizens, daily commuters and members of cycling associations are the most directly affected by changes in urban infrastructure, but no public opposition has been identified; the project directly addresses public needs for better active mobility and EV charging infrastructure.



Various stakeholders will be engaged in the process at different stages and with different levels of intensity, depending on their role in site selection, permitting, technical design, procurement, implementation, communication and final use of the pilot solutions.

LEVEL OF ENGAGEMENT	INFORM			CONSULT	INVOLVE		COLLABORATE
	Website	Newsletter	Questionnaire	Focus Groups	Workshops	One-to-one meetings	Task Force
Bursa City Council					X		
Bursa Youth Assembly					X		
Simge Mat (Asphalt Company)						X	X
A cycling association			X		X	X	
Bursa Uludağ University			X				
Bursa Technical University			X				
Bursa Mudanya University			X				
Department of Transportation Planning					X		X
Department of Infrastructure Coordination					X		X
Department of Parks and Gardens					X		X
Department of Road Construction					X		X



Department of Road Maintenance and Repair					X		X
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### 3.5.1.3 Visioning and Scale-up Potential

The pilot aims to demonstrate circular and low-emission urban mobility solutions in a real-life setting, addressing Bursa's needs for safer, more durable, and sustainable cycling infrastructure. Through rubberised asphalt applications and off-grid e-bike charging stations, the project seeks to improve user experience, increase cycling uptake, and reduce CO<sub>2</sub> emissions. By involving stakeholders through a co-creation approach, the pilot will ensure practical usability and social acceptance, while supporting the integration of circular materials.

#### Scale-up potential of the pilot, in the national or EU context

The pilot has strong scale-up potential as a replicable model for circular and sustainable urban mobility solutions. At the national level, it can be expanded to other districts in Bursa and other municipalities in Türkiye. At the EU level, the SMILE CITY framework facilitates knowledge transfer and adaptation among cities, supporting the wider adoption of circular materials and low-emission infrastructure in line with EU climate and sustainability goals.

### 3.5.2 Multicriteria analysis for sites selection

Bursa has relevant strategic frameworks for positioning pilot locations. The **Bursa Sustainable Energy and Climate Action Plan (BUSECAP)** and the city's Healthy Cities approach promote low-emission mobility and active transport. The municipality already operates a cycling network of about **170 km**, with further extensions planned under the Transportation Master Plan, supporting the selection of pilot sites that improve connectivity and safety. The Transportation Master Plan will be updated in **2026**, with a stronger emphasis on participatory planning processes and increased focus on cycling-related measures and infrastructure development.

Cycling infrastructure is implemented in accordance with the national **Bicycle Paths Regulation (2019)**, ensuring compliance with technical and safety standards.



There is no dedicated finalised city strategy specifically for e-bike charging stations; instead, smart e-bike charging is planned as a pilot action within SMILE City.

The site selection process for the SMILE CITY project in Bursa was carried out as a preliminary multicriteria assessment of three potential locations for the implementation of SMILE CITY systemic solutions:

1. **Location 1: Bursa - İzmir Road Corridor (40°12'47.14"N 28°55'34.69"E)**
2. **Location 2: Hüdavendigâr City Park**
3. **Location 3: Naim Süleymanoğlu Boulevard**

All three locations were considered strategically relevant to the SMILE CITY project from various perspectives.

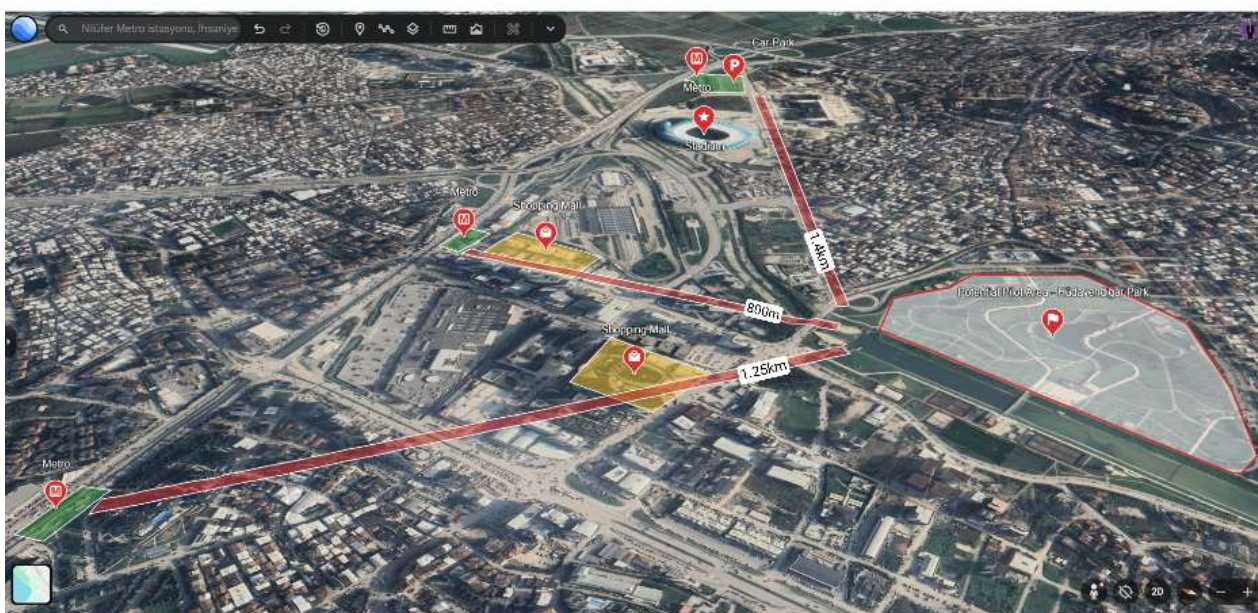
### 1. Location 1 – Bursa - İzmir Road Corridor (40°12'47.14"N 28°55'34.69"E):





hub, offering several alternative mobility options. Bursa team considers that the metro station and a mobility hub, where people change their mode of transportation, are the most appropriate selection, due to the high frequency of use.





### 3. Location 3: Naim Süleymanoğlu Boulevard

Location: Balkan, Naim Süleymanoğlu Cd., Nilüfer/Bursa

Naim Süleymanoğlu Boulevard is located at Balkan, Naim Süleymanoğlu Cd., Nilüfer/Bursa. It is currently treated as a preferred candidate for approximately 800 m of rubberised asphalt cycling-lane paving, subject to final approval, implementation timing and site-readiness conditions. The relevant municipal department is preparing a technical drawing for this boulevard. If approval is received for the asphalt works, preparatory activities can be accelerated accordingly. The application is planned to be carried out on the new infrastructure.

Expectations for improvements of paving are related to surface durability, riding comfort, resistance to cracking and rutting/deformation, drainage, safe separation and visibility, signage/wayfinding, and quality control processes.

The location also has additional strategic value because Naim Süleymanoğlu Boulevard has been identified as a future implementation area for Bursa's Smart Boulevard initiatives. Placing SMILE City pilot activities in this area would create a strong link between projects, strengthen integrated planning, increase public visibility, and support potential replication of circular and smart mobility solutions.





### 3.5.2.1 Legal Criteria

For **Location 2 – Hüdavendigâr City Park**, there are several adopted and relevant urban plans:

- 1/25,000 scale Central Planning Area Master Development Plan
- 1/5,000 scale Osmangazi Master Development Plan
- 1/1,000 scale Revision Implementation Development Plan for the area between the Old İzmir Road and the Uludağ Access Road
- A site plan for Hüdavendigâr City Park is available;

For **Location 3 - Naim Süleymanoğlu Boulevard**, the urban plan coverage is similar:

- 1/25,000 scale Western Planning Area Master Development Plan
- 1/5,000 scale Görükle Master Development Plan
- 1/1,000 scale Implementation Development Plan for the South of the Immigrant Housing Area.

#### **Upper-scale Plan (Province-wide), for both locations**

The Bursa 2020 Environmental Plan at a 1/100,000 scale is currently in force. However, since the plan has reached the end of its projection period, a new 1/100,000 scale Environmental Plan has been prepared and is approaching the approval stage.

### 3.5.2.2 Technical Criteria

#### **Location 2 – Hüdavendigâr City Park**



Technical documentation for the project has not been finalised yet, but it will be prepared by the Bursa Metropolitan Municipality – Transportation Department, Transportation Planning Branch Directorate.

### Location 3 - Naim Süleymanoğlu Boulevard

Since an asphalt application is foreseen for this pilot area, the Transportation Department of Bursa Metropolitan Municipality, through the relevant Transportation Branch Directorate, will integrate the asphalt specifications required by the SMILE City project into the technical specifications of the municipal asphalt procurement tender. In this way, the required material properties and implementation details will be included within the public procurement documentation, and the department will actively contribute to the permitting and implementation process.

The timeline for all needed procedures and permits for both locations is:

1. Design: 30 days;
2. Approvements: 15-30 days
3. Services: 45 days (minimum)
4. Implementation: 60 days (estimated).

#### 3.5.2.3 Operational Criteria

For both locations 2 and 3, there is sufficient time within the project duration to prepare the technical documentation, complete the public procurement procedure, and implement the investment. Construction works will be carried out by external contractors selected through municipal public procurement procedures. The process will be coordinated by the Bursa Metropolitan Municipality Transportation Department – Transportation Planning Branch Directorate, **in accordance with Public Procurement Law No. 4734**. Additional research will be conducted regarding the different permitting procedures for the charging stations. Since an off-grid system is planned, the municipality is in a more flexible position in this regard.

#### 3.5.2.4 Financial Criteria

No additional funding is planned at this stage. Using extra funds should be a last option and would require political consideration. If the SMILE City pilot delivers positive results, the municipality may adopt these approaches in its routine projects and consider dedicating more resources to similar sustainable mobility actions in the future.

The maintenance of the site is expected to fall under the responsibility of Bursa Metropolitan Municipality through its relevant technical and operational units responsible for transport and public space infrastructure. However, a location-specific maintenance assignment has not yet been formally defined. Additional meetings will be organised with various relevant municipal directorates about the new technologies which will be developed under the SMILE CITY project, and their maintenance.

#### 3.5.2.5 Socio-political Criteria

At this stage, no specific public opposition related to the proposed pilot location has been identified. On the contrary, the project addresses existing needs such as supporting infrastructure and EV charging stations.



### Overall assessment

Criteria for site selection:	Location 1	Location 2	Location 3
Legal	N/A	Barriers exist, but there is a strategy for overcoming them	Barriers exist, but there is a strategy for overcoming them
Technical	N/A	Barriers exist, but there is a strategy for overcoming them	Barriers exist, but there is a strategy for overcoming them
Operational	N/A	Barriers exist, but there is a strategy for overcoming them	Pathway for implementation is clear and achievable within the SMILE City timeline
Financial	N/A	Pathway for implementation is clear and achievable within the SMILE City timeline	Pathway for implementation is clear and achievable within the SMILE City timeline
Socio-political	N/A	Pathway for implementation is clear and achievable within the SMILE City timeline	Pathway for implementation is clear and achievable within the SMILE City timeline

Both locations are relevant for the SMILE CITY pilot and offer strong demonstrative value.

**Location 2 – Hüdavendigâr City Park** will be used for photovoltaic e-charging station(s), and **Location 3 - Naim Süleymanoğlu Boulevard** in Nilüfer remains the preferred candidate location for rubberised asphalt cycling lane paving, and potentially the second photovoltaic e-charging station, if the municipality is granted sufficient flexibility to carry out the asphalt works within a short timeframe or whenever implementation becomes possible.

### 3.5.3 Co-creation Activities

The co-creation activities in the City of Bursa included various public engagement events, internal technical meetings, and a wide sustainable urban mobility survey.

As Bursa Metropolitan Municipality, we held a meeting with representatives of local bicycle associations and members of the Bursa City Council Bicycle Working Group to present our **Smile City** project and engage in a mutual exchange of ideas. Within the scope of the project, we gathered their feedback regarding the locations of charging stations - rubberized asphalt and discussed which areas would best align with user profiles. In turn, they shared valuable insights regarding the cycling ecosystem in Bursa, infrastructure deficiencies, the challenges they face, and their expectations, ensuring a mutually beneficial collaboration.





Uludağ Electricity Distribution Inc.



Transportation Planning and Traffic Management Department and ISSD Bilişim Elektronik A.Ş.



Bursa Technical University - Technopark

## One to one meetings

## 3.5.4 Implementation Preconditions for Prototyping

### 3.5.4.1 Location conditions

Planning and ownership conditions:

- **Hüdavendigâr City Park:** 1/25,000 Central Planning Area Master Development Plan; 1/5,000 Osmangazi Master Development Plan; 1/1,000 Revision Implementation Development Plan for the area between the Old İzmir Road and the Uludağ Access Road; park site plan available.
- **Naim Süleymanoğlu Boulevard:** 1/25,000 Western Planning Area Master Development Plan; 1/5,000 Görükle Master Development Plan; 1/1,000 Implementation Development Plan for the South of the Immigrant Housing Area. Technical drawing is currently being prepared by the relevant municipal department.

The selected locations are municipally controlled target areas; therefore, the permitting and coordination process is expected to be handled internally. However, final routing, utility checks, and **Transportation Coordination Centre (UKOME)** related coordination must still be completed.

#### Conclusion

The preferred configuration is to proceed with the Naim Süleymanoğlu Boulevard asphalt pilot if the required timing flexibility and internal approvals are obtained, potentially combined with one charging station and aligned with the Smart Boulevard agenda.

### 3.5.4.2 Public procurement planning

The Bursa pilot will require a municipal public procurement procedure for works to be carried out by external contractors/private companies. The procedure will be coordinated by Bursa Metropolitan Municipality in accordance with **Turkish Public Procurement Law No. 4734**. For the **asphalt component, the SMILE City technical specifications for rubberised asphalt should be integrated into the municipality's routine asphalt procurement tender once the final corridor is approved.**

**The preferred procurement scenario is to use Naim Süleymanoğlu Boulevard for the asphalt pilot, because it can be linked with the municipality's Smart Boulevard initiatives and may also host one of the two charging stations. This scenario depends on receiving approval and flexibility to implement the asphalt works within the required timeframe.**

#### 1. Pre-tender preparation

- Confirm the final asphalt corridor.
- Finalise/review technical drawings, including the drawing currently **being prepared for Naim Süleymanoğlu Boulevard.**
- Check land ownership, zoning-plan compatibility, infrastructure conflicts, drainage, safety, site access and compatibility with Smart Boulevard planning.
- Prepare approximate cost estimates.
- Prepare **performance-based technical specifications for rubberised asphalt.**
- Obtain approval from the **Transportation Coordination Centre (UKOME)** and relevant municipal departments before tender launch.

#### 2. Tender scope



- Technical/application design, supply of materials, production of rubberised asphalt, transport, paving, quality control, monitoring and reporting.
- Off-grid charging-station site preparation, local adaptation, montage, commissioning and operational checks, including the possible placement of one charging station on/near Naim Süleymanoğlu Boulevard if the asphalt pilot proceeds there.

### 3. Procurement approach

Technical specifications should be drafted around measurable performance and verification criteria, not around a specific brand or product. Acceptance criteria should include pilot-section validation, sampling frequency, laboratory/on-site testing, and quality-control documentation.

### 4. Indicative timing

- Preparation and approvals: 30-60 days; this may be accelerated for Naim Süleymanoğlu Boulevard if the technical drawing and internal approval are finalised quickly.
- Utility/service checks and institutional opinions: minimum 45 days, unless handled through an accelerated internal process for a municipally controlled corridor.
- Implementation period: approximately 60 days for each finalised work package, subject to procurement calendar, weather/site conditions and approval timing.

#### 3.5.4.3 Relevant Legal Framework for Prototyping

##### Analysis of Relevant Legal Provisions for Prototyping

The Bursa pilot combines municipal public-space works, cycling infrastructure, rubberised asphalt made with ELT-derived materials, and off-grid e-bike charging stations. The following legal and regulatory framework should be considered before prototyping.

##### 1. Municipal Law No. 5393

Provides the municipal basis for local services, including transport, roads, parks, environmental services and infrastructure works. Relevant decision-making and implementation authority should be exercised through the competent municipal bodies.

##### 2. Metropolitan Municipality Law No. 5216

Defines metropolitan municipality duties for transportation planning, roads, parks, green areas, infrastructure coordination and metropolitan-scale service delivery. This is directly relevant because both pilot sites are under the Bursa Metropolitan Municipality jurisdiction.

##### 3. Zoning Law No. 3194 and relevant planning legislation

The pilot must be checked against applicable implementation plans and public-space/transportation land-use decisions. Since the planned works are mainly rehabilitation, pilot application and installation within municipal areas, a full construction permit may not be required unless permanent new structures, major superstructure works, or plan-amendment-triggering interventions are introduced.

##### 4. Bicycle Paths Regulation (2019) and transportation standards

Cycling-lane geometry, safety, horizontal markings, transitions, drainage and accessibility should comply with the national Bicycle Paths Regulation and relevant municipal/KGM technical standards.

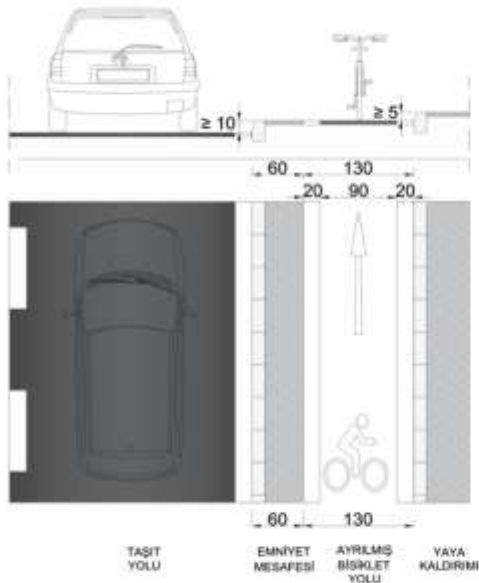


Figure shows a bicycle path separated from the road level by a pedestrian sidewalk, with a maximum speed limit of 50 km/h for cars

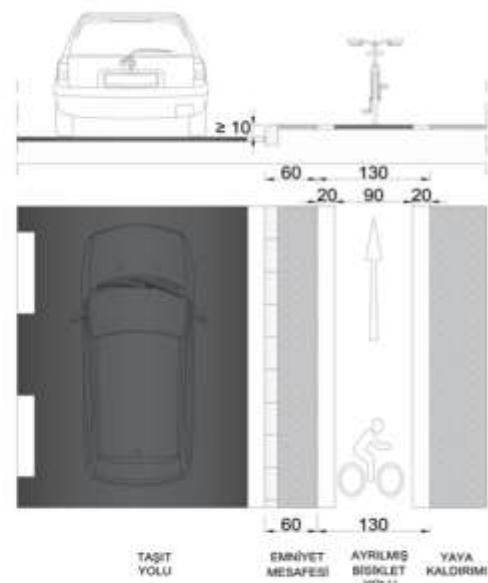


Figure shows Separate bike path at sidewalk level with a maximum speed limit of 50 km/h for cars.

## 5. Public Procurement Law No. 4734 and Public Procurement Contracts Law No. 4735

These govern tender preparation, competition, equal treatment, technical specifications, contracting, warranty, penalties and acceptance procedures. Technical specifications should be performance-based and should refer to national/international standards where applicable.

## 6. Environmental Law No. 2872, Waste Management Regulation and Regulation on the Control of End-of-Life Tyres

Rubber and other recycled inputs must be sourced through compliant and traceable channels. ELT-derived materials should be obtained from licensed/authorised facilities, transported through documented systems, and supported by certificates/records required by environmental legislation.

## 7. KGM technical specifications and material approval practice

KGM practice and technical documentation provide an important reference for rubber-modified bitumen/asphalt mixtures, including performance validation, trial sections, quality control and noise-reduction/performance objectives. This basis is relevant for defining the Bursa pilot's material verification procedure.

## 8. Chemical/content and product-safety framework

Where applicable, material suppliers should provide declarations and documentation on chemical content, restrictions and market placement conditions, including KKDIK/REACH-like compliance considerations for materials placed on the market.

### Pre-prototyping control process

- Confirm ownership and municipal authority for the selected sections.
- Review plan compatibility and cycling/transportation standards.
- **Establish UKOME-led sub-committee and obtain institutional opinions.**
- Approve technical documentation and tender specifications.
- Verify recycled-material traceability, supplier certificates and test methods.
- Proceed with procurement, site handover, implementation and technical acceptance.

### 3.5.4.4 SMILE CITY systemic solutions for prototyping

The Bursa Metropolitan Municipality has chosen to apply dry method in the proposed pilot area for asphalt. Considering the budget constraints of the pilot areas, it would be more suitable for the administration to carry out the asphalt application in a location where infrastructure work is already underway. In line with that, Bursa Metropolitan Municipality plans to involve the contractor in the process.

Rubberised asphalt and rubber-modified bitumen applications already have a technical basis in Türkiye through the Highway General Directorate (KGM) related practice and technical specifications.

Tablo-407-2 Aşınma Tabakası için Gradasyon Limitleri

Elek Boyutu		Geçen %		
İnç, No	mm	TİP-1	TİP-2	TİP-3 Çok İnce Aşınma
3/4"	19	100		
1/2"	12,5	88 - 100	100	100
3/8"	9,5	72 - 90	80 - 100	90 - 100
1/4"	6,0	-	-	25 - 33
No.4	4,75	42 - 52	55 - 72	23 - 31
No.10	2,00	25 - 35	36 - 53	20 - 27
No.40	0,425	10 - 20	16 - 28	12 - 18
No.80	0,180	7 - 14	8 - 16	-
No.200	0,075	3 - 8	4 - 8	7 - 11

	DİZAYN	AŞINMA TİP-1 ŞARTNAME
Optimum Bitüm (100'e)	4,45	4-7
Pratik Özgül Ağırlık g/cm <sup>3</sup>	2,411	
Teorik Özgül Ağırlık g/cm <sup>3</sup>	2,512	
Stabilite, kg	1090	Min.900
Boşluk, %	4,04	3-5
Asfaltla Dolu Boşluk, %	71,1	65-75
V.M.A. , %	14,0	14-16
Akma , mm	2,68	2-4

Figure 1: Highway Technical Specifications

In Turkey, the standard for bitumen used in road construction is provided below, in accordance with highway legislation.

No	Experiment Name	Standard	Unit	KMB 70-28	KMB 76-16	KMB 82-16	
1	Penetration (25° 100g, 5s)	TS EN 1426	0.1 mm	35-70	25-60	20-60	
2	Softening Point	Min.	TS EN 1427	°C	55	55	62
3	Elastic Recovery (25°)	Min.	TS EN 13398	%	60	50	50
4	Flash Point	Min.	TS EN ISO 2592	°C	220	220	220
5	Specific Gravity		TS EN 15326	g/cm <sup>3</sup>	1.0- 1.1	1.0- 1.1	1.0- 1.1
6	Dynamic Shear Rheometer (DSR) (G* /sind >1 kPa)	Failure Temperature min.	TS EN 14770 AASHTO T 315	°C	70	76	82

<b>7</b>	Rotary Thin Film Oven Experiment		TS EN 12607-1				
<b>7.1</b>	Mass Loss	Max.		%	0.5	0.5	0.5
<b>7.2</b>	Softening Point	Min.		°C	55	55	62
	Change in, Softening Point 7.3		TS EN 1427				
	Increase	Max.		°C	8	8	8
	Reduction	Max.		°C	2	2	2
<b>7.4</b>	Permanent Penetration	Min.	TS EN 1426	%	50	50	50
<b>7.5</b>	Dynamic Shear Rheometer (DSR) (G*/sinδ > 2.2 kPa)	Failure Temperature min.	TS EN 14770 AASHTO T 315	°C	70	76	82
<b>8</b>	Experiments on Modified Bitumen Aged with RTFOT+PAV		TS EN 14769 AASHTO R 28				
<b>8.1</b>	DSR (G * sin δ < 5000 kPa)	Deflection Temperature max.	TS EN 14770 AASHTO T 315	C	25	34	37
<b>8.2</b>	Beam Bending Rheometer (BBR) Flexural-Creep Stiffness (S ≤ 300 MPa m ≥ 0.300)	Temperature max.	TS EN 14771 AASHTO T313 ASTM D6648	°C	-18	-6	-6

The regulatory requirements, applicable standards, and implementation conditions for bitumen prepared with End-of-Life (EoL) materials are specified below.

<b>Table 418-2 Properties of Rubber Asphalt Mixtures</b>		
<b>Features</b>	<b>Specification Limits</b>	<b>Test Standard</b>
Rutting (at 30,000 rpm, 60°), (%) max.	5	TS EN 12697-22

Resistance Of Compacted Bituminous Mixtures To Deterioration Caused By Water, Indirect Tensile Strength Kg/Cm <sup>2</sup> , Min	5.0	AASHTO T283
Indirect Tensile Strength Ratio, %, min.	80	

If approved by the Authority, rubber-based granular products derived from waste tyres may be added to the bituminous mixture at the plant to prepare rubberised asphalt mixtures.

### Modifier Additive

Additives prepared by incorporating recycled automobile tyres (recycled elastomer waste) or bitumen, in the form of fine rubber-based granules, shall be used. At least **35% of the rubber content** of the modifier additive must dissolve in the mixture.

### Bitumen

The bitumen to be used in rubberised asphalt mixtures shall comply with the requirements of **TS EN 12591**, specifically penetration grades **B50/70** or **B70/100**, or another penetration grade deemed appropriate by the Authority.

### Selection of Application Area

The use of rubberised asphalt mixtures will be determined by the authority based on climate, rainfall, traffic volume, and road geometry. A **Technical Report** must be prepared and submitted for approval before the application.

### Mixture Properties

The mixtures must comply with the **specifications of the intended pavement layer** and the **characteristics in Table 418-2 Properties of Rubber Asphalt Mixtures**. The plant must have equipment to automatically feed the additive at the required rate and time. After production, the pavement must be covered by a **minimum 5-year warranty** from the contractor and/or supplier.

The innovation in Bursa is the application in a municipal cycling infrastructure context, using recycled materials within a living-lab framework and linking material performance to active mobility user experience.

- Bicycle paths are constructed as either one-way or two-way, in line with standards.
- Although alternative surfaces such as concrete exist, asphalt pavement is predominantly used, specifically **Fine-Graded Bituminous Hot Mix Asphalt**.
- Instead of continuous painting, only bicycle logos are printed at regular intervals to indicate the lane.
- In addition to dedicated bicycle paths, there are shared lanes where existing road lanes are utilised for mixed use. On these shared lanes, printed bicycle logos are placed at regular intervals to inform drivers.



Figure 2: Figure 1: (1) Application of plant mix base as the base for a hot mix asphalt bicycle path. (2) Application of C20/25 concrete as the base for a hot mix asphalt bicycle path. (3) A bicycle path using hot-mix asphalt material.

#### Technical approach regarding photovoltaic e-bike charging stations:

- Site-specific adjustments should address solar exposure, shading, vandalism/security, user access, maintenance access, drainage, foundations, signage, digital/app use and data-protection requirements.
- If any grid-connected alternative is considered, **Uludağ Electric Distribution Inc. (UEDAŞ)** and **Energy Market Regulatory Authority (EPDK)**-related requirements must be checked.

### 3.5.4.5 Prototype Construction

#### Construction Permit Issue

Because the targeted areas are municipally owned and the planned interventions mainly involve pilot rehabilitation, paving, urban mobility equipment and off-grid installation, a conventional construction permit is not expected to be required in the same way as for a new building. However, this must be confirmed through the **UKOME-led** internal procedure and the relevant municipal technical units.

For Naim Süleymanoğlu Boulevard, the key precondition is to receive internal approval and sufficient implementation flexibility for the asphalt works. If this is granted, the municipality would like to accelerate the related preparatory and implementation activities.

#### Required official/internal steps

- Review zoning plan and public space compatibility for the preferred Naim Süleymanoğlu location.
- Establish the UKOME sub-committee and request opinions from Transportation, Zoning and Urban Planning, Infrastructure Coordination, Parks and Gardens, Road Construction, Road Maintenance and Repair, and other relevant units.
- Check service/utility conflicts, traffic/pedestrian management needs and compatibility with Smart Boulevard planning.
- Approve technical documentation, tender specifications and implementation method statements.
- Issue site handover/administrative permission for works before construction starts.



The construction phase will follow an integrated procedure based on clear stakeholder cooperation, entirely overseen by the local government. The workflow is structured as follows:

**Material Sourcing:** Recycled rubber materials will be supplied by authorised project stakeholders/partners to ensure compliance with environmental standards.

**Asphalt Production:** Another designated stakeholder/production partner will process and mix this recycled rubber into the bitumen and aggregate matrix, utilising the technical methods designated for the pilot (specifically focusing on the dry method configuration chosen for the Bursa context).

**On-Site Application:** The appointed private contractor (contracted stakeholder) will handle the logistics, labour, site preparation, and final paving of the innovative rubberised asphalt along the selected pilot corridor.

**Supervision & Auditing:** Throughout the entire lifecycle of this process, spanning from initial raw material sourcing and factory mixing to final on-site implementation and execution, Bursa Metropolitan Municipality will maintain absolute supervisory control, conducting strict quality assurance, field audits, and technical compliance checks.

**Timeline:** In alignment with the established SMILE CITY local roadmap, the timeline for the construction works is planned as a phased deployment:

**Kick-off (1/2 2027):** Following the finalisation of technical drawings, procurement packages, and material certifications, on-site construction works and charging station montage are scheduled to commence in the first half of 2027.

**Completion (2/2 2027):** The asphalt paving, site integration, and final technical testing are targeted for completion within the second half of 2027, subject to seasonal weather conditions and procurement schedules.

No specific permit or formal approval is required for the bicycle lane to become operational and accessible to users. However, the charging stations involve additional regulatory considerations, particularly regarding the digital services that will support their operation.

One of the key issues and concerns is the development of the mobile application for the project. According to assessments conducted by our institution, the processing and storage of users' personal data on servers located outside Türkiye, including those hosted in Europe, may raise compliance concerns under the national Personal Data Protection legislation. For this reason, the relevant authorities have indicated that any digital solution must be designed in accordance with applicable data protection requirements and institutional policies.

## 3.6 Region of Crete – Local Report

### 3.6.1 Setting up the Urban Living Lab and stakeholders' engagement

The SMILE CITY project in the Region of Crete will be implemented in the City of Chania, but it will be coordinated by the Regional Authority. The Technical Department of the Chania City guide the process, and the Region of Crete has the final authorisation.

#### 3.6.1.1 Working Framework

The urban plan for the areas considered for the pilots is in development with Chania City - Local Sustainable Development Plans. Technical designs will be provided internally.

Execution of works will be conducted by a private company, after a public competition.

ECOELASTICA is the national authority of RTMs in Greece, which can register End-of-Waste status for waste rubber and textile fibres planned for testing. Many institutions, such as **FORTH IESL**, HELMEPA, EKETA, etc., are certification companies that have been registered to ELOT (National Authority) and can certify new construction materials tested.

Use permits will be provided by the National Authority through the jurisdiction of the Infrastructure Ministry, or private firms that have been registered to the Certification (CE, EPD, etc) Greek List.

There is no co-financing for the SMILE CITY systemic solution ensured in the public budget.

#### 3.6.1.2 Mapping the Main Stakeholders

There are multiple stakeholders who will have roles in pilot development, with various interests and influence in Crete Living Lab, but the ones with the most significance are Chania City Authority, citizens, visitors and local NGOs.

Various stakeholders will be engaged throughout the process, from various sectors (public, private, academic, civil), in different stages and in different ways:

LEVEL OF ENGAGEMENT	CONSULT		INVOLVE		COLLABORATE
	Questionnaire	Focus Groups	Workshop	One-to-one meetings	Task Force
Chania City- Pilot Area					
Katheris SA	Recycling PVs			meetings	Yes
Technical Chamber-East Crete Dep		Engineers group- Information, factsheets, further spread	Yes		
FORTH IESL		Materials - Plastics		Meetings	Yes



IHELIOS	Consulting			Meetings	Yes
TSIMEDOMI	Material production			Meetings	Yes

### 3.6.1.3 Visioning and Scale-up Potential

The Region of Crete intends to further engage cities in Local Urbanism and to develop a Local Urban Alchemy society. More informative workshops with the Public Bodies, Cities and citizens to promote the use of recyclable plastics in daily use, and public infrastructure.

The project alters the standard implementation steps in the following ways:

#### Shift from Virgin to Recycled Materials

In a traditional “business-as-usual” scenario, cycling tracks and sidewalks are constructed using standard asphalt or virgin stone. Under the SMILE CITY framework, Chania is acting as a **pilot site** for the Region of Crete to test innovative, low-emission materials:

- **Infrastructure:** Construction of cycling paths and urban surfaces now incorporates **recycled materials** diverted from urban waste value chains.

#### Integration of Circular Procurement

The SMILE CITY project influences the legal and administrative steps of the **RECODE** strategy by introducing **circular systemic solutions** into the procurement process. This moves beyond standard “lowest price” bidding to include criteria for:

- **Material Lifecycle:** Prioritising vendors who use regenerative and inclusive material value chains.
- **Waste Management:** Requiring contractors to demonstrate how construction waste is reintegrated into the local or regional scale.

#### Digital & Data-Driven Monitoring

The “business-as-usual” step of post-construction evaluation is replaced by real-time monitoring. The SMILE CITY project aligns with Chania’s **Smart City** digital platforms (funded by the RRF) to:

- Track the **environmental footprint** and performance of the new recycled materials used on Kydonias and Tzanakaki.
- Provide data for the city’s new **Digital Control Centre** (operational as of January 2026) to measure the success of these low-emission applications in real-time.

#### Community & Stakeholder Co-Design

Traditional planning often follows a top-down approach. The SMILE CITY project emphasises **awareness raising** and **citizen engagement**, encouraging local businesses and residents to participate in the “green transition”. This ensures that the urban furniture and cycling tracks are not just installed but are adopted by the community as part of a climate-neutral lifestyle.

#### *Scale-up potential of the pilot, in the national or EU context*

The Region of Crete will first consider the national scale-up. Considering the pilot development and the results from the project, more Cities and Regions in Greece may be engaged in urbanism through the green infrastructures and a less carbon-intensive daily routine.

### 3.6.2 Multicriteria analysis for site selection

The Municipality of Chania is actively implementing a Sustainable Urban Mobility Plan (SUMP) and a "Sustainable Urban Development Strategy" (2014-2020/ongoing). Key initiatives for positioning pilot locations include the "i-bike Chania" system launched in December 2025, which features electric shared bicycles with charging stations located at central points and municipal parking lots.

#### Key Strategic Initiatives for Pilot Locations:

- **i-bike Chania (E-bike & Charging Stations):** Stations are strategically placed near municipal parking areas (e.g., in the city centre) to encourage intermodal, sustainable transport.
- **Cycling Network Development:** The city is upgrading infrastructure to include dedicated, safer, and separated cycling routes, part of a broader, integrated strategy for sustainable mobility.
- **Electric Vehicle Infrastructure:** Plans exist for expanding electric transportation, including electric buses, vehicles, and charging infrastructure, often funded via regional/EU initiatives.
- **Strategic Focus Areas:** Pilot initiatives are heavily focused on reducing pollution and noise in the city centre, making central locations and key parking facilities, primarily spots facilities, available for new green infrastructure.

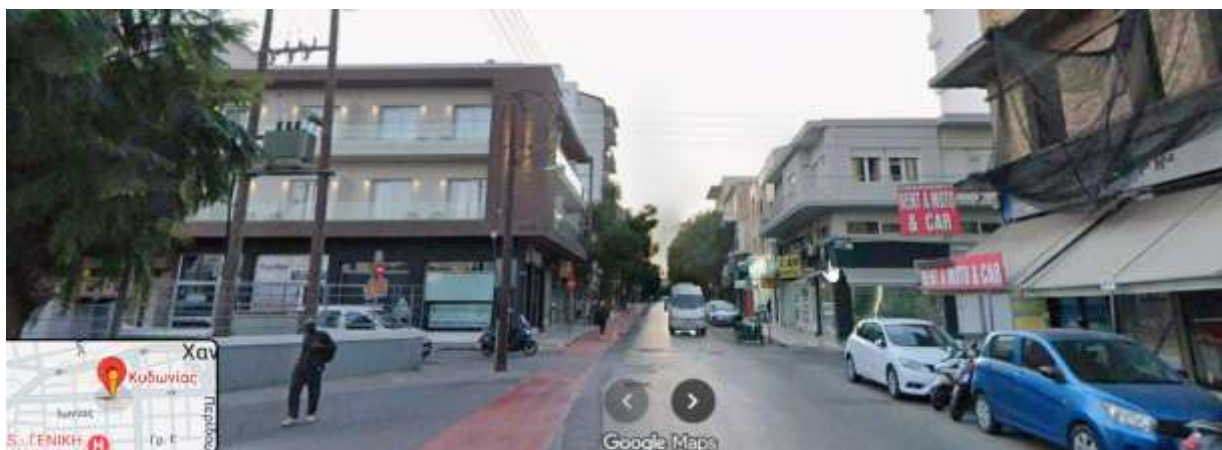
In Chania, three potential pilot locations were considered:

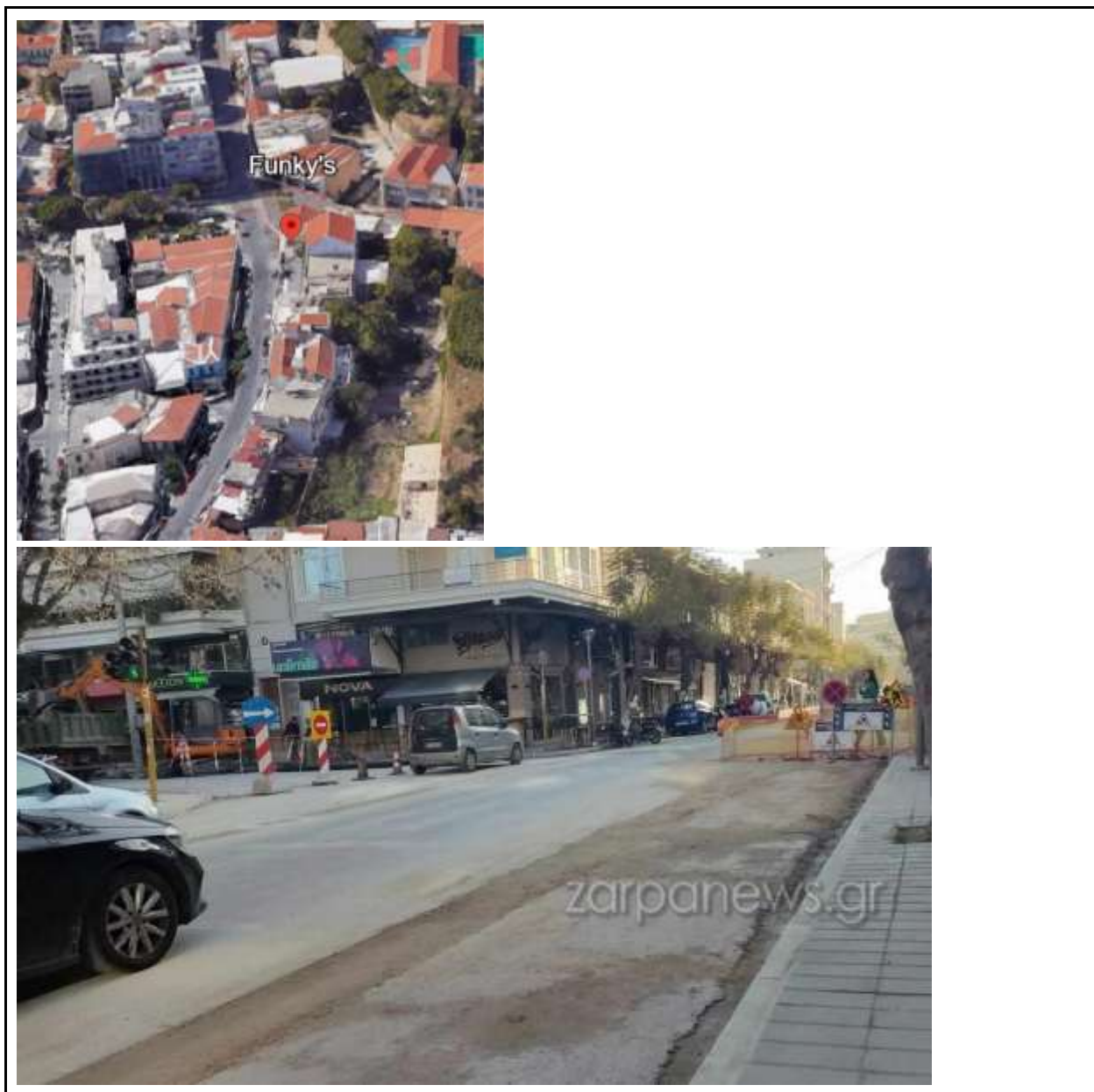
1. **Pilot 1: Kydonias Street**
2. **Pilot 2: Tzanakaki Street – City Centre**
3. **Pilot 3: Kanari Coast**

#### Location 1

Kydonias Street- City Centre

Upgrading of an existing bicycle path of approximately 640 m in a central artery of the city.

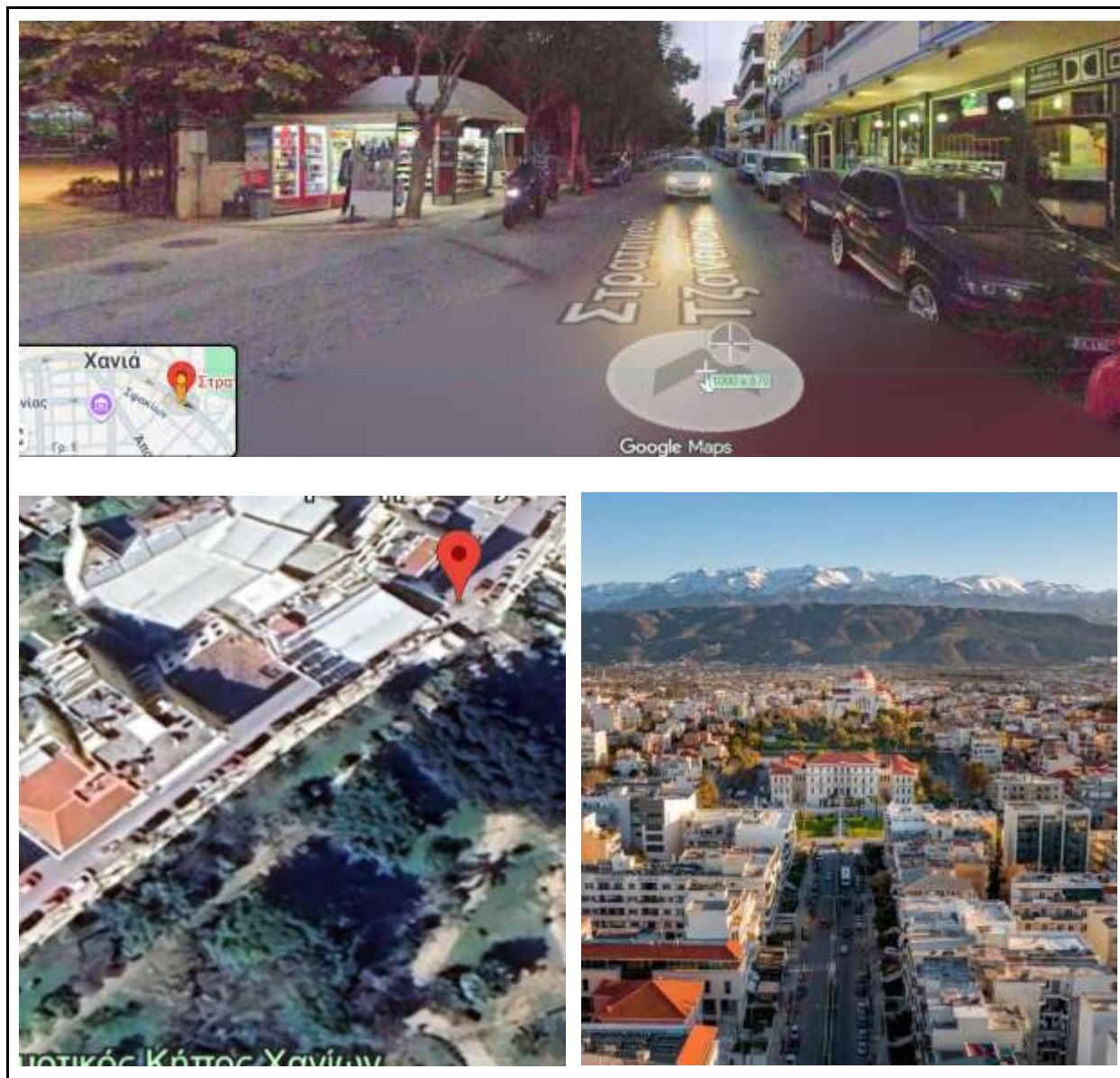




### *Location 2*

Tzanakaki Street – City Centre

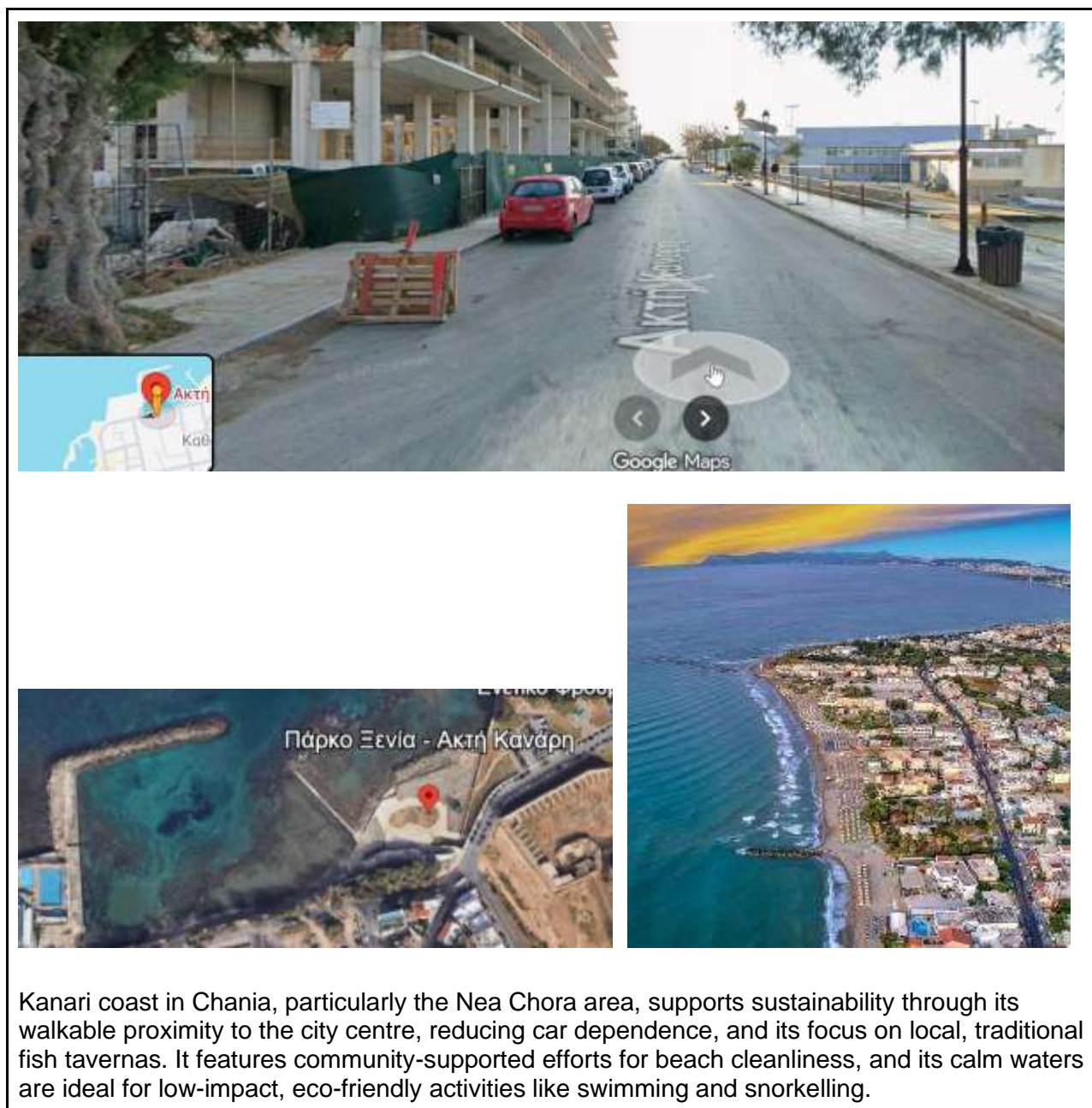
Construction of a new bicycle path of approximately 520m length on the city's central artery.



### Location 3

#### Kanari Coast

Upgrading of an existing bicycle path of approximately 520m in length on the city's coastal artery that connects the Old Town with the equally central district of Nea Chora.



### 3.6.2.1 Legal Criteria

#### Location 1

There is an adopted and active urban design project for **Kydonias Street** in Chania.

The governing plan is the **Sustainable Urban Development Strategy (SUDS) of Chania**, specifically the vision titled **RECODE** (*REvitalizing the COre for DEvelopment*). The specific implementation project is often referred to in municipal documents as the "**Regeneration of the**

**Residential Centre of the Municipality of Chania**", which covers 30 building blocks in the city centre.

The urban design plan for **Kydonias Street** in Chania city fully aligns with the planned land use for the city centre's regeneration and explicitly includes provisions for a cycling track, strategically managed to reduce car traffic in central districts.

The project for Kydonias Street also involves a comprehensive overhaul of its functional and aesthetic elements:

- **Sidewalk Reconstruction:** Broadening and resurfacing sidewalks to prioritise pedestrians and ensure accessibility for all users.
- **Underground Infrastructure:** Coordination with HEDNO and D.E.Y.A.H. to underground electricity networks and replace ageing water supply and drainage systems.
- **Sustainable Mobility:**
  - Integration with a new **cycle track network** that connects major central axes.
  - Implementation of "**Smart City**" sensors for monitoring traffic and environmental factors as part of the broader digital infrastructure rollout.
  - The overall project includes the creation of the first 3 km of a protected cycling route in the city centre to encourage cycling and combat air pollution.
- **Nature-Based Solutions (JUSTNature):**
  - Kydonias Street is closely linked to the pilot site of the **JUSTNature** project (located at the municipal five-story car park on Kydonias).
  - Interventions include "green façades" and urban corridor designs to create **carbon sinks** and reduce temperatures in adjacent streets by approximately 1°C.
- **Urban Equipment:** Installation of modern lighting, "smart" benches, and increased urban greenery to transform the street into a more livable corridor.

Detailed project maps and the current phase of construction (which reached final stages for specific sections by late 2025/early 2026) can be viewed via the [Chania Municipal GIS portal](#).

## Location 2

As of early 2026, there is an adopted urban design project for **Tzanakaki Street** in Chania. The street is undergoing a transformation into a **low-traffic road** as part of a larger strategic urban initiative.

The primary framework governing this redevelopment is the **Sustainable Urban Development Strategy (SUDS) of Chania**, often referred to by its Greek acronym **ΣΒΑΑ** (SBAA) or the project vision title **RECODE** (*REvitalizing the COre for DEvelopment*) – same as for Location 1.

The plan's primary goal is to shift the modal split towards sustainable transport, prioritising pedestrians and cyclists over private motor vehicles within the city centre.

- The land use in this area is being modified to support a "healthy city" model that integrates physical and social environments to enhance quality of life, a key component of which is sustainable mobility. The specific zoning for "low-traffic" areas is a deliberate change in land use management to facilitate this strategy.

- **Cycling Track Construction:** The plan specifically mentions the installation of new bicycle lanes. The strategy actively encourages cycling through "green constructions and design elements" and aims to achieve continuity of bicycle routes across the city centre.

The project for Tzanakaki Street includes specific interventions aimed at modernising the city centre and improving environmental quality:

- **Traffic Status:** Transformation into a "low-traffic" or "mild circulation" road to reduce vehicle speeds and prioritise pedestrians.
- **Infrastructure Upgrades:**
  - **Widening of sidewalks** and installation of new paving to ensure unhindered accessibility.
  - **Undergrounding of public utility networks** (electricity and water)
  - Installation of **new urban equipment**, including modern lighting, seating areas, and benches.
- **Greenery and Mobility:**
  - Creation of a **new bicycle path** along the street.
  - New plantings and the creation of "**pocket parks**" to increase the area's green footprint.
- **Regulatory Changes:** Demarcation of specific parking spaces to better manage urban space.

The project is part of a broader "regeneration of 30 building blocks" in Chania's heart, covering approximately 35,000 square meters, the same as location 1.

### Location 3

As of early 2026, the Kanari Coast (Akti Kanari) in the Nea Chora district is included in an adopted urban design project focused on coastal revitalisation. This project concerns the creation of a cycle path of the "Cycle track" type along the Kanari Coast, from its junction with Piraeus Street to its junction with Papanikoli Street.

The design and implementation of the cycle path are based on the Technical Instructions for Cycle Paths approved by Ministerial Decision DYO/OIK.1920/2016 (Government Gazette 1053/B/14-4-2016).

According to paragraph 3.4 of the decision, the selected type of "Cycle track" is a distinct infrastructure for the exclusive use of bicycles, with clear horizontal and vertical markings, separated from other traffic.

Construction method:

The intervention is non-invasive, as:

- No excavations or demolitions are required.
- The existing pavement configuration has not changed.
- The project is implemented by applying special paint/material on the existing asphalt, according to the technical specifications of the program.

Signage and safety:

According to the Technical Instructions of Government Gazette 1053/B:  
 -Horizontal signage will be installed (colouring, bicycle symbols, directions).  
 -Vertical signage will be reinforced with regulatory and information signs.  
 -Warning signs for drivers and pedestrians will be provided.  
 The choice of colouring will follow the anti-slip and durability specifications.

The project is part of the strategy of the Municipality of Chania for:  
 -Enhancing sustainable urban mobility and bicycle use.  
 -Reducing traffic congestion and CO<sub>2</sub> emissions.  
 -Safe movement of cyclists in an area with high tourist and local mobility.  
 -Pilot application of new materials and methods for shaping cycling infrastructure.  
 -Data collection through the SMILE program for evaluation and future expansion of the network.

The proposed cycle path in Kanari Cost is a modern, safe and fully compliant with Greek legislation intervention, designed to function as a pilot project for the development of an integrated cycle path network in Chania.

The non-invasive implementation method, compliance with the Technical Instructions of Government Gazette 1053/B and inclusion in the SMILE program make the project an important step towards a more sustainable and smarter city.

### 3.6.2.2 Technical Criteria

The procedure for municipal projects involves several digital and administrative steps:

1. **Preparation of Studies:** A certified engineer must prepare a comprehensive dossier including architectural designs, structural studies (for cycling tracks/infrastructure), and electromechanical studies for urban furniture/lighting.
2. **Preliminary Approval (Optional but typical for large projects):** Under **Article 35 of Law 4495/17**, the municipality may seek preliminary approval to ensure the project complies with land use and urban planning provisions before final submission.
3. **Electronic Submission (e-adeies):** Applications must be submitted through the **Technical Chamber of Greece** electronic system.
4. **Competent Authority Review:** The **Building Service of the Municipality of Chania** reviews the dossier for compliance with Local Spatial Plans (LSPs).
  - **Archaeological Clearance:** Due to the historical nature of Chania, a certificate from the Ministry of Culture is often a prerequisite.
  - **Environmental Permitting:** For coastal areas like the Kanari Coast, a **Decision for the Approval of Environmental Terms (AEPO)** may be required.
  - **Issuance and Social Security:** Before the permit is issued, social security contributions (**EFKA**) for the workers must be pre-calculated and paid.
5. **Commencement of Works:** Once the permit is issued electronically, construction may begin. A final inspection by a board of building inspectors is required upon completion to receive a **Completion Certificate**.



For large-scale projects like those under the RECODE strategy, the municipality typically manages these steps as part of a public works contract under the "fast-track" or integrated urban intervention provisions of Law 4412/2016.

### 3.6.2.3 Operational Criteria

#### Location 1

- **Infrastructure Completion:** Critical preparatory works, including the **replacement of water supply networks** and the **undergrounding of electricity networks** by HEDNO, have been completed along the axis to facilitate surface-level changes.
- **Active Sidewalk Reconstruction:** Following the completion of underground works, the project transitioned into the reconstruction of sidewalks. By early 2025, work had already progressed to the intersections of Kydonias with adjacent streets like Karaiskaki. As of early 2026, surface paving and the installation of **urban equipment** (lighting, benches) are the primary focus of active work sites in this zone.
- **Overall Timeline:** The wider project, which carries a budget of approximately **€7 million** funded by the Recovery & Resilience Fund, was launched with an 18-month implementation schedule starting in early 2025. Consequently, the intervention should be in the completion phase by mid-to-late 2026.
- **Smart City Integration:** In parallel, a new **Digital Control Centre** for the municipality was commissioned in January 2026, which will eventually monitor the "smart" sensors and traffic management systems being installed on Kydonias Street.

The Kydonias Street works are synchronised with other major central projects, most notably the **Municipal Market (Agora)** restoration nearby. The municipality is coordinating these timelines to minimise the long-term economic disruption caused by the closure of the city's central commercial "lung".

However, the reconstruction of the sidewalks of Kydonias Street was recently completed in June 2026, and the entire street will be asphalted immediately, and the approved bike path will be repainted and demarcated. Thus, the dynamics of SMILE CITY intervention work do not align anymore with this development project.

#### Location 2

- **Infrastructure Completion:** Similar to Kydonias Street, the foundational underground works—including the replacement of water and sewage networks by **D.E.Y.A.H.** and the undergrounding of electricity lines by **HEDNO**—have been largely completed along the Tzanakaki axes.
- **Low-Traffic Transformation:** The street is currently being physically reconfigured into a **"mild circulation"** road. This involves the ongoing widening of sidewalks and the installation of specialised paving designed to prioritise pedestrian movement.
- **Urban Equipment Installation:** The project has moved into the stage of installing **new urban furniture**, including modern street lighting, seating areas, and "smart" city infrastructure that will be managed by the municipality's new digital control centre.
- **Strategic Coordination:** The works on Tzanakaki are synchronised with the broader **"Regeneration of 30 building blocks"** initiative.

While some adjacent streets like Karaiskaki and Ypsilandon began their final sidewalk reconstruction in March 2025, Tzanakaki is part of the final cluster of central axes scheduled for completion in 2026.

### Timeline and Completion

The project is on track to conclude by **mid-to-late 2026**. This timeline is intentionally aligned with the grand reopening of the **Municipal Market (Agora)** nearby. By the end of 2026, Tzanakaki is expected to function as a primary pedestrian-friendly corridor connecting the city centre to the Public Garden area.

However, start with an overall reconstruction of the street, which requires preliminary works (undergrounding of networks, approvals of works, etc.) and a cycling path might be on the pedestrian sidewalk, as an integrated street.

### Location 3

- **Public Infrastructure:** The area is undergoing a gradual aesthetic and functional upgrade as part of the broader **Sustainable Urban Development Strategy (SUDS)**. This includes the renovation of coastal walkways and the integration of a **cycling track** that connects the Nea Chora front with the city's central bicycle network. By early 2026, work on surface pavings and the installation of modern **urban furniture** (benches, energy-efficient lighting) will reach the final phases of completion.
- **Environmental & Digital Integration:** Under the **RECODE** initiative, the coast is being monitored by new "smart city" sensors managed by the municipality's central digital control centre, which became operational in January 2026. These sensors track environmental parameters and pedestrian traffic to optimise urban management.

The revitalisation of the Kanari Coast is part of the municipality's goal to complete major urban core projects by mid-2026.

The existing municipal project for the city centre (including Kydonias and Tzanakaki) is already well underway:

- **Launch Phase:** Construction for this cluster began in **early 2025**.
- **Current Stage (early 2026):** Active sidewalk reconstruction and installation of urban furniture are occurring.

### Kanari Coast

Unlike the strictly managed city centre streets, the **Kanari Coast** has more flexibility for additional investment and project dynamics alignment:

- **Public Work Timeline:** Basic infrastructure and "smart" urban furniture installations are expected to be completed in **2026**.

There is **not enough time** to start a new large-scale procurement and complete construction within 2026 if starting as a new, stand-alone intervention.

For all the locations, **Municipality of Chania (Department of Technical Services)** acts as the lead stakeholder, managing the planning, contracting, and overall supervision of the projects.

Before surface construction begins, two key semi-public entities perform critical preparatory works:

- **D.E.Y.A.H. (Municipal Water and Sewerage Company of Chania):** Responsible for replacing and upgrading underground water and drainage networks.



- **HEDNO (DEDDIE)**: Responsible for the undergrounding of the electricity supply networks to remove overhead cables and improve urban aesthetics.

The **Technical Chamber of Greece (Western Crete Division)** and civil society groups like **Podilattris** (Bicycle lovers) provide technical and advocacy input, particularly for the cycling infrastructure.

The works are carried out under a **Public Works Contract** model following the legal procedures of **Law 4412/2016** (Public Procurement for Works, Supplies, and Services).

The projects were awarded through an **Open International Tender** process. The "Regeneration of 30 Building Blocks" project (which covers Kydonias and Tzanakaki) was awarded as a unified contract with a budget of approximately **€7 million**.

The municipality employs a phased implementation strategy to minimise city-wide disruption. For instance, surface reconstruction of sidewalks only begins after D.E.Y.A.H. and HEDNO have completed their respective underground utility upgrades.

#### 3.6.2.4 Financial Criteria

The "Regeneration of 30 Building Blocks" project (which covers Kydonias and Tzanakaki) was awarded as a unified contract with a budget of approximately **€7 million**. These investments are financed primarily by the **Recovery and Resilience Fund (RRF)** under the "Greece 2.0" national plan and the "Antonis Tritsis" programme for local government development.

**Operational Program "Crete 2021-2027"**, which includes broader coastal management and sustainable tourism actions, is often co-financed by the **European Regional Fund**.

However, for now, there is no co-financing for the SMILE CITY systemic solution ensured in the public budget.

SMILE CITY interventions are financed as capital investments, not as routine or investment maintenance, which is a critical distinction in public accounting and European Union (EU) funding rules. Urban regeneration projects such as those on Kydonias and Tzanakaki streets and the Kanari Coast are legally classified as capital expenditures (CapEx) or investments in Greece and the EU. The Municipality of Chania and other public **constitutions** oversee maintenance on the island of Crete. The interventions involve the creation of new assets and the use of innovative, research-driven materials, which fall under capital investment budgets and specific, ring-fenced EU investment funds designed for long-term transformation.

#### 3.6.2.5 Socio-political Criteria

While the regeneration of **Kydonias Street**, **Tzanakaki Street**, and the **Kanari Coast** is designed to modernise Chania, several factors have historically led to public opposition or concern:

##### **Loss of Parking and Traffic Congestion**

The transformation of Kydonias and Tzanakaki into "low-traffic" or "mild circulation" zones involves widening sidewalks and adding cycling tracks, which inherently reduces the number of available **on-street parking spaces**.



- **Citizen Concern:** Residents and commuters often oppose such plans if they perceive a lack of alternative parking infrastructure, fearing increased congestion in neighbouring streets.
- **Business Impact:** Local shop owners on central axes like Tzanakaki may worry that restricted vehicle access will deter customers who rely on quick, short-term parking.

Chania faces significant pressure from "overtourism," which has sparked organised protests.

- **"Hotelization" Fears:** Initiatives like the regeneration of the Kanari Coast are sometimes viewed as catering more to tourists and strategic investors (e.g., high-end hotel developments) than to the daily needs of permanent residents.
- **Gentrification:** Citizens have voiced concerns that such high-spec urban upgrades drive up property values and rents, eventually displacing locals and traditional businesses in favour of short-term rentals and tourist-oriented services.

Major projects in Chania, such as the restoration of the **Municipal Market (Agora)**, have missed multiple deadlines, leading to frustration.

- **Extended Work Cycles:** Ongoing construction on major arteries like Kydonias and Tzanakaki causes long-term disruption to local commerce and daily mobility. Citizens often oppose new projects if they lack confidence in the municipality's ability to meet completion timelines.

There is a general sentiment in Southern European contexts, including Greece, that urban planning is often too centralised or top-down. If the wider citizenry feels their input on specific designs (such as the placement of urban furniture or the exact route of cycling tracks) was not genuinely considered, they may view the project as an "aggressive" imposition rather than a community benefit.

Additionally, any intervention near Chania's sensitive archaeological sites can face opposition if perceived to prioritise modern aesthetics over historical integrity.

However, using rubberised materials and e-bike charging stations at Kydonias Street, Tzanakaki Street, and Kanari Coast would support the SUMP objectives in the following ways:

- **Aesthetic Distinction:** Rubberised materials are available in specific colours and textures, which could visually differentiate the cycling tracks and e-bike charging hubs from traditional road surfaces. This surface change creates a modern and intuitive urban landscape.
- **Branding Pilot Areas:** The unique look can help brand these streets as "green zones" or "priority mobility corridors," increasing public awareness and engagement with the new infrastructure.
- **High-Wear Zones:** The junctions where Kydonias Street and Tzanakaki Street meet other roads, and the coastal path of Kanari Coast (exposed to salt and sun), are high-stress areas. Rubberised asphalt exhibits greater resistance to wear, tear, and temperature variations, extending the infrastructure's lifespan and reducing maintenance costs.
- **Enhanced Drainage:** The porous nature of certain rubber pavements helps manage rainwater effectively, reducing the risk of pooling and improving safety for cyclists and e-scooter riders on the coastal route.

## Enhanced Separation and Safety

- **Physical and Visual Barriers:** Strategically placed rubber curbs can provide a clear and robust physical separation between the new cycling tracks and vehicle traffic lanes, a key priority for increasing perceived safety among cyclists.
- **Forgiving Bollards:** Rubber bollards at intersections, shared spaces, and along the Kanari Coast path would increase visibility and guide traffic flow. Their flexible, impact-absorbing nature drastically reduces injury risk in the event of a collision compared to rigid materials, which is vital for protecting vulnerable users in the city centre.

**E-bike charging station pilot** will be positioned on **1821 Square (Plateia 1821)** in Chania, as one of the city's most historically significant and socially active public spaces. It combines high pedestrian and cyclist flow, strong cultural identity, centrality within the Old Town, and is an existing gathering space, supported with existing infrastructure that attracts both locals and tourists. These factors maximise visibility, usage, and public engagement.

The distance from 1821 Square (Splantzia) to Kanari Coast in Chania is about 900–1,100 meters, depending on the exact point on Kanari Street. That's roughly 10–14 minutes on foot or 3–4 minutes by bike.

### Overall assessment

Due to operational criteria and dynamics of construction works, **Kanari Coast was selected as the Pilot Location**. According to the approved traffic study "Traffic Organisation and Parking Study and Implementation Study of the Urban Complex of Chania - Souda", which was approved by ministerial decision, there is a 1m wide cycling path. During project development, the specifications of cycle paths have changed, **so a 2m wide cycle path was implemented in practice**, which is now not in operation by decision of the Municipality, due to extensive works being carried out on the road and making its use unsafe. Through the program, the Region of Crete will restore it to operation with a **width of about 2m. The thickness of the final layer will be about 5cm.**

Criteria for site selection:	Location 1 Kydonias	Location 2 Tzanakaki	Location 3 Kanari Coast
Legal	Pathway for implementation is clear and achievable	Pathway for implementation is clear and achievable	Pathway for implementation is clear and achievable
Technical	Pathway for implementation is clear and achievable	Pathway for implementation is clear and achievable	Pathway for implementation is clear and achievable
Operational	Not feasible for implementation dynamics	Not feasible for implementation dynamics	Barriers exist, but there is a strategy for overcoming them
Financial	Pathway for implementation is clear and achievable	Pathway for implementation is clear and achievable	Barriers exist, but there is a strategy for overcoming them
Socio-political	Pathway for implementation is clear and achievable	Barriers exist, but there is a strategy for overcoming them	Barriers exist, but there is a strategy for overcoming them



### 3.6.3 Co-creation Activities

The Region of Crete developed and implemented a detailed plan for stakeholders' information, consultation and engagement:

	STEP 1	STEP 2	STEP 3	STEP 4	STEP 5	Links with WP 3	Links with WP 4	Links with WP 5 (&6)
<b>CO-CREATION PATHWAY STEPS</b>  (proposal)	<b>Identify SMILE CITY pilot area(s)</b>	<b>Map &amp; (initially) engage stakeholders</b>	<b>LAUNCH the LL / Task Force</b> Kick-off meeting	Plan co-creation activities: design the LL platform	LAUNCH the <b>local living lab</b> Local kick-off meeting	<b>Co-design: the pilot project(s)</b>	<b>Co-implementation: prototype construction</b>	<b>Co-monitoring: testing the prototype pilot</b>
	Nov '25 - Dec '25	Dec '25 – Jan '26	Feb '26 – March '26			April '26 – June '26	Jan '26 – June '28	June '26 – Aug '28
<b>Region of Crete</b>			Local Task Force for LL is engaged  Madoulka Apostolaki Vasilakis (REGION of CRETE)			Region of Crete  Madoulka Tzagkaraki Apostolaki Vasilakis		
<b>Chania City</b>	Chania City	Chania City 3 selected areas. Tzanakaki Street  Kydonias Street  Kanari Coast	Internal consultations with Technical Department			Chania City Fragioudaki Efthymiou		



<b>Private companies</b>		IHELIOS SE	IHELIOS SE			IESL (PV panels)		
<b>Chania Local Associations</b>		Mapping and informing	Chania Local Associations and Citizens  Region of Crete (Tech Department, etc.)  Technical University of Crete			KATHERIS (PV panel)  TSIMENDOMI SA (cements)  NAOUM SA pilot design  FINOMIXSA (Asphalt mixture)		
<b>Technical Chamber  Commercial Chamber</b>		Mapping and informing	Technical Chamber of Crete (East – West)  Commercial Chamber (Heraklion, Chania departments)			Other local Authorities and Associations  Other Relative SMEs		





## 3.6.4 Implementation Preconditions for Prototyping

### 3.6.4.1 Location Conditions

The pilot site has been selected - it will be Kanari Coast. Kanari Coast sits on the northern shoreline of Chania, an area shaped by open-sea exposure and the strong wind systems of the Cretan Sea.

The road running above Kanari Coast is a linear coastal corridor that follows the natural curve of Chania's northern shoreline. Because it sits directly above an exposed sea front, its conditions are shaped by both urban traffic patterns and marine environmental factors.

The road is a narrow urban coastal artery, bordered on one side by residential and hospitality buildings and on the other by the open sea.

Its elevation is slightly above sea level, offering visibility but also exposing it to spray, humidity, and strong winds.

Pavement conditions can vary due to salt exposure, which accelerates wear and reduces friction during wet periods.

Traffic flow is typically moderate, with peak activity during tourist season and evening hours. The road supports mixed mobility: cars, scooters, bicycles, and pedestrians using adjacent sidewalks. Parking zones along the coast can create localised congestion and reduced lane width.

### 3.6.4.2 Public procurement planning

Within the scope of the pilot project, the public procurement process for the implementation of recycled rubber asphalt concrete (RAC) will be planned.

Public procurement for the Kanari coastal zone focuses on maintaining safety, resilience, and accessibility in an area exposed to strong winds, sea spray, and high seasonal use. Planning prioritises infrastructure durability, environmental protection, and continuous mobility along the coastal road.

- Coastal Protection — Procurement includes works for shoreline reinforcement, anti-erosion structures, and maintenance of sea-spray-exposed surfaces.
- Road Surface Upkeep — Salt, humidity, and wave spray accelerate wear, requiring periodic resurfacing, anti-slip treatments, and corrosion-resistant materials.
- Drainage & Flood Control — Ensuring proper drainage along the road to prevent water accumulation during storms or wave run-up.
- Lighting & Urban Equipment — Procurement of corrosion-resistant lighting poles, signage, and pedestrian safety elements.
- Mobility & Accessibility — Improvements to sidewalks, crossings, and parking zones to support mixed mobility and high tourist flow.

If a new public procurement were to start in 2026, a typical timeline would be tight for a single calendar year:



- **Technical Documentation:** Drafting specialised urban design and engineering studies typically takes **2 to 6 months**, depending on complexity and archaeological clearances.
- **Public Procurement Process:** Under Law 4412/2016, a standard "Open Procedure" requires a minimum of **35 days** for tender submissions. However, once evaluation, appeals (10-day standstill), and contract signing are included, the average duration is **2 to 12 months**.
- **Implementation:** For urban regeneration, actual construction (cycling tracks, furniture, paving) typically spans **12 to 24 months**.

### 3.6.4.3 Relevant Legal Framework for Prototyping

The applicable legal framework for implementing pilots includes:

- **Law 4495/2017:** The central law regulating the control and protection of the built environment and the issuance of building permits.
- **Law 4412/2016:** Governs public procurement for works, supplies, and services, essential for municipal-led urban projects like the RECODE initiative in Chania.
- **Law 4067/2012 (New Building Regulation - NOK):** Defines the technical specifications and building codes for all constructions, including urban furniture and public spaces.
- **Law 3028/2002:** Required if works occur near monuments or historic areas (relevant for Chania's historic centre), necessitating approval from the **Archaeology Supervisory Authority**.
- **Law 4488/2017:** Accessibility Requirements.

However, public works in the Kanari Coast will be governed by a combination of national Greek legislation, EU directives, and coastal-zone protection rules.

EU Procurement Directives:

- Directive 2014/24/EU (public procurement),
- Directive 2014/25/EU (utilities sectors).

Because Kanari Coast is a marine-exposed urban shoreline and a sensitive marine zone, = environmental and coastal protection laws apply simultaneously:

- **Law 2971/2001 - Protection of the Coast & Seashore:** Defines the legal shoreline, regulates construction, maintenance, and interventions near the sea and requires permits for any works affecting the coastline or wave behaviour.
- **Law 1650/1986 & Law 4014/2011 – Environmental Permitting:** regulates Environmental Impact Assessment (EIA) required for coastal works, applies to drainage upgrades, coastal protection, and road modifications.

### 3.6.4.4 SMILE CITY systemic solutions for prototyping

SMILE CITY will treat the Kanari cycling path as a living prototype - a testbed where mobility, safety, environment, and public-space data converge, via the usage of materials innovative for the local context: Asphalt Concrete (AC) containing recycled End-of-Life tyres.



### 3.6.4.5 Prototype Construction

By treating the Kanari cycling path as a systemic prototype, SMILE CITY enables:

- Evidence-based design,
- Better procurement planning aligned with real needs,
- Continuous monitoring after implementation,
- Adaptive management as conditions change.

To prototype a cycling lane made with recycled-tyre materials and asphalt pavement along the Kanari Coast, SMILE CITY will treat this as an engineering pilot, testing durability, safety, and environmental performance under real coastal conditions.

The following steps will be followed:

1. Define Material Mix Design
  - Establish the optimal asphalt–rubber blend for coastal durability,
  - Select crumb rubber from end-of-life tyres (typically 0.5–2 mm),
  - Determine asphalt-rubber ratio (commonly 15–20% rubber by weight),
  - Include anti-stripping agents to resist salt and humidity,
  - Validate mix through consultations with SMILE CITY partners.
2. Prepare the Sub-Base
  - Ensure the foundation can withstand coastal moisture and traffic loads,
  - Excavate to the required depth and compact the soil,
  - Install a geotextile membrane to prevent moisture intrusion,
  - Add and compact crushed aggregate to achieve uniform support,
  - Verify drainage slope to avoid water pooling near the coast.



## 3.7 City of Turin – Local Report

### 3.7.1 Setting up the Urban Living Lab and stakeholders' engagement

The Metropolitan City of Turin (CMTO) plays a central role in the successful development of the SMILE CITY project pilots. In particular, the Mobility and Transport Department is in charge of implementing the project's actions, according to the Metropolitan Strategic Plan and the Sustainable Urban Mobility Plan (PUMS) of the Metropolitan City. The Mobility Department is the main reference point for SMILE CITY, but the involvement of other Departments (Public Works, Environment, etc.) will be essential for the successful implementation of the pilots.

The Metropolitan City of Turin is currently evaluating the establishment of an internal Working Group / Task Force to coordinate the various departments involved and oversee the installation of the SMILE CITY pilot areas from start to finish. This internal working group would be composed of representatives from different CMTO departments (Mobility, Public Works, Environment, and Procurement) and would be coordinated by the Mobility and Transport Department, which is directly involved in the SMILE CITY project. This is still under discussion, and we are working to formalise the group in the coming months.

The Metropolitan City of Turin has previous experience in co-design and participatory processes and believes that the involvement of professional facilitators could be beneficial. However, this would require additional financial resources not foreseen in the project budget. Therefore, the City will primarily rely on internal resources and existing relationships with local stakeholders, while remaining open to collaborations with consortium partners and local innovation ecosystem actors who can contribute pro bono or within the project's available resources.

#### 3.7.1.1 Working Framework

The main stakeholders who make decisions on spatial and urban plans in the CMTO territory include:

- **Metropolitan City of Turin (CMTO)** – Mobility and Transport Department, Public Works Department
- **Municipalities** within the CMTO territory (to be identified once pilot sites are selected)
- **Piedmont Region** – for regional planning and funding

**Superintendence of Cultural Heritage (Soprintendenza)** – for interventions in areas of historical/landscape interest, if applicable.

The pilots will be implemented on the land owned by the Metropolitan City of Turin or by the municipalities within the CMTO territory.

The approval of technical designs will follow Italian public works regulations and will be carried out by the competent departments of the Metropolitan City of Turin and the municipalities involved.

The Metropolitan City of Turin has previous experience with rubberised asphalt through the LIFE project TyRec4Life, which can provide valuable knowledge and contacts.

Construction and use permits for works will be issued by various bodies, but they can be managed by the Metropolitan City of Turin and the competent municipalities by requesting them through the



Italian procedure called "service conference" (conferenza di servizi), which is mandatory for all public works.

At the moment, the Metropolitan City of Turin has not planned to contribute to the project's costs beyond the budget; to do so, it would need political approval to allocate more resources, and this is not currently planned. The idea is to manage everything within the project's available resources.

Since the Metropolitan City of Turin is a public administration, the possibility of being co-financed by other external entities is possible, but it involves numerous technical and bureaucratic difficulties.

### 3.7.1.2 Mapping the Main Stakeholders

Regarding stakeholders, two distinctions must be made: those within the Metropolitan City and those outside it.

#### Internal stakeholders (CMTO):

- **Mobility and Transport Department:** directly involved in the project and responsible for implementation
- **Public Works Department:** responsible for technical supervision and certification of works
- **Environment Department:** for sustainability and environmental impact aspects
- **Maintenance Office:** responsible for evaluating material characteristics, durability, and maintenance needs over time
- **Legal and Procurement Office:** for public procurement procedures

#### External stakeholders (to be identified):

- **Municipalities** within the CMTO territory (to be identified once pilot sites are selected)
- **Piedmont Region** – for regional coordination and potential synergies with regional projects
- **Superintendence of Cultural Heritage (Soprintendenza)** – since the CMTO territory has many historical and landscape values, it is necessary to ensure that the location of the pilot projects does not pose a problem; they could prohibit proceeding with the installation if it interferes with cultural heritage
- **Local producers and manufacturers** – for the supply and installation of materials (to be identified)
- **Cyclists and local cycling associations** – as main end users
- **Citizens and residents** – especially those living near the pilot areas who may be affected by the works
- **Owners of commercial activities** along the pilot routes, who may be impacted by construction works
- **Public transport operators** – for integration with existing services
- **Environmental associations** – for their interest in sustainability and circular economy aspects.

As mentioned, the stakeholders with the greatest influence on the project's implementation are:

- **Metropolitan City of Turin – Mobility and Transport Department and Public Works Department,**
- **Municipalities** that will host the pilots (to be identified),
- **Superintendence of Cultural Heritage (Soprintendenza)** – due to the historical and landscape value of the area,
- **Piedmont Region** – for potential synergies with regional planning and funding.

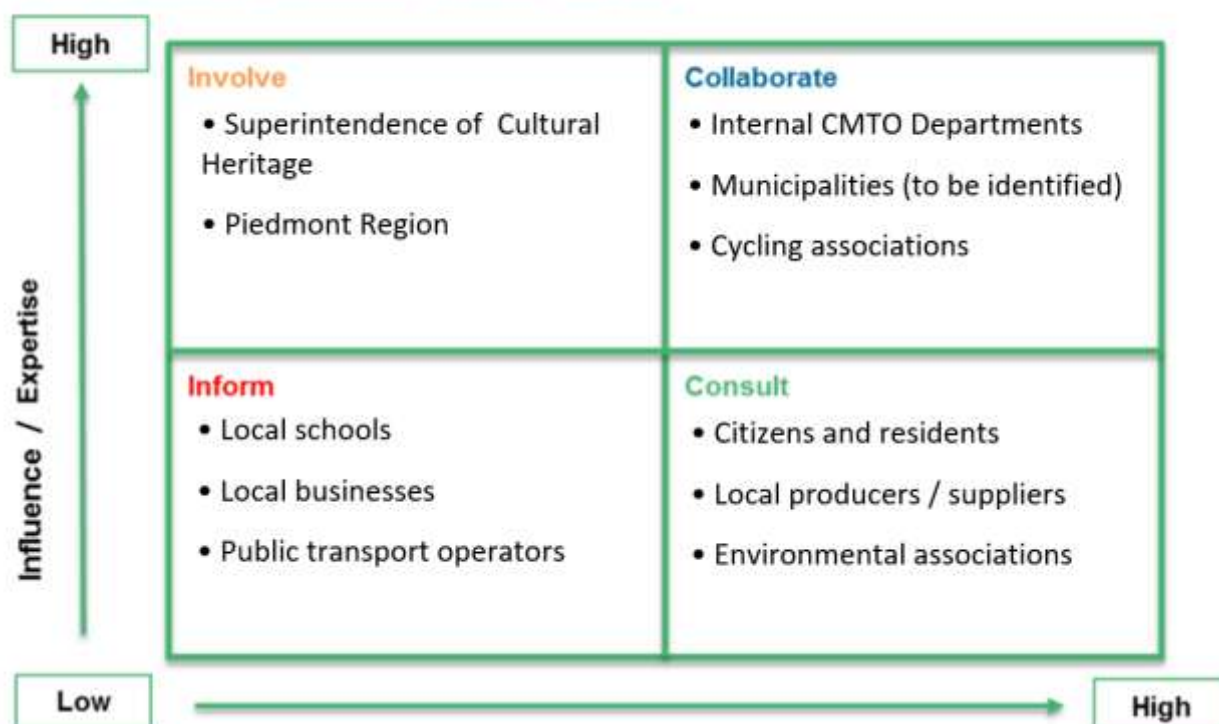
The most vulnerable stakeholders and subject to potential adverse impacts are:

- **Residents and commercial activities** along the pilot routes, that may be temporarily affected by construction works (noise, dust, access limitations);
- **Cyclists**, who may face temporary diversions during the implementation phase.

Additional stakeholders to be involved along the process are:

- **Local schools** – as potential users of the cycling infrastructure, and for educational activities on sustainable mobility
- **Sports associations** – for potential synergies
- **Parking management operators** – if the charging station replaces existing parking spaces
- **Public lighting and urban furniture companies** – for integration with existing infrastructure
- **Tourism sector stakeholders** – for the potential impact on sustainable tourism.

TOOL 2.3: Mapping. Stakeholder Quadrant Template







Various stakeholders will be engaged in the process at different stages and with different levels of intensity, depending on their role in site selection, permitting, technical design, procurement, implementation, communication and final use of the pilot solutions.

<b>LEVEL OF ENGAGEMENT</b>	<b>INFORM</b>			<b>CONSULT</b>	<b>INVOLVE</b>		<b>COLLABORATE</b>
<b>Method of engagement</b>	<b>Website</b>	<b>Newsletter</b>	<b>Questionnaire</b>	<b>Focus Groups</b>	<b>Workshops</b>	<b>One-to-one meetings</b>	<b>Task Force</b>
<b>Internal CMTO Departments</b> (Mobility, Public Works, Environment, Maintenance, Legal/Procurement)			X	X	X	X	X
<b>Local Authorities</b> (Municipalities to be identified, Piedmont Region)	X				X	X	X
<b>Regulatory Bodies</b> (Superintendence of Cultural Heritage)						X	
<b>Local Producers / Suppliers</b>			X			X	
<b>Cyclists &amp; Associations</b>			X	X	X		
<b>Citizens, Residents &amp; Local Businesses</b>	X	X	X	X		X	
<b>Public Transport Operators</b>						X	
<b>Environmental &amp; Educational Stakeholders</b> (Environmental associations, Local schools)	X	X		X		X	



### 3.7.1.3 Visioning and Scale-up Potential

The Metropolitan City of Turin has been working for years to increase sustainable mobility within its territory. This is due to a significant traffic and air quality problem that negatively impacts the lives of residents and visitors. The SMILE CITY project could bring our construction techniques closer to the best available in terms of environmental sustainability and the circular economy.

The vision is to:

- Test innovative, sustainable materials and technologies in a real urban context,
- Promote the use of sustainable mobility,
- Increase the safety and quality of cycling infrastructure,
- Contribute to the circular economy through the use of recycled materials.

#### Scale-up potential of the pilot, in the national or EU context

The Metropolitan City of Turin has been implementing sustainable mobility for years, often using funding sources available at regional, national, and European levels. In this context, our institutional relationships, developed both with other municipalities and with relevant national bodies, will be able to provide a basis for scaling up project concepts and offer useful communication channels for incorporating procedures and techniques into national guidelines. Specifically:

- The Metropolitan City of Turin's territory is vast and diverse, offering good potential for scaling up successful pilot interventions.
- Relationships with **ANCI** (National Association of Italian Municipalities) and with bodies involved in promoting sustainable mobility, as well as with the **Piedmont Region**, are important for scaling up at national and regional levels.

Once successful results are achieved, the CMTO could replicate the interventions in other municipalities within its territory, as well as share knowledge with other Italian and European regions.

### 3.7.2 Multicriteria analysis for sites selection

The site selection process for the SMILE CITY project in Turin was carried out for two, instead of one pilot location, since SMILE CITY systemic solutions A and B will be territorially separated:

1. **Location 1: Sangone Park in Rivalta, for e-Charging Station;**
2. **Location 2: "Piemonta in Bici" in Pianezza, for rubberised paving.**

#### Location 1 – Sangone Park in Rivalta, for e-Charging Station:

The identified area is located in the municipality of Rivalta di Torino, Città Metropolitana di Torino, within Sangone Park (Parco Sangone), an important green area that extends along the Sangone river. The area features a network of cycling paths connecting several municipalities in the Turin metropolitan area. The charging station will be positioned alongside a cycling path that is part of the "Piemonta in Bici" project, a regional initiative promoting the development of Piedmont's cycling network. A Bicigrill, a refreshment point for cyclists offering also a bike repair service, is located nearby. Furthermore, as part of the same "Piemonta in Bici" project, a pump track is planned in this area, which will attract additional users – especially young cyclists and families – increasing visitor flow and making the charging station even more strategic. The municipality actively promotes

sustainable mobility initiatives, and the area is frequently visited by cycling enthusiasts. The location is therefore strategic and fully consistent with the project's objectives.





- The area is very popular and heavily frequented by cyclists and families, which could require careful integration of the new charging station.
- The park's attractiveness could lead to congestion, especially on weekends, making access and maintenance more complex.



Figure 1: CHARGING SPOT, Pilot point (charging station): 45.024126, 7.513805

Expected users include local cycling enthusiasts, families visiting the park, and cyclists travelling along the Sangone river cycle path. The Bicigrill is already a well-established meeting point for both cyclists and the local community.

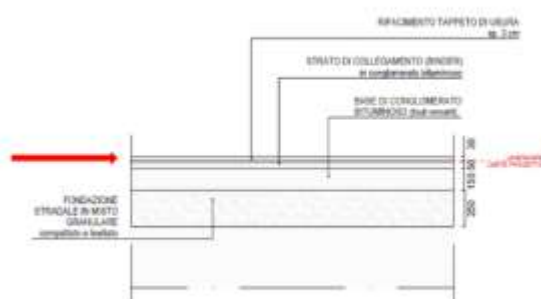
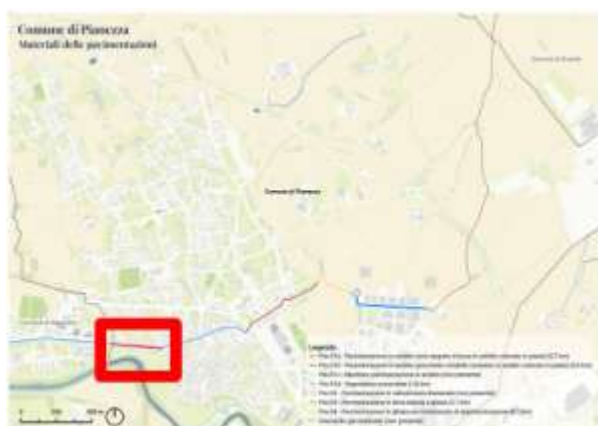
#### **Location 2 – "Piemonta in Bici" in Pianezza, for rubberised paving:**

The cycling track for the rubberised asphalt stretch is located along a section of cycling path that is part of the "Piemonta in Bici" project, in the municipality of Pianezza. o The project involves the construction of the cycling path on an existing pavement (currently a sidewalk). The repaving of this sidewalk with a new wearing course of rubberised asphalt will create a dedicated and separated cycling path.

## Comune di Pianezza



The rubberised asphalt track will be 700 meters long and 1.5 meters wide. The wearing course will be 3 cm thick. The planned works include scarification, application of emulsion (tack coat), and laying of the rubberised asphalt wearing course. The total length of the intervention is 1,000 meters, of which the actual rubberised asphalt paving will be applied to 700 meters. The remaining section will include the installation of bollards and curbs. Estimated cost: €30,000.00 (VAT included).



LOCATION OF 1 KM OF RUBBERISED ASPHALT, RUBBER CURBS, AND BOLLARDS

Rubberised urban furniture, namely UNITS C and D (Rubber Curbs and Bollards), will be installed in the municipality of Pianezza, but not necessarily adjacent to UNIT B: the bollards will be placed at driveway entrances, while the curbs, if needed, will be foreseen in other stretches within the same municipality.

The installation of rubber curbs and bollards offers several benefits:

- Increased safety: they provide a clear physical separation between cyclists and motor vehicles, especially at driveway entrances and critical points;
- Flexibility and durability: rubber is resistant to impacts, does not damage vehicles in case of minor collisions, and requires low maintenance;
- Visibility: rubber bollards are available in bright colours and can be fitted with reflective elements, improving visibility especially at night;
- Sustainability: they are made from recycled rubber (end-of-life tyres), contributing to the circular economy and reducing environmental impact;
- Easy installation: rubber products are lightweight and easy to install, reducing construction time and costs.

Coordinates (Lat / Long) calculated with  
Google My Maps

STARTING POINT: 45.100746, 7.539575

ENDING POINT: 45.100564, 7.544166

LENGHT: 700m

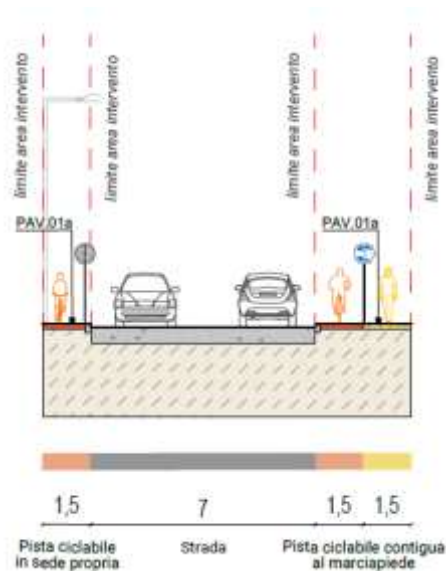


The surrounding area is characterised by a mixed urban and peri-urban context, with residential zones, local roads, and proximity to the Dora Riparia River. The area is frequented by cyclists and residents, making the new cycling infrastructure a strategic addition to the local mobility network.

The main issues identified on the existing surfaces are:

- Discontinuous and deteriorated sidewalks: the current sidewalks are often narrow, in poor condition, and overgrown with vegetation, making them difficult and unsafe for both pedestrians and cyclists.

- Lack of dedicated cycling infrastructure: the area does not currently have a continuous and safe cycle path, which forces cyclists to either share the road with motor vehicles or use inadequate pedestrian walkways.
- Safety concerns and poor maintenance: the surfaces are frequently degraded, with cracks, unevenness, and worn pavement, which increases the risk of accidents and reduces usability, creating dangerous conditions, especially for the most vulnerable users.



The following improvements are needed:

- Construction of a dedicated and separated cycling path: to ensure safety and continuity for cyclists, as planned within the "Piemonta in Bici" project;
- Repaving of existing sidewalks with rubberised asphalt: to create a new, durable, and safe wearing course that improves grip, drainage, and overall pavement quality;
- Regular maintenance of surfaces and vegetation control: to prevent degradation and ensure long-term usability of the cycling infrastructure;
- Integration with the broader cycling network.

### 3.7.3 Co-creation Activities

A series of individual meetings was already organised. Co-creation activities will be intensified during the following phases of the project development and implementation, with task-force meetings, website or newsletters information and/or perhaps organised focus groups or workshops.

### 3.7.4 Implementation Preconditions for Prototyping

#### 3.7.4.1 Location conditions

The pilot is located within the **Metropolitan City of Turin**, involving two municipalities: **Rivalta di Torino** and **Pianezza**, along the regional cycling network "Piemonta in Bici".

- **Unit A (Charging Station)** is located in **Parco Sangone, Rivalta di Torino**, a highly frequented green area with cycling infrastructure and services.



- **Unit B (rubberised Asphalt)** is located in **Pianezza**, where an existing sidewalk will be repurposed into a cycling path using rubberised asphalt.
- **Units C and D (Curbs and Bollards)** are located in **Pianezza**, at driveway entrances and along the same cycling path.

The intervention represents an upgrade of existing infrastructure to improve safety and sustainability, in line with the Metropolitan Strategic Plan.

### 3.7.4.2 Public procurement planning

The procurement process will follow **public tender procedures**, including design, supply, construction, and monitoring. A **single-package tender** is envisaged.

#### Timeline:

- Preparation: months 1–3
- Tendering: months 4–6
- Contracting: months 7–9
- Implementation: months 10–13

The tender will include specific technical requirements for the use of rubberised asphalt and recycled rubber products. Training for local producers can be organised as part of the contractor's obligations, if foreseen in the tender documents. The possibility of blending grant and local budget resources is currently under evaluation.

#### June 2026

PFTE approval by decree planned

#### July 2026

Tender start for PE + DL, with award in October 2026

#### January 2027

Design completion

#### February 2027

PE approval by decree planned

#### February/March 2027

Tender start for construction works (in 4 lots)

#### June 2027

Construction works tender award

#### July 2027

Works handover

#### July 2028

Works completion

#### By end of 2028

Testing/Commissioning



### 3.7.4.3 Relevant Legal Framework for Prototyping

The project will comply with the following regulatory framework:

- **Italian Public Procurement Law** (D.Lgs. 36/2023)
- **Road Safety Standards** (D.Lgs. 285/1992 – Codice della Strada)
- **Urban Planning Regulations** (D.P.R. 380/2001 – Testo Unico Edilizia)
- **Environmental Laws** (D.Lgs. 152/2006 – Codice Ambientale)
- **Cultural Heritage and Landscape Code** (D.Lgs. 42/2004)
- **Electrical System Certification** (D.M. 37/2008)
- **Hydrogeological Constraints** (R.D. 3267/1923)
- **Construction Products Regulation** (EU Regulation 305/2011)
- **Technical Standards for Construction** (NTC 2018)
- **Minimum Environmental Criteria (CAM)** for road construction

Works are classified as maintenance and upgrading of existing infrastructure.

Technical documentation includes:

- **Executive design** (progetto esecutivo)
- **Safety and coordination plans** (PSC – Piano di Sicurezza e Coordinamento)
- **Material specifications** (including recycled content)
- **Structural and electrical system designs**
- **Geotechnical and environmental assessments**

All documents will be prepared by **licensed engineers** and validated by the competent departments of the Metropolitan City of Turin and the municipalities involved. The process will be coordinated by the internal Working Group, with regular monitoring to ensure smooth progress.

### 3.7.4.4 SMILE CITY systemic solutions for prototyping

Unit	Location	Coordinates / Details
A – Charging Station	Parco Sangone, Rivalta di Torino	45.024126, 7.513805
B – Rubberized Asphalt	Pianezza	700 m x 1.5 m
C – Curbs	Pianezza	Other stretches, if needed
D – Bollards	Pianezza	At driveway entrances

In the context of the prototyping phase, the local production of bituminous mixtures containing recycled materials will be carried out through the adaptation of existing asphalt production plants. In compliance with Public Procurement Law No. 36/2023, the contractor will be selected according to the applicable procurement procedure.

The operational methods and the steps required for the local production of rubberised bituminous mixtures will be defined in detail by the contractor.

**No specific local producer has been identified yet.** The selection will take place through the public procurement process.

Use of rubberised asphalt made with recycled materials in compliance with EU standards. Although rubberised asphalt is already available, it has not yet been applied to cycling paths; in this context, the SMILE project could introduce innovative solutions, based on the experience of the **LIFE TyRec4Life+ project**.

In the Italian context, the use of bituminous mixtures, including those containing recycled materials, is regulated by a well-established framework that integrates:

- **Regulation (EU) No 305/2011** (Construction Products Regulation – CPR)
- **Harmonised technical standards** (UNI EN 13108 series)
- **Italian Technical Standards for Construction** (NTC 2018)

These references govern both the performance requirements of materials and the assessment processes, including CE marking, the Declaration of Performance (DoP), and Factory Production Control (FPC).

#### About recycled asphalts:

- **Reclaimed asphalt pavement (RAP)** is already fully standardised and widely adopted, as it is explicitly covered by current technical standards.
- **Rubberised asphalt**, although technically feasible and consistent with circular economy principles and Minimum Environmental Criteria (CAM), is currently regulated mainly through technical specifications and project-level requirements, as it is not yet fully harmonised within the regulatory framework.



In this context, there is significant potential for innovation, particularly for specific applications such as cycling infrastructure, where rubberised asphalt—although already available—has not yet been widely implemented. Projects such as SMILE can help bridge this gap by promoting advanced and standardised technical solutions that improve functional performance (e.g. comfort, durability, and noise reduction) and support a broader uptake of recycled materials in light road infrastructure.

Do you understand your role in installing the charging station? Do you have contact with technical partners, and do you need to adjust the design to specific conditions of your location (e.g. requirements from cultural heritage protection)? Who will be appointed for the montage of the charging station in your city? Does your city need public procurement for this process? Which steps and official confirmations are expected in the montage process?

At present, the issue requires further investigation, and the specific role of the entity in the installation of the charging station has not yet been clearly defined. In particular, several technical and administrative aspects remain open, including the identification of operational partners and the procedures for adapting the project to the specific characteristics of the site.

There are also a number of critical issues related to the regulatory and authorisation framework, including:

- **Certification of electrical systems**, which must comply with the applicable legislation (in particular Ministerial Decree 37/2008, governing the installation and certification of building systems, as well as relevant CEI technical standards);
- **Landscape authorisations**, pursuant to Legislative Decree 42/2004 (Code of Cultural Heritage and Landscape), are required where the installation is located in protected areas;
- **Hydrogeological assessments and clearances**, in accordance with Royal Decree 3267/1923 and relevant regional and basin regulations, where applicable.

In light of these aspects, the identification of the entity responsible for the installation of the charging station, as well as the possible need to initiate public procedures (such as consultations or inter-agency coordination processes), is still to be determined.

It is expected that the installation process will require several authorisation steps and formal approvals, including opinions from competent authorities, technical verifications, and compliance checks, which will be further detailed in the subsequent phases of project development.

### 3.7.4.5 Prototype Construction

The installation is planned on a public area; therefore, the intervention will be subject to a **Conference of Services** (Conferenza di Servizi) in order to obtain opinions and authorisations from the competent authorities.

In this specific case, **no building permits pursuant to D.P.R. 380/2001** are expected to be required, as the intervention does not fall within the scope of works subject to such procedures. Instead, it will be regulated primarily through institutional coordination and the necessary sector-specific authorisations.

In the Italian context, there are formal administrative acts and technical certifications required to ensure that infrastructures such as cycle lanes and charging stations are legally operational and can be used.

However, rather than a single document, the process involves a combination of administrative approvals and technical validations.



**For cycle lanes**, the key document is typically a municipal administrative act (ordinance) that officially establishes the infrastructure, defines traffic regulations, and enables its legal use under the Road Code.

**For charging stations**, operability depends on both administrative and technical steps, including the activation of the service, the use authorisation of the public space, and the Declaration of Conformity of the electrical system in accordance with Ministerial Decree 37/2008.

**The overall process generally includes:**

1. Project design and preliminary assessments (including regulatory and environmental constraints);
2. Conference of Services, where applicable, to collect approvals from relevant authorities;
3. Construction and installation;
4. Technical verifications and certifications (including system compliance);
5. Issuance of final administrative acts (e.g. municipal ordinance or service activation);
6. Formal commissioning and start of operation.

Therefore, operability is ensured through a structured process combining institutional approvals, technical compliance, and final administrative acts.

Activity	Timeline	Status / Notes
1. Location conditions issue	Q4 2026	Urban plan verification ongoing
2. Relevant Law provisions analysis	Q4 2026	Completed – see regulatory summary
3. Technical documentation development	Q1 2027	To be developed by licensed engineers
4. Public procurement planning	Q1 2027	Preparation of tender documents
5. Innovative materials production	Q2 2027	To be defined by contractor
6. Construction Permit issue	Q2 2027	Conference of Services
7. Materials testing and certification	Q2 2027	To be coordinated with contractor
8. Charging station montage	Q2–Q3 2027	Subject to technical and regulatory coordination
9. Construction works	Q2–Q3 2027	Execution of all units
10. Technical review and Use Permit	Q3 2027	Final administrative acts

## 3.8. City of Alba Iulia – Local Report

### 3.8.1 Setting up the Urban Living Lab and stakeholders' engagement

The Municipality of Alba Iulia will coordinate the implementation and testing of the SMILE CITY pilot solutions at local level. The municipality's role includes identifying sites, coordinating permitting processes, involving relevant actors, facilitating co-creation activities, and monitoring results. The proposed pilot aims to set up a bicycle lane on Mărășesti Street using rubberized asphalt with recycled materials and to install three charging stations for electric bicycles with integrated urban furniture.

The process can be coordinated through the existing working structures within the Municipality of Alba Iulia, involving the Technical Department, the Development Department, the Urban Planning Service, the Investment Service and other relevant departments. They ensure the necessary interdepartmental coordination for project planning and implementation.

SMILE CITY project partners, technical experts, urban mobility organizations, universities and local non-governmental organizations will be involved in consultation, co-creation and evaluation of pilot solutions. BICICLIM Alba Association is a sports NGO from Alba Iulia, founded in 2020, which promotes cycling, outdoor movement and the development of the cycling community in Alba County. The main activity of the association is that of a sports club dedicated to cycling. Among his most famous projects are the organization of the Alba Carolina Bike Race competition, included in the calendar of the Romanian Cycling Federation; organizing MTB tours and group outings; promotion of bicycle infrastructure, including maps of the tracks in Alba Iulia; involvement in the development of performance cycling and support of the CSM Unirea Alba Iulia cycling team.

#### 3.8.1.1 Working Framework

##### **Authorities with a direct decision-making role regarding urban planning documents are:**

- Alba Iulia City Hall (Alba Iulia Municipality) – the administrator of the streets in the municipality and the initiator of the project.
- Alba Iulia Local Council – approves the studies, budgets and investment.
- Alba County Council – if the route crosses or uses county roads and for co-financing. The County Council has also financed infrastructure projects with bicycle lanes in the Ciugud-Drâmbar area. It is important to communicate also with Alba County Council because AIM wants to connect Alba Iulia and Ciugud (also the industrial park).
- The City Hall of Ciugud Commune – an essential partner because the bike path of AIM will connect the bike path of the commune.

##### **Technical and Approval Authorities**

State Inspectorate in Constructions

Alba Traffic Police (Local police and national police)– very important for the approval of the route, bike path and markings.

Alba Environmental Protection Agency – if green spaces or protected areas are affected.

Utility network managers (water, gas, electricity, telecommunications).



### **Institutions that can provide expertise**

BICICLIM Alba Association – can provide data on the routes used by cyclists and technical solutions.

Romanian Cycling Federation – recommendations on bicycle infrastructure standards.

Universities or specialists in urban mobility and road safety.

The municipality of Alba Iulia is the owner and administrator of the public domain on which the pilot is proposed to be implemented.

Technical documentation can be developed by authorized designers or specialized companies contracted by the municipality. Their approval is up to the Municipality of Alba Iulia and the competent institutions according to the legislation in force.

Universities and research institutes specializing in civil engineering and materials science can analyze and certify new construction materials tested.

Independent testing organizations are accredited under ISO/IEC 17025. State Inspectorate in Constructions performs regulatory oversight rather than product certification.

Use permits will be issued by the Municipality of Alba Iulia and the competent authorities, depending on the nature of the interventions.

### **3.8.1.2 Mapping the Main Stakeholders**

The main local stakeholders include:

- Alba Iulia Municipality – coordination and implementation of the project.
- Alba Iulia Local Council – approval of investments and necessary measures.
- SMILE CITY project partners – technical support and knowledge transfer.
- Designers and builders – design and execution.
- Citizens in the area of Marasesti Street – direct beneficiaries and group affected by traffic changes.
- Ciugud commune – indirect beneficiary by improving connectivity for cyclists.
- Companies in the Ciugud industrial area – beneficiaries of an alternative mobility for employees.
- Mobility service providers.
- Local cycling and urban mobility organisations.
- State Inspectorate in Constructions
- Alba Traffic Police (Local police and national police)– very important for the approval of the route, bike path and markings.
- Alba Environmental Protection Agency – if green spaces or protected areas are affected.

Additional stakeholders to be engaged are:

- Schools and educational institutions in the area.
- Courier and logistics services.
- Local Economic Agents
- Local Police and Traffic Police.
- Environmental Protection Agency.
- Local media.



<p><b>INVOLVE:</b></p> <ul style="list-style-type: none"> <li>- Internal Department of Alba Iulia City Hall Technical Department, the Development Department, the Urban Planning Service, the Investment Service, International Relations, Partnerships, Urban Innovations.</li> <li>- Alba Iulia Local Council – Alba Iulia Local Council – approves the studies, budgets and investment.</li> <li>- SMILE CITY project partners – technical support and knowledge transfer.</li> <li>- Designers and builders, local or regional providers (tech experts, builders comp) – design and execution.</li> <li>- Local (Municipality Police) and national traffic police</li> <li>- Biciclim (NGO)</li> </ul>	<p><b>Collaborate</b></p> <ul style="list-style-type: none"> <li>-Alba County</li> <li>-The City Hall of Ciugud Commune</li> <li>- Companies in the Ciugud industrial area – beneficiaries of an alternative mobility for employees.</li> <li>- Mobility service providers.</li> <li>- Local cycling and urban mobility organizations.</li> </ul>
<p><b>Inform:</b></p> <ul style="list-style-type: none"> <li>- State Inspectorate in Constructions</li> <li>- Alba Environmental Protection Agency – if green spaces or protected areas are affected.</li> <li>- Local media</li> </ul>	<p><b>Consult:</b></p> <ul style="list-style-type: none"> <li>- Citizens in the area of Mărășești Street – direct beneficiaries and group affected by traffic changes.</li> <li>- Local Small economic agents (from the area)</li> </ul>

### 3.8.2 Analysis for sites selection

The site selection process for the SMILE CITY project in Alba Iulia was carried out for four, instead of three pilot location, since SMILE CITY systemic solutions A and B will be territorially separated. These locations have been selected following an assessment of cyclist flows, tourist activity, accessibility, visibility, connectivity with existing cycling infrastructure and proximity to important public facilities. Together, the three locations for e-charging stations will cover the main categories of users targeted by the pilot project: tourists, recreational cyclists, commuters, students and



residents.

The proposed charging station locations benefit from the presence of several cycling-related facilities already developed by the Municipality of Alba Iulia.

These include:

- Existing dedicated cycling lanes connecting different areas of the city.
- Shared pedestrian and cycling routes within the Vauban Citadel.
- Bicycle parking facilities near public institutions and tourist attractions.
- Recreational cycling routes serving parks and leisure areas.
- Connections to urban cycling corridors linking residential neighbourhoods with the city centre.
- Signposted cycling routes frequently used by both residents and tourists.
- Bicycle-friendly public spaces developed under previous urban regeneration projects.

The charging stations are therefore integrated within an existing cycling ecosystem rather than functioning as isolated infrastructure elements.

The selected sites are distributed across areas with different urban functions, allowing the project to test the charging stations under diverse operating conditions and user profiles.

All proposed locations are situated on public land owned and administered by the Municipality of Alba Iulia and are covered by the existing urban planning framework, including the General Urban Plan (PUG), the Sustainable Urban Mobility Plan (SUMP) and the Integrated Urban Development Strategy.

#### **For e-Charging Station:**

- 1. Location 1: the area adjacent to Alba Iulia City Hall,**
- 2. Location 2: the Dendrological Park,**
- 3. Location 3: the central area of the Vauban Citadel, in front of the Prince's Palace.**

#### **For rubberized paving:**

- 4. Location 4: Mărășești street.**

#### **Location 1 – the area adjacent to Alba Iulia City Hall, for - charging station:**

The first charging station is proposed near Alba Iulia City Hall, located in a central administrative and service area of the city. This location attracts a constant flow of residents and visitors accessing municipal services and nearby businesses. The area is characterized by a mix of administrative, commercial and educational functions, generating daily travel demand. Due to its central position, the location serves both local commuters and visitors travelling between different parts of the city. The charging station would contribute to promoting sustainable urban mobility among residents and employees working in the city centre.

Near Alba Iulia City Hall there are numerous public facilities:

- Municipal administrative services.
- Educational institutions.
- Commercial areas.
- Financial services ( a lot of Banks).
- Public transport stops.
- Public parking areas.
- Civic and community facilities.

The diversity of nearby services ensures a broad user base for the charging stations.



### **Urban Development Phase**

The area is fully developed and operational. Current municipal investments focus on modernization, sustainable mobility improvements and public service accessibility.

### **Urban Planning and Regulatory Conditions**

The site is situated within an administrative and public services zone regulated by the General Urban Plan. The installation of an e-bike charging station is compatible with the area's urban function and mobility objectives.

### **Preparatory Works Required**

- Confirmation of exact installation point.
- Electrical infrastructure assessment.
- Public procurement to find a company to install the modules

SMILE CITY PILOT | ALBA IULIA

# PROPOSED E-BIKE CHARGING STATION

## ALBA IULIA CITY HALL

CIVIC SERVICES + DAILY MOBILITY



LOCATION A



CITY CONTEXT

DASHED CIRCLE = SELECTED SITE AREA

ZOOMED SITE DETAIL

SITE DETAIL

CITY HALL ENTRANCE AREA



The green marker identifies the proposed installation point.



### WHY THIS LOCATION

A strategic charging point at the city's main administrative hub. It encourages municipal employees and residents to travel by bicycle and allows e-bike users to recharge while collecting documents, paying local taxes or accessing other public services.

SITE VALUE

Sustainable access to local administration

MUNICIPAL STAFF RESIDENTS PUBLIC SERVICES

The dashed green circle in the overview identifies the area enlarged in the detailed view.

PROPOSED CHARGING STATION LOCATION

ALBA IULIA MUNICIPALITY | SMILE CITY PILOT

## **Location 2 – the Dendrological Park, for e-charging station::**

The second charging station is planned within or adjacent to the Dendrological Park, one of the most important green and recreational areas in Alba Iulia. The park is frequently used by local residents, tourists, sports enthusiasts and families for leisure activities.

The area offers a pleasant natural environment and attracts visitors throughout the day, particularly during weekends and the warm season. Cyclists frequently use the park as a destination or transit point due to its attractive landscape and safe environment. Installing a charging station in this area would support recreational cycling and longer bicycle trips while providing additional services for users of electric bicycles.

Near the Dendrological Park there are various recreational, leisure and sports amenities:

- Green and recreational areas.
- Walking and jogging routes.
- Outdoor leisure facilities.
- Sports and recreational infrastructure.
- Educational facilities.
- Family-oriented public spaces.

### **Urban Development Phase**

The park is fully operational and functions as an established recreational and environmental area. The intervention represents an enhancement of existing visitor facilities rather than a new urban development.

### **Urban Planning and Regulatory Conditions**

According to the General Urban Plan, the site is classified as a public green space and recreational area. The proposed intervention is compatible with the intended use of the site and supports sustainable mobility and environmentally friendly recreational activities.


### **Preparatory Works Required**

- Site verification and positioning assessment.
- Utility connection assessment.
- Environmental compatibility review.
- Technical design preparation.
- Installation planning.

SMILE CITY PILOT | ALBA IULIA

## PROPOSED E-BIKE CHARGING STATION


DENDROLOGICAL PARK / MAMUT FOREST  
RECREATION + ADVENTURE CYCLING



LOCATION B

CITY CONTEXT

DASHED CIRCLE = SELECTED SITE AREA




ZOOMED SITE DETAIL


↓

SITE DETAIL

MAMUT FOREST TRAIL GATEWAY



The green marker identifies the proposed installation point.

 **WHY THIS LOCATION**

Located next to the city's largest dendrological park and directly connected to the existing cycling route through Mamut Forest. The station serves frequent park visitors, leisure cyclists and riders using the popular forest adventure route.

**CITY VALUE**  
Gateway to the existing Mamut Forest cycling route

PARK VISITORS
LEISURE CYCLISTS
ADVENTURE RIDERS

The dashed green circle in the overview identifies the area enlarged in the detailed view.

➤ PROPOSED CHARGING STATION LOCATION

ALBA IULIA MUNICIPALITY | SMILE CITY PILOT

### Location 3 - the central area of the Vauban Citadel, in front of the Prince's Palace.

The third charging station is proposed in front of the Prince's Palace, one of the most representative landmarks located within the Vauban Citadel of Alba Iulia. The Citadel is the city's main tourist attraction and receives a very large number of visitors throughout the year. The area hosts cultural events, historical reenactments, festivals, educational activities and guided tours, generating continuous pedestrian and cycling traffic. The urban environment is characterized by high-quality public spaces, heritage buildings, pedestrian areas, tourist services, museums and recreational



facilities. The location is highly visible and easily accessible from several cycling routes crossing the Citadel.

The installation of a charging station in this location would support sustainable tourism and encourage visitors to use electric bicycles as a convenient and environmentally friendly means of transport while exploring the city.

Near the Prince's Palace there are numerous public facilities and services:

- Museums and exhibition spaces. (Princely Palace, Principia, National Museum, Ikon museum, Union Hall)
- Historical monuments. the oldest roman catholique cathedral in Romania, Orthodox Cathedral,
- Tourist information centres.
- Cultural institutions.
- Administrative institution – County Council building
- Restaurants and hospitality services.
- Event and festival venues.
- Public squares Main piazzeta (main square of the citadel).
- Educational and cultural facilities University.

The proposed location is already fully urbanized and equipped with public infrastructure, lighting, utilities and urban furniture. No major construction works or land-use modifications are required.

### **Urban Development Phase**

The area has undergone extensive regeneration through several European-funded urban development projects and is currently in a mature operational phase focused on improving visitor services, sustainable tourism and smart mobility solutions.

### **Urban Planning and Regulatory Conditions**

The location is situated within a protected historical area governed by the General Urban Plan and heritage protection regulations. The proposed charging station must comply with:

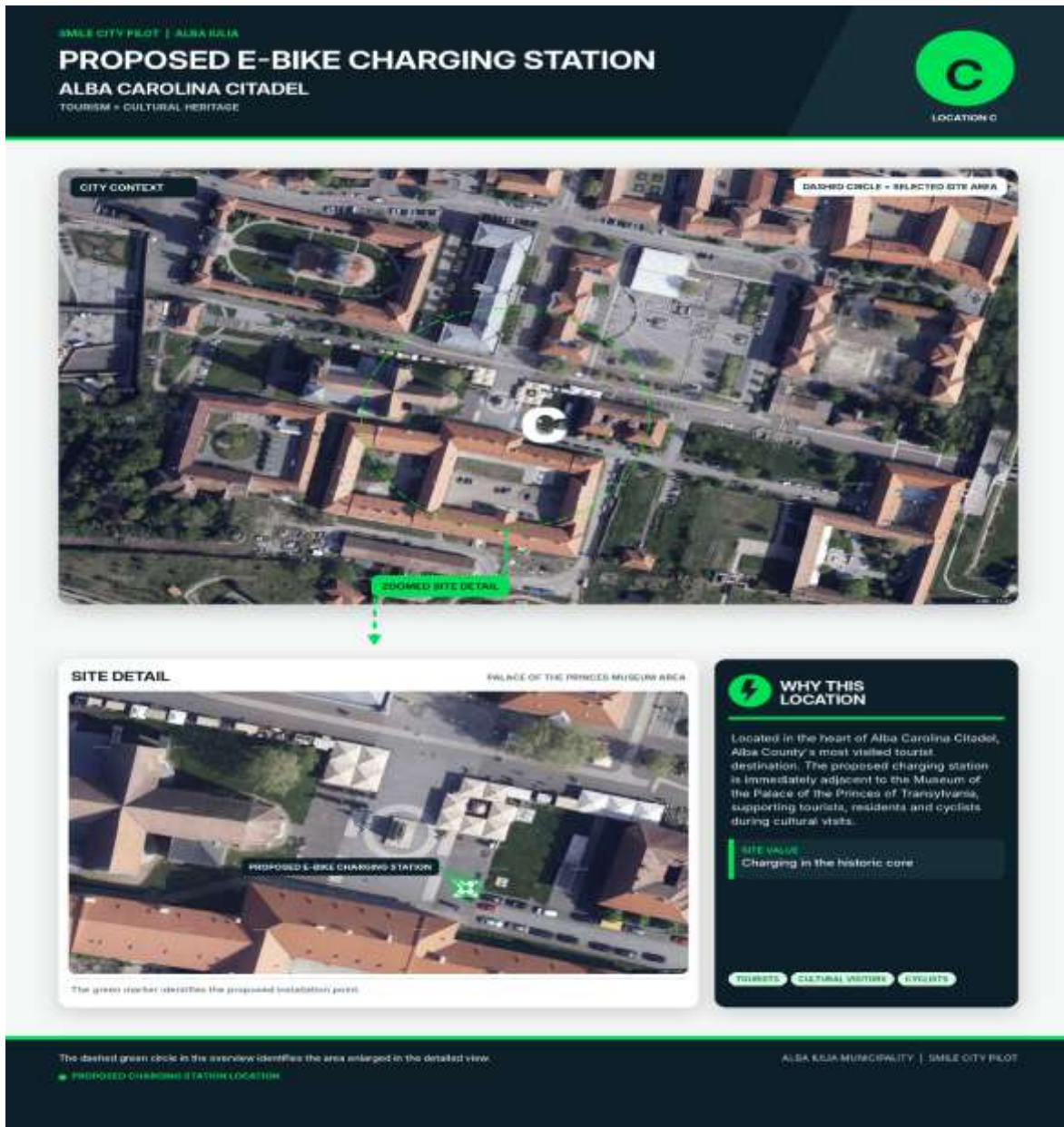
- heritage protection requirements;
- public space design regulations;
- accessibility standards;
- urban furniture integration principles.

The Municipality of Alba Iulia and the relevant cultural heritage authorities will provide the necessary planning guidance and approvals.

### **Preparatory Works Required**

- Detailed site survey.
- Verification of electrical connection capacity.
- Heritage compatibility assessment.
- Preparation of technical design documentation.

- Public procurement to find a company to install the modules.



The selected locations are well connected to the public transport network of Alba Iulia. Users can access:

- Local bus routes serving the city centre and surrounding neighbourhoods.
- Bus stops located within walking distance of the proposed charging stations.
- Taxi services.
- Ride-sharing and mobility services where available.
- Pedestrian corridors connecting major destinations.
- Connections to regional transportation services.



Several factors contributed to the selection of these locations:

**High user potential**

All three sites experience significant daily flows of cyclists, pedestrians and visitors.

**Strategic visibility**

The locations are highly visible and can increase awareness of sustainable mobility initiatives implemented under the project.

**Connectivity**

The selected areas are connected to existing and planned cycling routes, ensuring practical usefulness for cyclists.

**Tourism promotion**

The Citadel and Dendrological Park attract a substantial number of tourists who increasingly use bicycles and e-bikes during their visits.

**Support for sustainable mobility**

The locations contribute to encouraging a shift from private motorized transport towards cleaner transport modes.

**Demonstrational value**

Because of their visibility and importance within the city, the selected sites can effectively showcase innovative mobility solutions to residents, visitors and stakeholders.

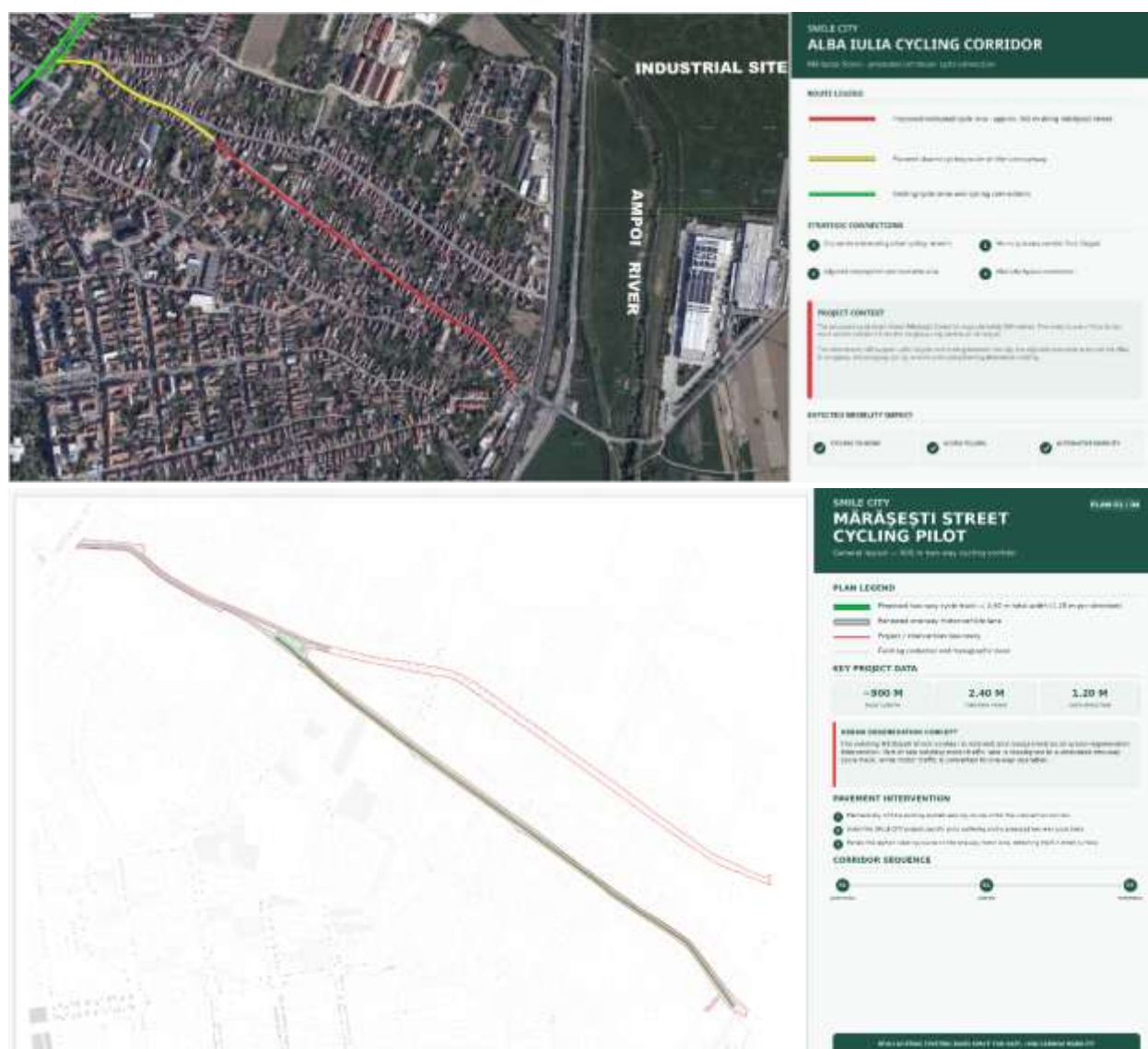
Expected users include:

- Residents commuting by bicycle.
- Users of electric bicycles.
- Tourists visiting the Vauban Citadel.
- Recreational cyclists.
- Students.
- Public administration employees.
- Visitors to municipal facilities.
- Participants in cultural and sporting events.
- Families using cycling infrastructure during leisure activities.

The stations are expected to serve a highly diverse user group, reflecting the multifunctional nature of the selected locations.

**Location 4 - Mărășești street, for rubberized paving:**

The Municipality of Alba Iulia has identified the cycling lane located on the one-way street. Mărășești street, connecting streets and main routes but also connecting Alba Iulia and Ciugud and Industrial park zone as the proposed location for the implementation of rubberized asphalt. This route forms part of the urban cycling network and serves both daily mobility and recreational cycling activities. The corridor has been selected due to its visibility, accessibility and relevance within the city's cycling infrastructure.



The selected corridor is located within a developed urban area characterized by:

- Residential buildings.
- Commercial activities.
- Public institutions.
- Daily commuting flows.
- Mixed traffic conditions.
- Pedestrian activity.
- Connections to central city areas.

The corridor experiences regular bicycle use and represents an important link within the local cycling network. The surrounding environment makes it an ideal location for evaluating the performance of innovative pavement materials under realistic urban conditions.

The intervention includes:

- rubberized asphalt pavement sections;



- rubber curbs for cyclist protection;
- rubber bollards for improved visibility and traffic separation.

### Urban Development Phase

The corridor is an existing and operational mobility infrastructure corridor. The proposed intervention represents a modernization and rehabilitation measure intended to improve safety, comfort and sustainability.

### Urban Planning and Regulatory Conditions

The corridor is included within the transport infrastructure network covered by the General Urban Plan and Sustainable Urban Mobility Plan.

The proposed interventions are fully compatible with the designated transport function and support municipal objectives regarding:

- cycling infrastructure development;
- road safety improvement;
- sustainable mobility;
- climate adaptation and environmental sustainability.

## 3.8.3 Co-creation Activities

A series of individual meetings were already organized. Co-creation activities will be intensified during the following phases of the project development and implementation, with task-force meetings, website or newsletters information and/or perhaps organized focus groups or workshops.

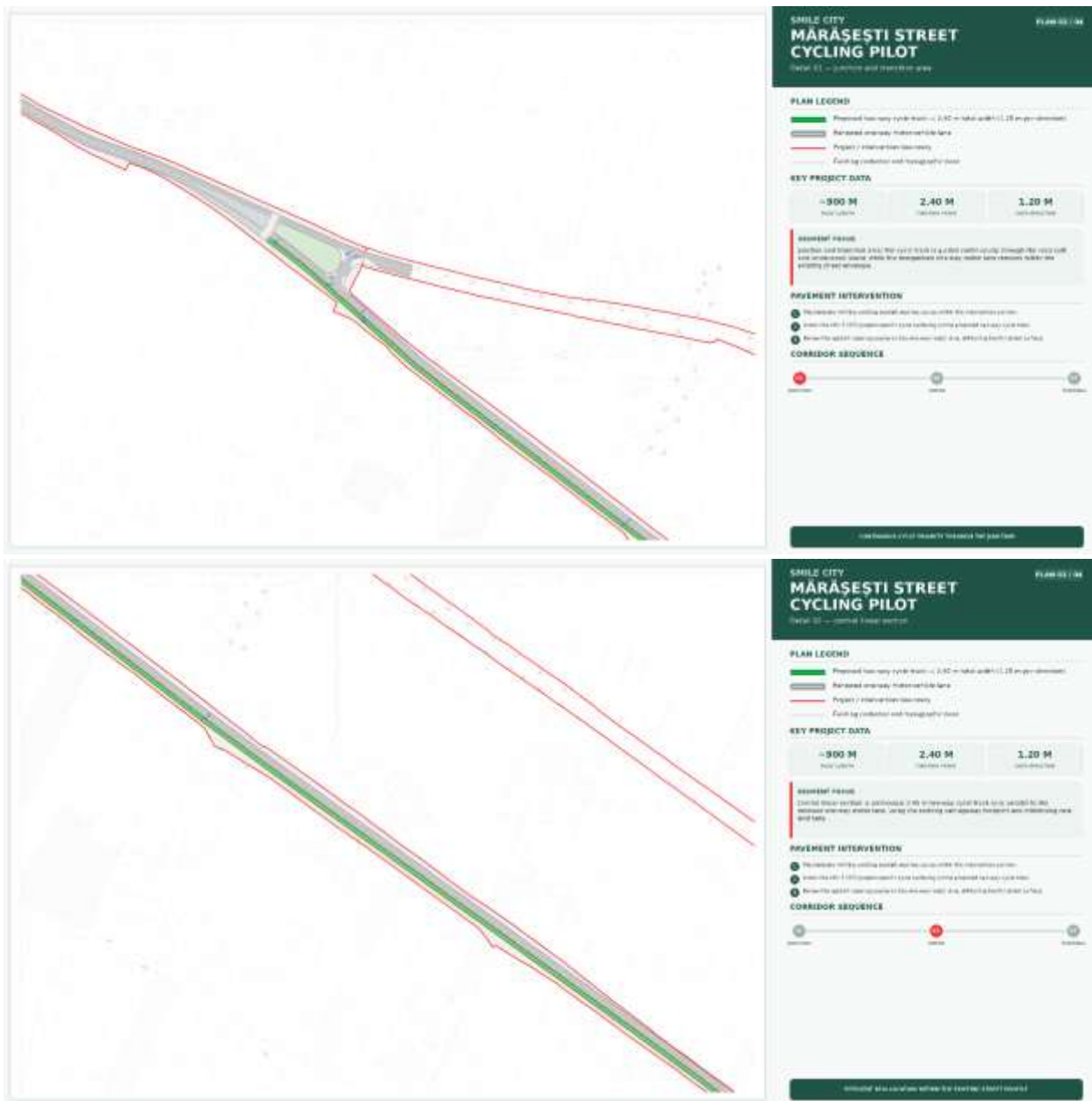
## 3.8.4 Implementation Preconditions for Prototyping

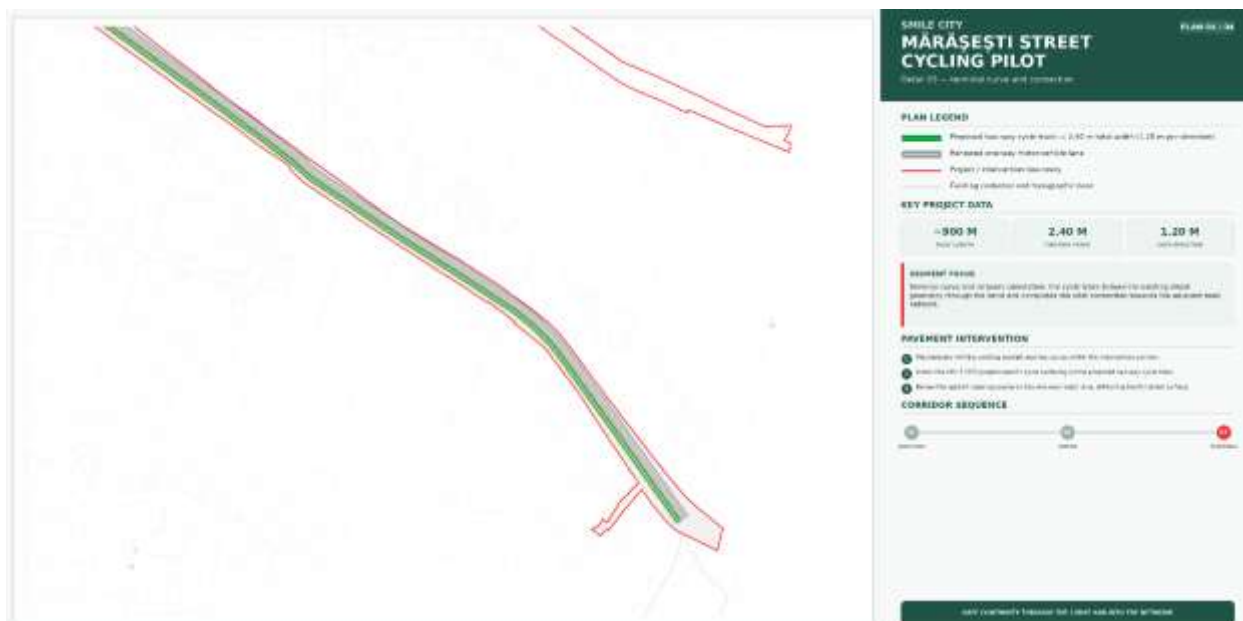
### 3.8.4.1 Location conditions

The intervention is planned as a rehabilitation and modernization measure applied to existing road infrastructure.

The project will involve the replacement or resurfacing of selected pavement sections using rubberized asphalt mixtures incorporating recycled rubber materials. This approach will allow a direct comparison between conventional pavement and innovative rubberized asphalt under real operating conditions.

The total length of the cycling corridor between Piața Alessandria and Mihai Viteazul Street is approximately 900m, and the width of both directions is 2.4m. The exact length and surface of the rubberized asphalt pilot section will be determined during the detailed design phase, depending on technical requirements, budget availability and monitoring objectives.





The intervention aims to:

- Improve pavement smoothness.
- Increase cyclist comfort.
- Enhance durability.
- Improve skid resistance.
- Reduce maintenance needs.
- Increase resistance to temperature fluctuations.
- Improve overall service quality.

Additionally, the pilot will provide valuable information regarding the suitability of rubberized asphalt for future cycling infrastructure projects in Alba Iulia.

The curbs and bollards will be installed along the cycling corridor between Piața Alessandria and Mihai Viteazul Street, directly associated with the rubberized paving cycling infrastructure, particularly in sections where additional protection and separation between cyclists and motorized traffic are necessary. Priority will be given to conflict points such as intersections, access points and areas with increased traffic exposure.

The installation aims to achieve:

- Increased cyclist safety.
- Better lane segregation.
- Enhanced visibility of cycling infrastructure.
- Prevention of vehicle encroachment.
- Improved user confidence.
- Traffic calming effects.
- Reduced collision risks.



- Greater flexibility compared with rigid concrete elements.
- Lower injury severity in case of accidental impacts.

The use of recycled rubber also supports environmental sustainability objectives.

### 3.8.4.2 Public procurement planning

The municipality will identify suitable suppliers through market analysis and procurement procedures.

Priority will be given to suppliers capable of:

- Delivering certified products.
- Demonstrating experience with rubberized asphalt technologies.
- Providing materials incorporating recycled rubber.
- Technical support during installation and monitoring.
- Complying with European and national technical standards.
- 

There are options of local, regional or national producers of rubberized asphalt but it is impossible to know the final producer and contractor before the public procurement.

### 3.8.4.3 Relevant Legal Framework for Prototyping

The implementation of the SMILE City pilot in Alba Iulia (three e-bike charging stations and one cycling corridor with rubberized asphalt, rubber curbs and rubber bollards) must comply with the following key legislation:

Legislation	Relevance for the Pilot
<b>Law No. 50/1991 on Construction Works Authorization</b>	Regulates the need for building permits, technical documentation and approvals.
<b>Law No. 350/2001 on Spatial Planning and Urbanism</b>	Ensures compliance with the General Urban Plan (PUG) and land-use regulations.
<b>Government Ordinance No. 43/1997 on Roads</b>	Applies to interventions on public roads and cycling infrastructure.
<b>Government Emergency Ordinance No. 195/2002 on Road Traffic</b>	Regulates cyclist safety, road markings, lane separation and traffic management.
<b>Law No. 10/1995 on Construction Quality</b>	Establishes quality standards for design, materials and execution of works.
<b>Law No. 98/2016 on Public Procurement</b>	Governs procurement of design services, equipment and construction works.
<b>Law No. 422/2001 on Protection of Historical Monuments</b>	Applicable to the charging station proposed in the Alba Carolina Citadel area.
<b>Environmental and Green Space Regulations</b>	Relevant for the charging station located in the Dendrological Park.
<b>Local Regulations on Public Domain Administration</b>	Apply to all four locations situated on municipal public land.

### Competent Authorities

- Municipality of Alba Iulia;
- Chief Architect Department;
- Technical Services Department;
- Utility Operators;
- Alba County Directorate for Culture (for the Citadel location, if required);
- Road and Traffic Authorities.

### Conclusion

No major legal barriers have been identified. The proposed pilot interventions are compatible with the current urban planning framework and can be implemented following the standard procedures for design, approvals, procurement and construction works applicable to municipal infrastructure projects.

### 3.8.4.4 SMILE CITY systemic solutions for prototyping



For the implementation of the SMILE City pilot locations in Alba Iulia, technical documentation will be prepared in accordance with Romanian legislation and municipal procedures. At present, the pilot locations have been identified, while the detailed technical documentation will be developed during the implementation phase.

### Required Technical Documentation For E-bike Charging Stations



(Prince's Palace Area, Dendrological Park, City Hall Area)

The documentation will typically include:

- Site layout plan and location drawings;
- Topographic survey (if required);
- Electrical connection design;
- Utility approvals, where applicable;
- Technical report and implementation details.

### **For the Cycling Corridor**

(Mărășești Street)

The documentation will include:

- Existing conditions survey;
- Site layout and intervention plans;
- Rubberized asphalt technical specifications;
- Design and positioning of rubber curbs and bollards;
- Traffic management and road safety measures;
- Bill of quantities;
- Technical specifications and implementation details.

### **Current Status**

The pilot locations have been selected and preliminarily assessed. Detailed technical documentation has **not yet been finalized**.

### **Licensed Engineer Requirements**

Yes. Depending on the final scope of works, the technical documentation will be prepared and signed by **authorized designers and licensed engineers**, in accordance with Romanian regulations. Where required, the documentation will also be verified by certified technical verifiers.

### **Ensuring a Smooth Approval Process**

The Municipality of Alba Iulia will facilitate the process through:

- coordination between municipal departments;
- timely preparation of technical documentation;
- consultation with utility operators and relevant authorities;
- early identification of heritage or environmental requirements;
- integration of procurement and permitting activities within the project timetable.

The preparation of technical documentation is considered a standard procedure and no significant technical barriers are anticipated. The Municipality of Alba Iulia has the institutional capacity and experience to coordinate the design, approval and implementation process for all four pilot locations within the SMILE City project timeframe.

### **3.8.4.5 Prototype Construction**

Rubberized asphalt is already available on the European market and has been used in several road and cycling infrastructure projects. Therefore, the SMILE City pilot does not necessarily require the development of entirely new material.

Innovation does not consist only of the material itself, but of:

- testing recycled-rubber solutions in a real urban cycling environment;



- demonstrating their applicability for cycling infrastructure in Alba Iulia;
- evaluating technical performance, durability and maintenance requirements;
- promoting circular economy principles through the reuse of end-of-life tyres;
- testing an integrated package of solutions (rubberized asphalt, rubber curbs and rubber bollards);
- generating technical evidence for future municipal investments and procurement procedures.

For Alba Iulia, the innovation is therefore the **pilot implementation, monitoring and validation of recycled-rubber solutions within the local cycling network**, rather than the invention of a completely new product.

Any rubberized asphalt product proposed for use should comply with Romanian and European regulations applicable to construction products and road materials.

Typical documentation may include:

- Declaration of Performance (DoP);
- CE Marking, where applicable;
- Technical Data Sheets;
- Product Quality Certificates;
- Test Reports;
- Environmental and Safety Documentation;
- Manufacturer's Technical Specifications.

For innovative products not covered by harmonized standards, additional technical approvals may be required.

The use of construction materials in Romania is governed by:

- Regulation (EU) No. 305/2011 on Construction Products (CPR);
- Law No. 10/1995 on Construction Quality;
- National technical standards and road construction specifications;
- Romanian and European standards applicable to asphalt mixtures and road materials.

The proposed material must demonstrate compliance with the technical requirements regarding:

- mechanical performance;
- durability;
- safety;
- environmental performance;
- suitability for the intended use.

### **Applicability to the SMILE City Pilot**

For the pilot section located on the cycling corridor Mărășești Street, the selected rubberized asphalt solution should be accompanied by all relevant technical certificates and product documentation required by Romanian legislation and municipal procurement procedures.

The same principle applies to the rubber curbs and rubber bollards, which should be supplied with technical specifications, quality certificates and evidence of recycled-rubber content where applicable.

For the SMILE City pilot interventions, the main document required before initiating works is the **Urban Planning Certificate (Certificat de Urbanism)**, which establishes the legal, technical and



planning conditions applicable to the site and clarifies whether a **Building Permit (Autorizație de Construire)** is required.

Depending on the final technical solution and the nature of the intervention, the municipality may implement certain works based on maintenance or modernization procedures within the public domain. However, this determination will be made during the preparation of the technical documentation. For the charging station located in the Alba Carolina Citadel, additional approvals related to cultural heritage protection may be required.

### **Applicability to the SMILE City Pilot**

#### **Charging Stations**

(Prince's Palace Area, Dendrological Park, City Hall Area)

Depending on the final design, the installation may require:

- Urban Planning Certificate;
- utility connection approvals;
- Building Permit (if applicable);
- heritage approval for the Citadel location.

#### **Rubberized Asphalt, Rubber Curbs and Rubber Bollards in Mărășești Street**

As these interventions are implemented within existing public road, they may be possible treated as rehabilitation, modernization or maintenance works. The exact permitting requirements will be determined during the technical design phase and in consultation with the competent municipal authorities.

## **3.9 City of Veszprem – Location Selection**

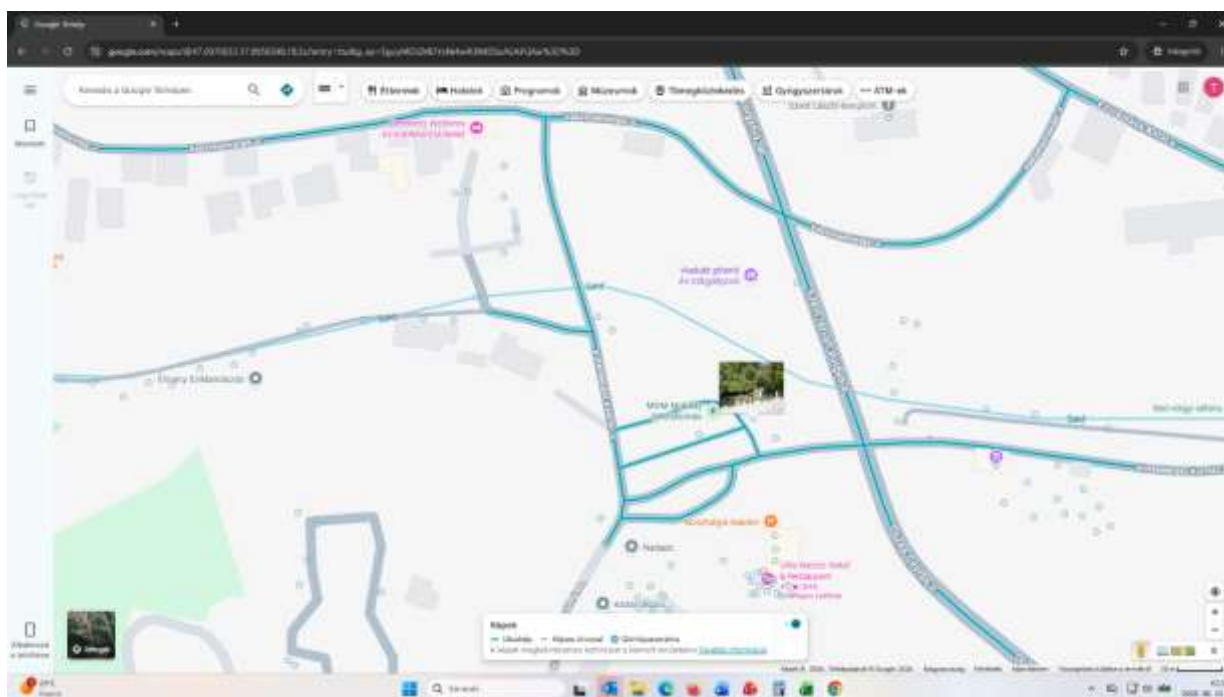
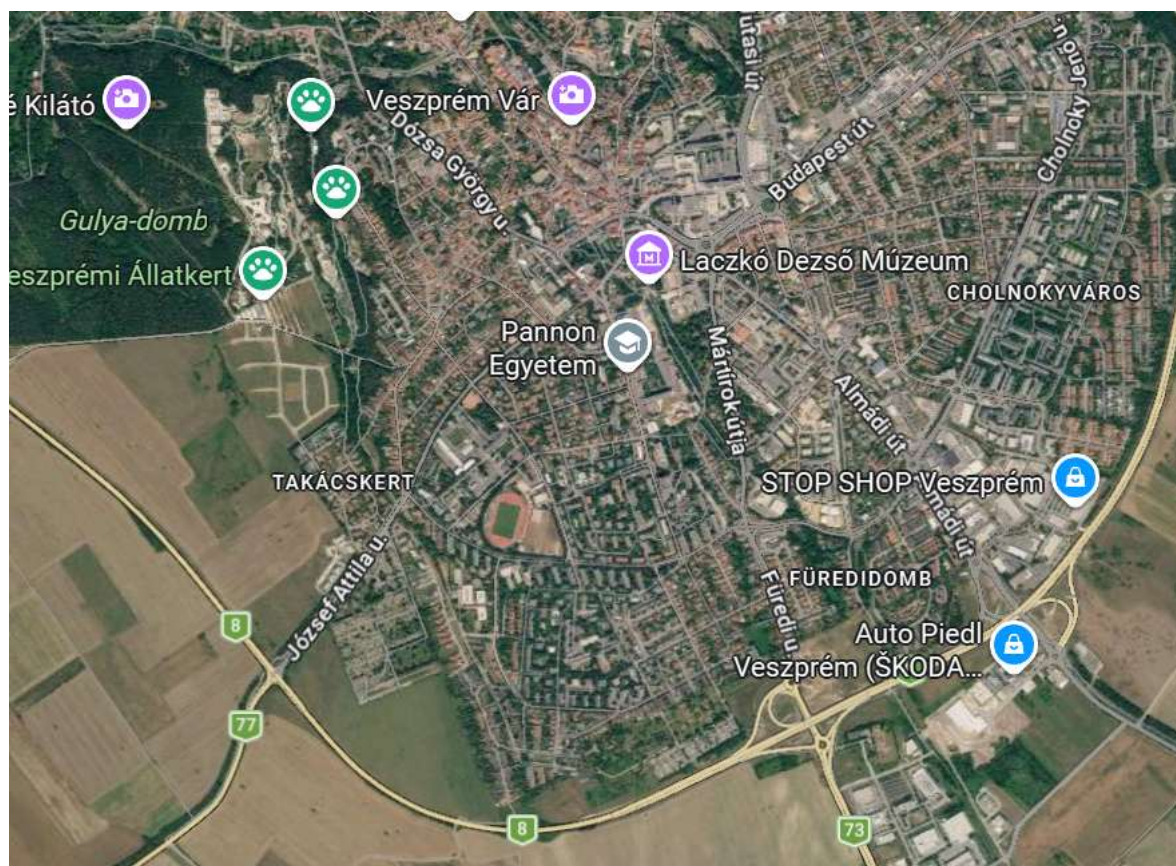
The site selection process for the SMILE CITY project in Veszprem was carried out for two, instead of one pilot location, since SMILE CITY systemic solutions A and B will be territorially separated:

**Location 1: Public Zoo Entrance, for e-Charging Station**

**Location 2: Balatonalmádi cycling lane, for Rubberised paving**

**Location 1 – Public Zoo Entrance, for e-Charging Station:**

The new e-Charging Station is planned at the parking area of the local Zoo in Veszprem. There can be found the local e-bike, called the v-bike and the docking station. It can be placed in front of the entrance of the Zoo. It's in a valley, near two hotels.



There is a stop of the local sightseeing train, and there is a bus stop 200 m away. In the vicinity, there is a walkway along the Séd Creek, a park, and sports infrastructure. The target group are

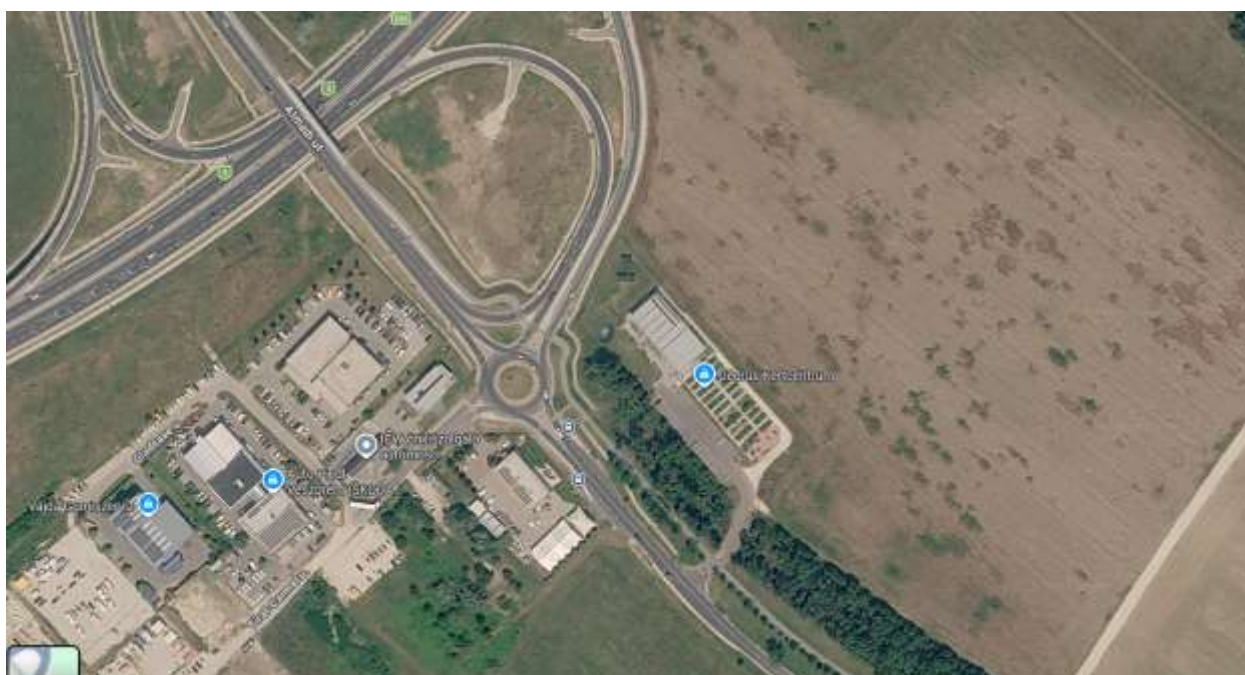
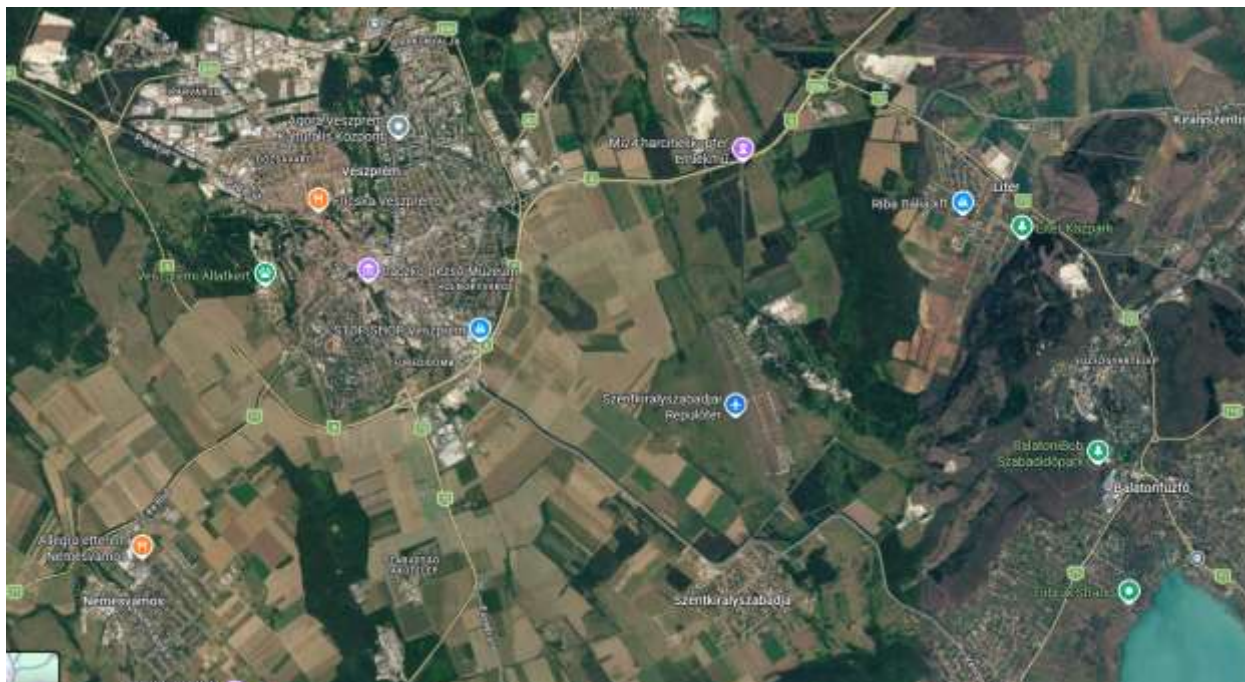
mainly the tourists visiting Veszprem.



### Location 2 – Balatonalmádi cycling lane, for Rubberised paving:

The already existing cycling path going to the south to Lake Balaton is selected for Rubberised paving. It connects Veszprém and Balaton Lake, but in the vicinity, there is also a newly developed south trade centre. It is the first cycling path built in Veszprem, and the surface is damaged and

fragmented. The roots of the trees pushed up and damaged the asphalt, and total re-paving is needed.





There is technical documentation for the current cycle path; the transport authority has approved it. The City Administration will select a designer for the planned re-paving.





### Technical Criteria

For Location 1 – Public Zoo Entrance, for the e-Charging Station, the timeline for all needed procedures and permits for implementing the pilot in these locations is 6-8 months from the date of receipt of plans.

For Location 2 – Balatonalmádi cycling lane, for Rubberised paving, the timeline for all needed procedures and permits is 30 days from the date of receipt of the technical documentation. Re-paving can be done without permission. The operator of the existing cycle path is the Hungarian Public Road Ltd., and only the operator's consent is needed.

### Operational Criteria

For both locations, the municipality will carry out the investment, and the contractor will be selected through a public procurement procedure.

For Location 1 – Public Zoo Entrance, the e-Charging Station has a preliminary study. The planning dynamics are a little risky; it may take more than 24 months to develop a plan, issue a permission, launch a tender, and complete the construction.

For Location 2 – Balatonalmádi cycling lane, rubberised paving: the tendering procedure will be required to prepare the technical documentation. If the City receives the technical specifications of the technologies to be used, works can be completed within 24 months.

### Financial Criteria

The mayor's office is responsible for the technical implementation of pilot projects.

For Location 1 – Public Zoo Entrance, for the e-Charging Station, no own financial resources are planned, and the site location is maintained by the Municipality of Veszprem City.

For Location 2 – Balatonalmádi cycling lane, for Rubberised paving, the Municipality has adequate own financial resources. That site location is maintained by the Hungarian Public Road Ltd.

### Socio-political Criteria

For the e-Charging Station, taking away a lane from the cars can provoke resistance.

#### Overall assessment

Criteria for site selection:	Location 1	Location 2
Legal	Barriers exist, but there is a strategy for overcoming them	Pathway for implementation is clear and achievable within the SMILE City timeline
Technical	Barriers exist, but there is a strategy for overcoming them	Pathway for implementation is clear and achievable within the SMILE City timeline
Operational	Barriers exist, but there is a strategy for overcoming them	Pathway for implementation is clear and achievable within the SMILE City timeline



Financial	High-risk for implementation	Pathway for implementation is clear and achievable within the SMILE City timeline
Socio-political	Barriers exist, but there is a strategy for overcoming them	Pathway for implementation is clear and achievable within the SMILE City timeline

## 3.10 City of Varna – Location Selection

The City of Varna selected the two pilot sites for SMILE CITY systemic solutions:

**Location 1: Varna Municipality, for e-Charging Station and rubberised paving,  
Location 2: Medical University Campus, for e-Charging Station.**

### **Location 1 – Varna Municipality, for e-Charging Station and rubberised paving:**

This proposed location is situated in the immediate vicinity of the Municipality of Varna and represents a highly strategic and symbolic urban space. Its central position, intensive daily use, and strong visibility make it particularly suitable for piloting sustainable mobility measures. The location enables direct engagement with citizens and serves as a demonstrative example of the Municipality's commitment to sustainable urban development.



It will be an upgrade of the existing cycling route, the oldest cycling path in Varna, constructed at the beginning of 2000s, and not renovated up to date. It will be approximately 800 meters long, on a strategic central location. The repaved lane will start at Ilko Eshkenazi Square/ bul. Slivnitsa, along Slivnitsa Boulevard, passing Varna Municipality, and ending at Bratya Miladinovi Street.

This innovation aligns with the Investment plans of the Municipality of Varna, it will be connected with the new cycling lane planned along Bratya Miladinovi Street in 2026, and it will ensure continuity and future upgrade of cycling infrastructure.

The cycling lane is located on municipal property, and no building permit is required for the proposed pilot intervention. At the time of construction of the existing cycling lane, all applicable Bulgarian legislation and regulatory requirements were fully complied with. The planned pilot action focuses on improving and upgrading existing infrastructure within the established legal and urban planning framework.

Current condition of the cycling route is bad, there is a need for improvement due to pavement deformation from tree roots, the lane is slippery and unsafe, thus the Pilot responds to long-standing user concerns.

This lane is the only cycling lane in Varna with a width of 1.5 meters. Other EU-funded cycling lanes are one-directional, while the typical width of other lanes is only 0.4 meters. The current condition of cycling infrastructure at a major urban intersections illustrate the absence of clear separation between cyclists and pedestrians, combined with limited width and suboptimal surface conditions, poses safety risks and reduces the overall quality of the urban environment. These challenges highlight the necessity for targeted pilot interventions aimed at improving functionality, safety, and user experience within the SMILE CITY project.



The main challenge for the City of Varna is Limited experience with the proposed surface material, because it was not previously used in Bulgaria. Thus, SMILE CITY Pilot provides valuable testing and learning opportunities.



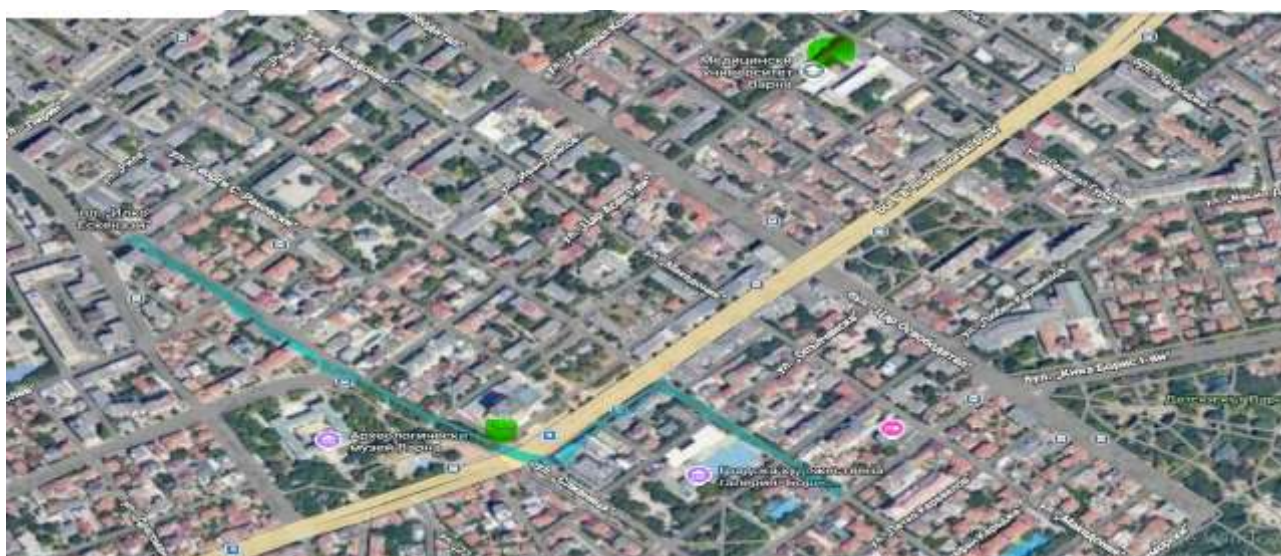
The extract map from the official municipal planning document of the Municipality of Varna, illustrates the long-term vision for the development of the cycling and pedestrian network in the city. It includes both existing cycling routes and planned future corridors. The SMILE CITY pilot cycling intervention is fully aligned with this strategic framework and contributes to the gradual implementation of the city's sustainable urban mobility objectives.

In addition, in the Square in front of the Municipality building, at the most central and a highly strategic and symbolic location, it will be the Pilot Site for the e-bikes charging station, next to the existing e-bike station. Its central position, intensive daily use, and strong visibility make it particularly suitable for piloting sustainable mobility measures. The location enables direct engagement with citizens and serves as a demonstrative example of the Municipality's commitment to sustainable urban development.



## **Location 2: Medical University Campus, for e-Charging Station.**

The second Pilot Site for the e- bikes charging station will be in the Medical University Campus. It is located in a densely built urban area, characterised by high daily mobility demand and limited opportunities for private car use. A significant share of students and staff rely on bicycles for commuting. The presence of existing bicycle parking infrastructure, combined with controlled access, on-site security, and video surveillance, ensures both functional suitability and operational safety for a pilot intervention.



*Overview map showing the pilot cycling lane and the proposed locations for bicycle charging stations. The map illustrates spatial coherence between the pilot intervention and key urban destinations.*

## 4. Pilot Sites Summaries

Most of the Pilot Sites are technically mature enough to be presented in the format of a Table shared in the Urban Living Lab Local Roadmap Template.

### City of Lucca Pilot Sites

<b>ULL Lucca L1 Cycling Track (B) + Curbs (C) &amp; Bollards (D)</b>	<b>A: e-bike charging station</b>	<b>B: cycling tracks from rubberised asphalt</b>	<b>C/D: Curbs and/or Bollards from rubberised asphalt</b>
<b>Pilot area / location</b> (name of the street/park, geographic coordinates, etc.)	New "Asse Suburbano" part A – Lucca, from Via dell'acquacalda (43°51'45.9"N 10°31'21.7"E ) to Via della Santissima Annunziata (43°51'31.9"N 10°31'37.2"E)		
<b>Starting date of construction:</b>		From the second half of 2026	From the second half of 2026
<b>Finishing date of construction:</b>		By the end of 2026 (by M24 according to GA)	By the end of 2026 (by M24 according to GA)
<b>SMILE CITY funds</b>		According to GA €30.000	According to GA €26.500
<b>Additional budget &amp; funding source</b>		No additional budget	No additional budget
<b>Stakeholders involved</b>		Technical Department of Public Works of the Municipality of Lucca  Local Contractor	
<b>Materials to be used</b>		Rubberised asphalt mixture for the wearing course, using recycled rubber from end-of-life tyres.	Bollards and curbs dividers made of 100% recycled rubber.
<b>Innovation element</b> (if there is something specific for the Pilot, apart from what is		The cycle path will be built on a new road that will connect busy residential areas on the outskirts of the city and will	

provided by the technical partners)		therefore be a huge boost to sustainable mobility.	
<b>Constraints / risks</b>		Possible problems related to the mix design of rubberised asphalt.  Limited budget.	Risk of unnecessary obstacles.  Limited budget.
<b>Risk mitigation measures</b>		Using an existing contract to avoid problems and the risk of delays due to a lack of permits and authorisations.	Choose a manufacturing company that already produces this type of urban furniture.

<b>ULL Lucca L2</b> <b>2 Charging Stations (AA) + Curbs (C)</b>	<b>A: e-bike charging station</b>	<b>B: cycling tracks from rubberized asphalt</b>	<b>C/D: Curbs and/or Bollards from rubberized asphalt</b>
<b>Pilot area / location</b> (name of the street/park, geographic coordinates, etc.)	Option n.1: Sports Hall Parking – Lucca, Via delle Tagliate (43°50'59.2"N, 10°29'43.7"E)  Option n.2: Railway Station – Lucca, Piazzale Ricasoli (43°50'15.7"N 10°30'22.9"E)  Option n.3: Carducci Parking – Lucca, Viale Carducci (43°50'17.1"N 10°29'47.9"E)		
<b>Starting date of construction:</b>	To be defined		
<b>Finishing date of construction:</b>	To be defined		
<b>SMILE CITY funds</b>	Elements of the charging station are expected from project partners, free of charge; the cost of assembling works, certification, etc., will be agreed upon among the consortium		
<b>Additional budget &amp; funding source</b>	No additional budget		
<b>Stakeholders involved</b>	Technical Department of Public Works of the Municipality of Lucca  Site owners or managers of the selected locations		



<b>Materials to be used</b>	E-bike charging station equipment, PV panels, support structure, battery storage components, electrical components, wiring, sockets/connectors, anchoring elements, protective casing and user information/ signage		
<b>Innovation element</b> (if there is something specific for the Pilot, apart from what is provided by the technical partners)	To be defined after ULL 3.6		
<b>Constraints / risks</b>	<p>Landscape and cultural permit issues related to the charging station model selected.</p> <p>Issues that may arise during product installation (anchoring, safety, refueling).</p> <p>Issues related to the size of the charging station model that may influence the choice of location.</p>		
<b>Risk mitigation measures</b>	Choose a charging station model that does not have an excessive impact on the urban area.		

## City of Manresa

<b>ULL Manresa M1 &amp; M2</b>	<b>A: e-bike charging station</b>	<b>B: cycling tracks from rubberized asphalt</b>	<b>C/D: Curbs and/or Bollards from rubberized asphalt</b>
<b>Pilot area / location</b> (name of the street/park, geographic coordinates, etc.)	<p>Location a1: Pont Nou (New industrial area)</p> <p>Location a2: El Congost sports area parking (41.72615184820264,</p>	<p><b>Manresa-SJV:</b> Avinguda Pirelli - Congost</p>	<p><b>Manresa-SJV:</b> Avinguda Pirelli - Congost</p>



	1.811024490085373)		
<b>Starting date of construction:</b>	To be defined	To be defined 2027	To be defined 2027
<b>Finishing date of construction:</b>	To be defined	To be defined 2027	To be defined 2027
<b>SMILE CITY funds</b>	Elements of the charging station are expected from project partners, free of charge; the cost of assembling works, certification, etc., will be agreed upon among the consortium	30.000	
<b>Additional budget &amp; funding source</b>	–	–	–
<b>Stakeholders involved</b>	Manresa City Council Technical project partners	Manresa City Council Local Producer	Manresa City Council Local Producer
<b>Materials to be used</b>	It is determined by technology development companies.	Recycled rubber Asphalt Bitumen Aggregate	Recycled rubber
<b>Innovation element</b> (if there is something specific for the Pilot, apart from what is provided by the technical partners)	It is determined by technology development companies.	New solutions that can be implemented will be evaluated after the contractor is selected.	
<b>Constraints / risks</b>	Issues that may occur during product installation	Limited budget.	Limited budget.
<b>Risk mitigation measures</b>			

## Region of Castilla y León Pilot Sites

ULL Castilla y León, Pilot CL1: Sanabria Lake	A: e-bike charging station	B: cycling tracks from rubberised asphalt	C/D: Curbs and/or Bollards from rubberised asphalt
<b>Pilot area / location</b> (name of the street/park, geographic coordinates, etc.)	Galende, Zamora. <ul style="list-style-type: none"> <li>• Origin: Lugar Puente, 26, 49350 El Puente, Zamora (42.08629011777941, -6.64515669893734)</li> <li>• Destination: Lago de Sanabria and Sierras Segundera y de Porto Natural Park Visitor Centre, Zamora.</li> </ul>		
<b>SMILE CITY systemic solutions – units, to be applied and tested</b>		According to Grant Agreement: <ul style="list-style-type: none"> <li>• 3 x 1000 m<sup>2</sup> = 3000 m<sup>2</sup></li> </ul> Proposal according to Material Execution Budget: <ul style="list-style-type: none"> <li>• 850 m x 3 m = 2550 m<sup>2</sup></li> </ul>	According to Grant Agreement: <ul style="list-style-type: none"> <li>• 100 curbs &amp; lane dividers</li> <li>• 4 x 20 = 80 bollards</li> </ul> Proposal according to Material Execution Budget: <ul style="list-style-type: none"> <li>• 20 lane dividers</li> <li>• 6 bollards</li> </ul>
<b>SMILE CITY funds</b>		30.000 €	30.000€
<b>Additional budget &amp; funding source</b>		--	--
<b>Stakeholders involved</b>		FPNCyL Municipality of Galende Regional Government of Castilla y León road authority Territorial Environmental Service Technical project partners Public works contractor Rubberised asphalt producer or supplier Quality-control laboratories Cyclists, pedestrians, residents and visitors	FPNCyL Technical project partners; Contractor responsible for installation Suppliers or manufacturers Road safety and maintenance staff Cyclists, pedestrians and other users of the cycle-lane section

<b>Materials to be used</b>		Rubberised asphalt mixture for the wearing course, using recycled rubber from end-of-life tyres, bituminous binder, mineral aggregates, tack coat or bonding layer, and complementary materials required for surface preparation, levelling, crack treatment and road marking.	Bollards and/or lane dividers made of 100% recycled rubber, preferably supplied by regional producers where technically and legally feasible. Fixing and anchoring systems, reflective elements, screws, bolts and complementary installation materials will also be used.
<b>Innovation element</b> (if there is something specific for the Pilot, apart from what is provided by the technical partners)		Use of rubberised asphalt incorporating powder and/or textiles from EoL tyres to improve circularity, durability and climate resilience in cycling infrastructure.	Use of 100% recycled-rubber safety elements made from rubber derived from end-of-life tyres, preferably from regional producers.
<b>Constraints / risks</b>		Permitting requirements, proximity to the ZA-104 road, environmental sensitivity, pavement condition, drainage, frost, tourism-season disruption and contractor experience.	Risk of unnecessary obstacles, incorrect placement, anchoring issues, visibility, vandalism, maintenance compatibility and product availability.
<b>Risk mitigation measures</b>		Start works only after permits are granted, precondition the existing pavement, require proven experience with rubberised asphalt, ensure material traceability and quality control, and plan works to reduce disruption.	Install only where they provide clear safety or functional value, preferably at key points, require 100% recycled-rubber products where feasible, check anchoring and visibility, and verify final placement on site.

<b>ULL Castilla y Leon, Pilots</b> <b>CL2-CL5:</b>	<b>A: e-bike charging station</b>	<b>B: cycling tracks from rubberised asphalt</b>	<b>C/D: Curbs and/or Bollards from rubberised asphalt</b>
<b>Pilot area / location</b> (name of the street/park, geographic coordinates, etc.)	<ul style="list-style-type: none"> <li>• Pilot CL2: PRAE building, Valladolid</li> <li>• Pilot CL3: Pozo María site, municipality of Villablino, León</li> <li>• Pilot CL4: IES Galileo premises, Valladolid</li> <li>• Pilot CL5: TBD</li> </ul>		



<b>SMILE CITY systemic solutions – units, to be applied and tested</b>	<ul style="list-style-type: none"> <li>4 charging stations</li> </ul>	--	--
<b>SMILE CITY funds</b>	Elements of the charging station are expected from project partners, free of charge; the cost of assembling works, certification, etc., will be agreed upon among the consortium		
<b>Additional budget &amp; funding source</b>	--		
<b>Stakeholders involved</b>	<p>FPNCyL</p> <p>Site owners or managers of the selected locations</p> <p>Technical project partners</p> <p>PV/electrical installer</p> <p>Maintenance staff</p> <p>Users of the facilities: cyclists and e-bike users</p>		
<b>Materials to be used</b>	E-bike charging station equipment, PV panels, support structure, battery storage components, electrical components, wiring, sockets/connectors, anchoring elements, protective casing and user information/ signage.		
<b>Innovation element</b> (if there is something specific for the Pilot, apart from what is provided by the technical partners)	Testing circular charging stations using reused or recycled components, such as second-life photovoltaic panels, recovered batteries from used vehicles and recycled concrete bases.		
<b>Constraints / risks</b>	Site selection, space availability, electrical/photovoltaic feasibility, weather exposure, vandalism, user safety and maintenance needs.		
<b>Risk mitigation measures</b>	Select visible and accessible locations, check technical feasibility in advance, coordinate with site managers, use robust equipment, provide clear user information and		



	define basic maintenance responsibilities.		
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## Istanbul Metropolitan Municipality Pilot Sites

ULL Istanbul	A: e-bike charging station	B: cycling tracks from rubberized asphalt	C/D: Curbs and/or Bollards from rubberized asphalt
<b>Pilot area / location</b> (name of the street/park, geographic coordinates, etc.)	Avcılar Coastal Park 40.970906850761395, 28.72111720241488  Caddebostan Şehit Kadir Yıldırım Park 40.95539915013124, 29.07982075665534	Avcılar Coastal Park 40.970906850761395, 28.72111720241488	Avcılar Coastal Park 40.970906850761395, 28.72111720241488
<b>Starting date of construction:</b>	Second quarter of 2027	First quarter of 2027	First quarter of 2027
<b>Finishing date of construction:</b>	Third quarter of 2027	Second quarter of 2027	Second quarter of 2027
<b>SMILE CITY funds</b>	The pricing analysis has not yet been finalized. However, it is anticipated that the project budget will be insufficient due to ongoing economic crises.		
<b>Additional budget &amp; funding source</b>	It is planned to be addressed through the municipality's internal resources.		
<b>Stakeholders involved</b>	IMM Energy Management and Lighting Branch Directorate	Contractor	Contractor
<b>Materials to be used</b>	It is determined by technology development companies.	Recycled rubber Asphalt Bitumen Aggregate	Recycled rubber
<b>Innovation element</b> (if there is something specific for the Pilot, apart from what is provided)	It is determined by technology development companies.	New solutions that can be implemented will be evaluated after the contractor is selected.	

by the technical partners)			
<b>Constraints / risks</b>	<p>Customs issues that may arise in product supply</p> <p>Issues that may occur during product installation</p> <p>Restrictions related to the use of the mobile application</p>	<p>Inability to apply the mix ratio determined by the project's technical partners.</p> <p>Limited budget.</p>	<p>Insufficient number of companies producing the required product.</p> <p>Limited budget.</p>
<b>Risk mitigation measures</b>	<p>Exemption from the use of the mobile application.</p> <p>Installation to be carried out by the project's technical partners.</p> <p>Procurement of product components from Türkiye.</p>	<p>Due to a limited budget, the bicycle path will be implemented over a shorter length instead of 800 m.</p>	<p>Conducting research on alternative products.</p>

## Bursa Metropolitan Municipality Pilot Sites

ULL Bursa Metropolitan Municipality	A: e-bike charging station	B: cycling tracks from rubberised asphalt	C/D: Curbs and/or Bollards from rubberised asphalt
<b>Pilot area / location</b> (name of the street/park, geographic coordinates, etc.)	Hüdavendigâr City Park and surroundings, Odunluk, İbrahim İşsevenler Cd., 16110 Nilüfer/Bursa. If the asphalt works proceed on Naim Süleymanoğlu Boulevard, one of the two charging stations may	Naim Süleymanoğlu Boulevard, Balkan, Naim Süleymanoğlu Cd., Nilüfer/Bursa, approx. 800 m cycling-lane asphalt paving section,	Not selected for now and might be evaluated after implementation of systemic solutions A and B.

	instead be located on/near that boulevard to create an integrated asphalt + charging pilot.	subject to approval and implementation flexibility.	
<b>Starting date of construction:</b>	Target: 1/2 2027, following technical partner confirmation and site approvals. If the Naim asphalt pilot proceeds, one charging station may be coordinated with the same implementation schedule.	Target: 1/2 2027, following tendering, material testing/certification, site handover and final corridor approval. It may be accelerated <b>if Naim Süleymanoğlu Boulevard receives timely approval and we can begin immediately.</b>	Not scheduled at this stage; optional after co-design and technical/safety evaluation.
<b>Finishing date of construction:</b>	Target: 2/2 2027, subject to equipment delivery, local adaptation, commissioning and final location decision.	Target: 2/2 2027, subject to procurement, weather/site conditions, quality-control acceptance and approval timing.	Not scheduled at this stage.
<b>SMILE CITY funds</b>	The pricing analysis has not yet been finalised. However, it is anticipated that the project budget will be insufficient due to the ongoing economic crisis.		
<b>Additional budget &amp; funding source</b>	Not planned at this stage.		
<b>Stakeholders involved</b>	Bursa Metropolitan Municipality; Transportation Planning Branch Directorate; Smart Cities Branch Directorate, UKOME; Parks and Gardens; technical directorates; possible UEDAŞ/EPDK only if grid-connected option is considered; citizens/end-users; Smart Boulevard/smart mobility units if Naim is selected.	Contractor	Contractor
<b>Materials to be used</b>	It is determined by technology development companies.	Recycled rubber Asphalt Bitumen	Recycled Rubber

		Aggregate	
<b>Innovation element</b> (if there is something specific for the Pilot, apart from what is provided by the technical partners)	It is determined by technology development companies.	New solutions that can be implemented will be evaluated after the contractor is selected.	
<b>Constraints / risks</b>	Equipment delivery/customs or local procurement constraints; final app/data requirements; vandalism/security; shading and site suitability; unclear maintenance assignment until final design; final decision on whether one charging station will be located at Naim.	Approval/timing flexibility budget constraints;	Insufficient number of companies producing the required product.  Limited budget.
<b>Risk mitigation measures</b>	Prioritise off-grid design, early technical partner confirmation, municipal site/security review, Exemption from the use of the mobile application.	It is planned to be integrated into a scheduled infrastructure project	-

## Region of Crete Pilot Sites

ULL Crete	A: e-bike charging station	B: cycling tracks from rubberised asphalt	C/D: Curbs and/or Bollards from rubberised asphalt
<b>Pilot area / location</b> (name of the street/park, geographic coordinates, etc.)	1821 Square	Kanari Coast	Kanari Coast



<b>Starting date of construction:</b>	Under Procurement Essay preparation	Under Procurement Essay preparation	Under Procurement Essay preparation
<b>SMILE CITY funds</b>	21.500€		
<b>Additional budget &amp; funding source</b>	Under consideration		
<b>Stakeholders involved</b>	Katheris	Tsimedodomi NAOUM	
<b>Materials to be used</b>	-	Recycled tyre materials, Recycled asphalt	

## City of Turin Pilot Sites

<b>ULL Turin</b>	<b>A: e-bike charging station</b>	<b>B: cycling tracks from rubberised asphalt</b>	<b>C/D: Curbs and/or Bollards from rubberised asphalt</b>
<b>Pilot area / location</b> (name of the street/park, geographic coordinates, etc.)	Parco Sangone (45.024126, 7.513805)	Pianezza cycling path (700m)	Pianezza locations
<b>Starting date of construction:</b>	Q1 2027	Q1 2027	Q1 2027
<b>Finishing date of construction:</b>	Q3 2027	Q2 2027	Q2 2027
<b>SMILE CITY funds</b>	The pricing analysis has not yet been finalised. However, it is anticipated that the project budget will be insufficient.		
<b>Additional budget &amp; funding source</b>	SMILE CITY + CMTO + Municipalities of Rivalta and Pianezza + Piedmont Region		
<b>Stakeholders involved</b>	CMTO, Municipality Rivalta, technical partners, contractor	Municipality of Pianezza, Contractor	Municipality of Pianezza, Contractor



<b>Materials to be used</b>	Charging station components (PV panels, 2nd-life batteries, pre-cast concrete)	Recycled rubber Asphalt Bitumen Aggregate	Recycled rubber
<b>Innovation element</b> (if there is something specific for the Pilot, apart from what is provided by the technical partners)	Strategic mobility hub with renewable energy integration	First application of rubberised asphalt on a cycle path. Flexible, safe, and sustainable curbs/bollards.	
<b>Constraints / risks</b>	High site usage; regulatory complexity (landscape, electrical certification)	No local supplier identified yet	Limited providers for molded recycled rubber products
<b>Risk mitigation measures</b>	Early stakeholder engagement; preventive dialogue with Superintendence; clear definition of technical requirements	Open tender with clear technical specifications; collaboration with Ecopneus and national experts	Market dialogue / competitive dialogue to identify qualified suppliers



## 5. Lessons Learned and Recommendations

Although majority of the cities and regions diligently worked in the previous months on developing their Pilot Sites and implementation preconditions for innovation testing, none of the official, administrative permits has been issued yet.

Since the land for most of the targeted Pilot Sites is municipally owned, and permitting process is the responsibility of the local administration, permits issuing will be internal processes, expected to be streamlined without jurisdictional conflicts. The preparatory phase was longer than initially expected, due to joint understanding of the complexity of tasks, roles and responsibilities. Acceleration of actions is expected in the following months, without risks for the overall results.

Thus, the working structure of the Urban Living Lab 2.3 will be kept beyond June 2026 and the first submission of the Deliverable 2.5, for coordinating the work on finalization of design, and approval of technical documentation. Deliverable 2.5 is expected be updated in December 2026.

Considering that coordinator effort will be needed in the subsequent phases of the project as well, namely during construction or installation works on implementation of Pilots, their testing and monitoring the prototypes, it is highly recommended to keep the established ULL working structure until the end of the project.