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&

SCHOOL OF SPATIAL PLANNING AND DEVELOPMENT

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# **The Regeneration Project of Chamartín Area**

SE8-1: URBAN PLANS & PROJECTS

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## 1. INTRODUCTION

The following proposal concerns a regeneration project of Chamartín area in order to face economic, social, environmental and natural challenges that emerge from the multi-criteria analysis of the existing cityscape of the envisaged area.

The main goal of the proposal is to generate a well-developed regeneration plan for the project area in order to face the forementioned challenges based on the basic sustainability principles. The following approach of the regeneration plan concerns a business urban aspect regarding the cultural industry and the improvement of quality of life. Furthermore, the proposal aims to organize and develop the degraded area by planning the land uses and to connect the area on the inside, as long as with the rest of Madrid region, by upgrading the existing public transport network and creating interior routes based on sustainability policies. Moreover, the project targets to make the Chamartín area an investment pole and a vital place both to inhabit and to work.

To conclude, Chamartín's regeneration project is a necessary intervention for the area in order to become an attractive place for the upcoming population and to animate the local urban economy.

## 2. AREA ANALYSIS

The current state of the project area demands quite efficient and subversive conversions. As a result of the continuous financial crisis, the city, in general, has many deficiencies and malfunctions in its urban fabric.



The area constitutes a large urbanized frame which remains empty due to the lack of demand for real estate products, abandoned buildings and structural weaknesses. Moreover, the urbanization model characterized by the over-construction of infrastructures leads inevitably in the urban sprawl, the elongation of the duration of commuter trips and the demand of motorized mobility. These parameters in combination with the network of heavy transport infrastructures conclude in the environmental degradation. Of course, the lack of proper technology and the incompetent protection measures for the elimination of the noise pollution contribute in the degradation of the quality of life of the residents.

More specifically, the project area consists of neighborhoods, which are unconnected and the whole segment lacks urban entity and structure. There are minimum connections with the public transport facilities and the discontinuity of streets, and generally, of traffic circles worsen the mobility. Regarding the green infrastructure, the area does not have a green axis but only a few delimited green spaces and unused fields with mild vegetation. In general, the scheme consists of warehouses, unused fields, train station installations and abandoned buildings. However, in the northern part there are some businesses of technology and communication and the BBVA. The northern part of the area hosts some car dealerships, the Four Towers business area and the Chamartín railway station. These land uses result, directly, in the augmentation of the entrepreneurship and the mobility.

In a nutshell, the project area constitutes a downgraded area with many functional problems, urban «confusion», lack of infrastructures and most of all lack of sustainability. The current situation produces abysmal social unbalances, especially between the northern and the southern part.



### **3. CHALLENGES**

In this chapter of the regeneration proposal, we analyze the main challenges we faced in order to transform the underprivileged Chamartín area, into a mixed-use development according to the sustainability standards. Chamartín Project, as a complicated operation, tends to retrieve investments as long as employment, consumption and well-being standards inside the urban area of Chamartín. The challenges are classified based on the three main pillars of sustainable development, the economy, the society and the environment.

Regarding the society and economy prospect, we focused on promoting economic and social vitality and diversity. In order to succeed it, we took into consideration factors such as the social inequality reduction, the accessibility in any kind of activity or service and an intended increase in job opportunities for a variety of social groups. The business center as long as the communication cluster and the logistic area's construction will provide Chamartín area with a variety of job opportunities and vacancies, which will give people from every social group the chance to enter the job market. Furthermore, we considered to transform the north part of the impending residential area into a social housing complex in order to reduce housing inequality. Last but not least, the construction of the upcoming thematic park and the cultural center will feature the social mix and cohesion, as long as the sense of place and culture in the area.

Concerning the environmental factor, we faced the challenge of protecting and providing the vital open and green spaces for Chamartín's population, reduce the air and noise pollution coming from the existing transport network, and improve the urban environment's quality. In order to deal with the improvement of urban environment and the provision of the desirable open spaces, we created a green infrastructure network, including the abandoned railways that formed a degraded cityscape, which links the urban area with the green spaces existing inside and outside the area's boundaries. The abandoned railways were covered with undergrowth so as to create a more appealing cityscape. The air and noise pollution are confronted by providing the area with a public transport network, which allows the transportation across the area, and other policies such as bicycle lanes and pedestrian corridors, in order to avoid the car use as much as possible.

Finally yet importantly, we focus on promoting compact urban forms in order to avoid urban sprawl. In order to face the challenge above, we form a green pocket in the north

Chamartín area, which functions as deterrent against residential sprawl concerning the determinate population growth.

#### **4. VISION**

*"A new City Center Hub a few kilometers away from Madrid Center- Chamartín"*

**Based on the principles of sustainability, Chamartín Area is about to be transformed into a vibrant mixed use development of offices, residential, logistics, leisure, culture and commercial, friendly to people and environment.**

This project is characterized by an integrated provision of pedestrian and bike accessibility, great incorporation of public and green spaces, functional land uses with respect to the region's elements.

The above will be delivered through actions across themes:

- **A great place to work**

The future Business Centre of Chamartín, provides an attractive and affordable workspace in a vibrant and inspiring environment for new business opportunities. Chamartín Business Centre being in the heart of the regenerated area, offers a great accessibility to the greatest development poles of Madrid due to its proximity to the main Chamartín Station and Fuencaral station. Moreover the proximity to universities, health centers and communication cluster widens the opportunities for developing new networks of experts and entrepreneurs.

- **A great place to live**

A new residential district is about to complement the previous ones in the area. This is made up of 46 blocks of varying size and of 3-4 storeys-buildings, which are designed for all economics levels. New residences will benefit from great access to the new Chamartín's commercial center, leisure and green parks, cultural and sport facilities and education, but also from safety.

Also, the first social housing regeneration project is about to be established a few kilometers away from Madrid Center. Chamartín area seems to be ideal for the development of the new social housing regeneration project in order to face its challenges.

- **A great place to relax and work out**

Approximately 2000m bike lane and 225.000m pedestrian line offer great opportunities for enjoying walking and biking around new Chamartín area. The network which is developed especially across the railways and among green spaces, offer a great experience of high level of service and safety. Also the 190 acres of green spaces all over the area consist an ideal place for relaxation.

- **A place for creative people**

The discovery of creative economy through revitalization of an old barrack of 22570m<sup>2</sup>, is a great step for enhancing the economy of Chamartín. This project is about to give floor to creative class develop their interest on architecture, fashion, media, graphic



design, music, writing, arts etc. , by creating a very inspiring and modern environment where culture and creativity take place. A great opportunity for those who looking new qualitative amenities in the heart of the new city center.

#### **A place to have some fun**

Theme park next to Chamartín Station is a totally new experience for those who want to have some fun. Games, cafeterias, restaurants give an opportunity to residents, entrepreneurs, visitors spend their free time close to the new city center.

#### **Logistics and Communication cluster**

Chamartín communication cluster is a great place for one to be a member and share his experience on information science-high technology and innovation through the existing network of experts. Also a great chance for new businesses to be established deserving low taxes and excellent environment.

The competitive node of a logistics network. A great place that offers some powerful advantages for companies willing to properly invest and implement these options: transportation, storage and distribution. Great logistics can help maintain a competitive edge in the industry network.

## **5. PROPOSAL**

### **THE NEW RESIDENTIAL AREA**

At Chamartín, there is a reforming of land to set a large scale housing project. The project is replacing existing old industries, barracks, parts of parallel railway services, parking lots with a complex of 46 residential blocks on the left and right side of railway lines. This complex is divided into three types of residential:

#### **RESIDENTIAL TYPE A**

The first type concerns the building set on the left of railway lines. It is developed close to the existing urban center, adopting its interesting elements such as coherence, neighborhood-based organization, and combination of natural and built environment. Inspired by them, this residential set not only consist of new homes but also new streets, squares and public spaces. Therefore, the new plan sets out aspirations to improve its layout by organizing this residential set on the creation of public space.

- The creation of a central square acts as a link between a public space in the existing urban area and a cultural and creative place. This link has a great symbolic value, declaring the right to the city and the right to the quality of life.
- The creation of a pedestrian network which is constituted by a basic large pedestrian line crossing the entire residential area and a pedestrian subsystem linking the internal areas of building sets, creates of an excellent quality open space and the necessary conditions for air movement, noise reduction and light transmittance.
- Also, a network of green spaces which is developed circumferential of this residential set, protect



the aesthetic quality of the internal environment by isolating it from externalities such as negative effects of railway system on right, disorganized urban system on left. At the same time, it offers a valuable environmental resource not only for the residents but also for the visitors.

Each housing Block consist of three to four plots which are developed in 4 storeys. Also each plot occupies an area of about 1000-1500m<sup>2</sup>.



Eixample a district of the Spanish city of Barcelona consist a Great architectural paradigm inspired by by Spanish urban planner Ildefons Cerdà, who considered traffic and transport along with sunlight and ventilation in coming up with his Characteristic octagonal blocks.

Source Kaushik. (Saturday, July 06, 2013). The Peculiar Architecture And Design of Eixample, Barcelona. Available: <http://www.amusingplanet.com/2013/07/the-peculiar-architecture-and-design-of.html>.

Especially the architectural development of housing blocks are inspired by Eixample, a district of the Spanish city of Barcelona, where also are used quadrangular blocks of standard size and a limited height, leaving a shady square or a garden in between. This internal space guarantees houses with sun, light and air circulation. Also the angled corners of the buildings contribute to visibility and management of traffic.

Finally, on the ground floor of these buildings will be developed the commercial part of the area and one of the recreation centers of it such as Retail shops, services, restaurants and other function which serve community's needs. This area which is developed along the main pedestrian line is about to consist a dynamic economic pole for the area based on third sector.

Residential Type A is designed to serve housing needs of new families, entrepreneurs, shop owners, young couples and people of medium economic levels.



## RESIDENTIAL TYPE B

The second residential type is about to be located northern of residential type a. The great proximity to the central services, makes residential type b area as an integrated functional area, but at the also there is an opportunity for a medium economic activity to be developed there, too.

Residential type b area consist of 10 blocks of about 3 storeys- buildings, which are designed for social housing. The Chamartin Social Housing project is an attempt to create an entire environmental friendly neighborhood, which at the same time serves the needs of its inhabitants.

Regarding the environmental friendly approach, this attempt tries to create a set of apartment-type buildings which are energy-independent due to the exploitation of solar power and rainwater harvesting, using mild-type materials.

Finally the design which is fully oriented to resource management is a way to secure and balance the environment and the effects which the heavy infrastructure causes, as there is a greater proximity to this.



LES LOGGIAS – PARIS, FRANCE

*Les Loggias housing project in Paris by a Paris-based agency KOZ Architects designed the building, giving consideration to both the environment and the needs of its inhabitants. The interiors were designed to receive as much natural light as possible, and the building also features exterior insulation as well as eco-conscious solar panels»*

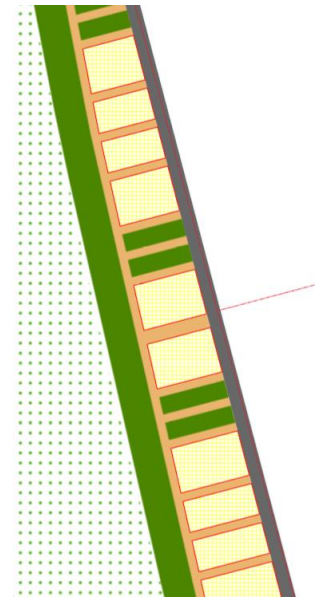
JEREMY ALDER. ( ). 30 OF THE WORLD'S MOST IMPRESSIVE SOCIAL HOUSING PROJECTS.

Available:  
<http://www.bestmswprograms.com/impressive-social-housing-projects/>. Last accessed 2017.

## RESIDENTIAL TYPE C

The third residential; type concerns the building set on the right of railway lines. This set consist of 14 blocks of apartment type buildings about 3-4 storeys, constituting a net residential area.

A system of green spaces, pedestrian lines and low density buildings forms an environment of high quality, for those who looking for high amenities. Transferring the environmental elements of residential type a and characteristics of luxury-building sets on the right, Residential Type C is designed for medium or high economic classes.



## CULTURAL AND CREATIVE CENTER

The long-abandoned and low-functional barrack in the center of Chamartín area concentrates unused assets which could turn it into an experimental place. The revitalization of this barrack constitutes of a great importance action in order to grow a new economic context for it but also to upgrade the quality of environment.

The proposal of this revitalization project is to turn this barrack into art space. There, creative class and young people could be attracted not only by the amenities that are concentrated in the area but also by the creative environment that will be formed in this site. The new art space could consist a great opportunity for them to express themselves, to create and develop art, media skills, architecture, graphic design etc., in the heart of the new city center.

It is very important for the region and economy to attract creative class that could work and live in the same place. This class, according to Florida and Landry, could boost the economy of Chamartín and create a brand-name for it, so as to compete other similar cities. But also it is important events and exhibitions to be organized so as to promote this action.

In the end, the location of this art space is determinant as it is closed to public spaces and city center and can attract more interested people and visitors.

## LOGISTICS AND COMMUNICATION CLUSTER

The subsistent infrastructure favors the development of uses such as logistics and communication cluster. Firstly, in the middle of the project area is located use of logistics that is a modern service industry that combines transportation, storage and distribution. This use could amplify the connections with the city center of Madrid and project area. The access to this use made into using the collector's network and bicycle lane. Secondly, the communication center which is located on top of the project area and is enveloped by green areas and open spaces, provides to clients the newest,

most innovative products available in the market place and offers the best targeted marketing solutions. The aim of this cluster is to convert to a “High Technology Business Park”. There is inside the use a metro station and there are the options such as bicycle lane and collectors that facilitate the access to the use. Both uses contribute some vital benefits to the economy and character of the project area and play an important role in international business and in attracting investment. These enterprises could create business opportunities in the project area.

### **THEMATIC PARK “MY FANTASTIC CHAMARTLAND”**

“My Fantastic Chamartland” is the greatest place which combines the three “R”: refresh, relax and run with a beautiful background full of green spaces, safe places and of course “adrenaline rush” places for brave people. The wide variety of activities holds the visitors’ interest: classic playground activities (essentials: sunscreen, good spirits and goodwill and head to the park for some full-body fun- snacks and juice boxes you will find there), have a picnic and learn about nature (grab a basket and blanket and you are ready!), special games according to season (ex. carnival games), set up a challenge (hula-hoops or jump ropes for an endurance challenge, eggs and spoons for a balance-testing relay challenge, soccer ball for a dribbling challenge, plastic cups and water for a balancing-on-the-head race challenge, rope for tug-of-war and three-legged race), scavenger hunt (a scavenger hunt is a great way to explore numerous areas of a park in a relatively short time) and last but not least don’t miss the skill games about the nature try their luck and strengths. Entry is free and for all ages. Access to “My Fantastic Chamartland” is easy by car or by bike, there are also a metro station and pedestrian path. Get your friends and out into the sun for some healthy, free (or cheap) warm weather fun.

### **TRANSPORT, MOBILITY & PARKING FACILITIES**

The regeneration of the project area based on urban and metropolitan mobility. The project area combines the public transport and road and bicycling distribution. The role of transport is to be functional so as to the project area will be a growth-oriented magnet of transport and also to serve the proposed uses and accessibility to them. For this reason, the rail tracks keep their main role and function contributing to the transportation as well as the connection with both the city center and on northern and southern side of the area. However, the rail tracks convert to green-rail tracks using plants so as to they are to be a green physical connection between neighborhoods of the east and of the west. Furthermore, four proposed links, one of them is over ground, aim for accessibility from eastern to western side and from western to eastern side. All of them are collectors. At the northern and the southern link there is a subsistent bicycle connection too. Lengthwise of the project area are proposed some links (collectors) that connect the neighborhoods of the north of Madrid with the neighborhoods of the south. The Chamartín railway station is upgraded adopting a multinode role like a supralocal magnet for the whole city. The consequence is given to public transport and open and green spaces. So, the Paseo de la Castellana should not extent. The project area is located at a nodal point and combines the majority of the public transport: railway, metro, bus and tram. Motorways, pedestrian zones and cycle paths are also contributing to the motivation. The proposed stations and expansion of some lines complete the greatest accessibility. The subsistent bicycle network is completed with some bicycle lanes that connect the eastern side with western passing through the project area. Lengthwise of the project area, the bicycle lanes connect the residential area with the other uses such as the communication

cluster, offices, logistics and some green spaces. The bicycle lane which connects the residential area with offices is in parallel to the pedestrian line. The pedestrian network is developed in the largest part of the project area passing through the residential use. Pedestrian lines there are also both at western and eastern residential area in parallel to railway lines creating alternative and safer routes of circulation as well as circumferentially of the thematic park as refreshing and recreating path. At the south part is located a bus terminal that serves parking for buses. At the whole project area are located some private parking facilities. The first one is located internally of the communication cluster and serves the involved of communication cluster that. The second one is located in the middle of the project area and specifically on the eastern side serving the necessities of the eastern residential area. The last one is located above the thematic park and is used for a parking of visitors of thematic park. In addition, there is a public parking across from the use of logistics and offices and in parallel to rail tracks. This parking is serving both the necessities of offices and logistics and the transshipment of goods from the industries.

## **GREEN SPACES**

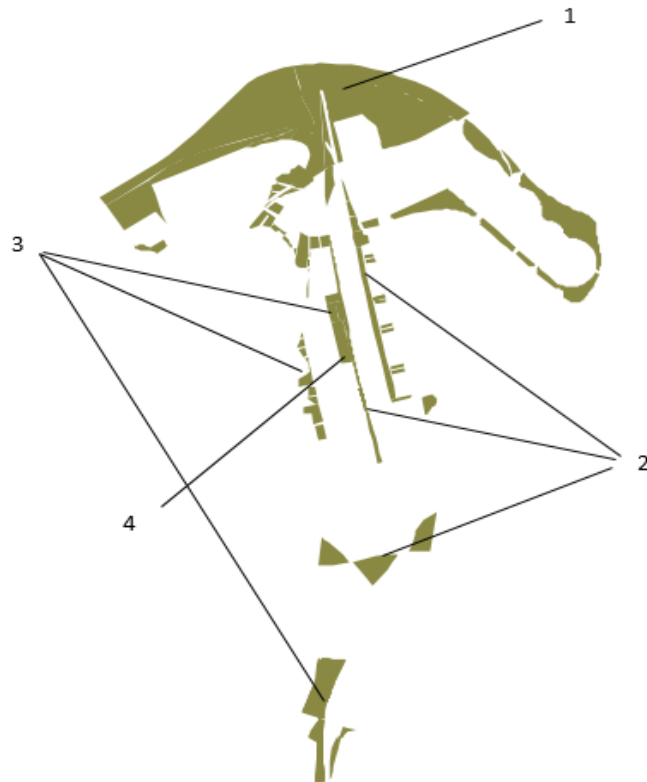
The role of green spaces in urban projects is crucial, as they can contribute positive social, economic and environmental benefits, improving quality of life, well-being and Aesthetic upgrading. Especially in urban regeneration, they can create a balance, reducing environmental problems that brownfields causes.

For these reason in Chamartín Regeneration project, the creation and organization of a wide network of green spaces consist a key tool so as to prevent and manage crucial issues. In these way, green spaces in Chamartín area

- Link communities. The green corridors can provide functional service and connection of areas especially from the east and west and vice versa, providing social inclusion
- Add value to properties as green spaces improve the quality and diversity of environment especially in residential areas where are places
- Act as a border to urban sprawl on north, to the externalities of railway lines and motorways

These green spaces take different forms in Chamartín Area such as:

1. Parks and public gardens
2. Green Corridors
3. Amenity Green space
4. Outdoor sports facilities



Especially cases 2, 3, 4 serves local need and case 1 local or over-local need.

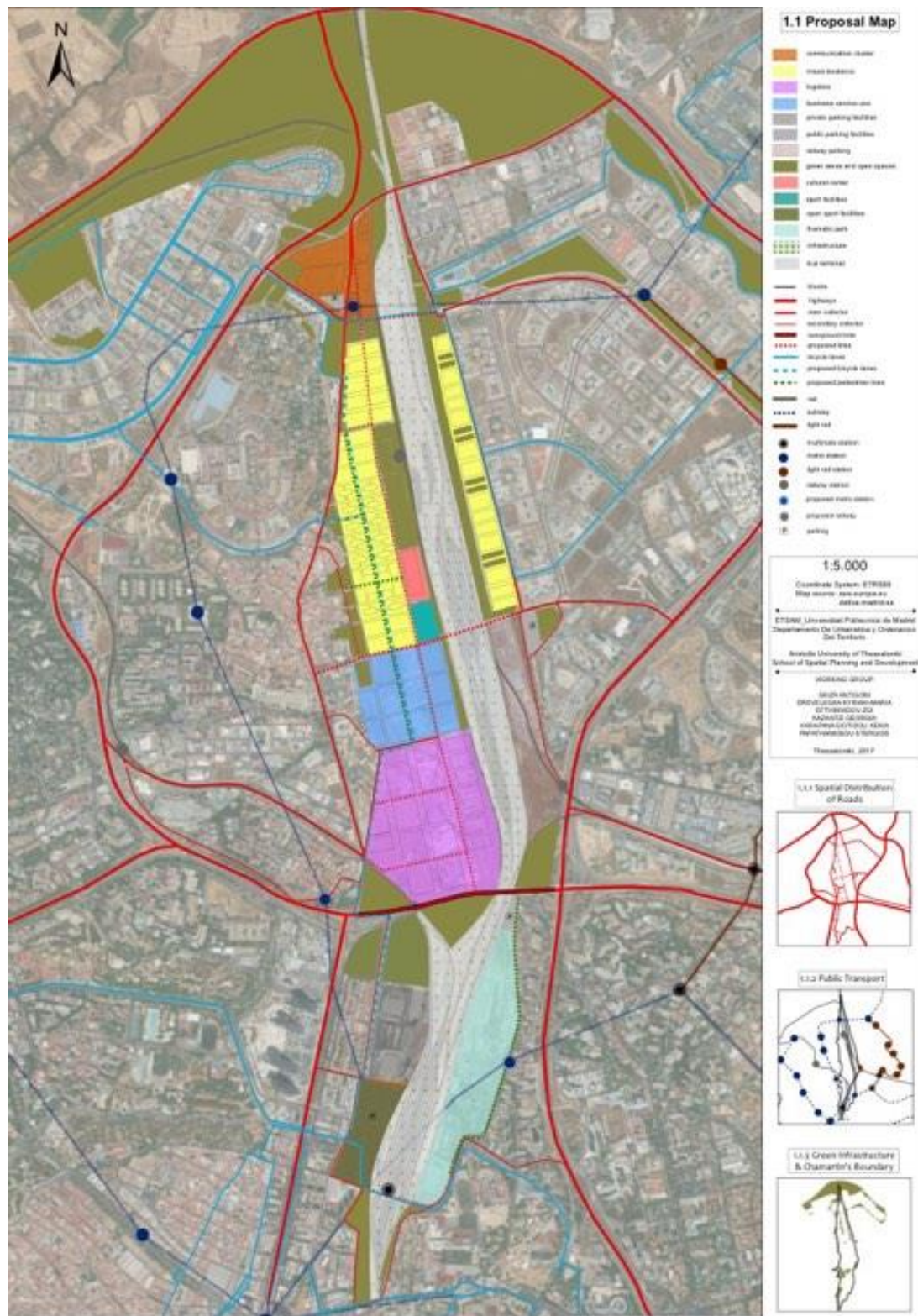
The green space strategy could bring several benefits to the areas. Some of them are:

- Economic potential of tourism, leisure and cultural activities
- Variety of social and community facilities, including activities
- Formal and informal recreational facilities
- Prevention to climate change and reduction of temperature, noise, etc.
- Alternative safer routes of circulation
- Well-being and prevent disease through physical activity, play, relaxation etc.

Finally, responsible for managing and maintaining these green spaces is community especially for the 2nd, 3rd cases, public sector for 1st case and public or private sector for 4th case.



## 6. PROPOSAL MAPS





## 7. BUILDING COEFFICIENT AND HEIGHTS

The building coefficient is a key factor which determines the density of an urban area and according to Arabantinos, it can be distinguished into “net” and “mixed”. Generally, when we are referring to building coefficient, what is stated is the “net” building coefficient.

In our present work, the concept of the “net” building coefficient shall be used. Either “net” or “mixed” it can be referred to either one or multiple land uses.

Taking the above into consideration, different “net” coefficients are proposed for different land uses in Chamartín area. It should be mentioned that only for the Business area and the Residential a coefficient is being proposed. Therefore, for the first case, we propose a coefficient that is equal to 1.2 and for the second, respectively, that is equal to 0.8. For the latter, we consider it relatively small, creating very good living conditions and a satisfactory environment.

Regarding to the logic followed, the project is characterized by medium to low density with generally low heights. Specifically, a max height of 15 meters (4 floors including ground floor) is set for the residential area, while the business center will be characterized by a higher building density with higher building heights (more than 20 meters high) respectively.

In conclusion, improving the quality of the environment requires the construction of low buildings with sufficient distances to each other, so the humidity, the cold, the heat are not trapped inside the city. This will improve its attractiveness.

## 8. CALCULATING URBAN DENSITY

In this section, we attempt to calculate the population density for the residential area. The Methodology is: Generally, it is emphasized that the land use is the Residential Area is Mixed Residence. This means that apart from dwellings, there are shops, local sports facilities, services etc.

We are based on the assumption the 35% of the built area is available for the upper uses, while the available area per inhabitant is 50 m<sup>2</sup>.

At this point, the mixed built surface for residence is calculated (Table 1). Then, based on the net built surface (mixed surface X 0,65), the area's capacity for inhabitants is calculated.

Table 1: Calculation of Mixed, Net Built Surface & Population Density

Areas	Mixed Built Surface (m <sup>2</sup> )	Net Built Surface (Mixed surface X 0,65)	Residents (50 m <sup>2</sup> / inhabitant)	Dwellings Forecast (3 res. / dwelling)
Mixed Residential	147574	64410	2951 res.	984 dwellings
Social Housing	48878	31770	635 res.	212 dwellings
Total	196452	96180	3586 res.	1196 dwellings

As it is observed, the total capacity of the residential area is approx. 3586 inhabitants.



Social Housing is calculated to serve approx. 635 residents. In addition, assuming that approx. 3 people live in each apartment, a demand in 212 new dwellings is calculated. Respectively, there is also a demand for 984 new houses in the residential area near the cultural & sports center.

## **9. COSTS**

Having in mind that all the 3 proposals (DUCH, BBVA, AYUNTAMIENTO) that preceded were characterized by high costs for building infrastructure and also based on the government's financial difficulty in funding such urban projects, it is attempted to lower the total costs as much as possible.

Therefore, the extension of Paseo De la Castellana is not proposed as well as the undergrounding of the railway tracks which were a few of the proposed ideas from the first proposal (DUCH). In addition, so as to avoid a cost increase, it is also attempted an intervention in unused facilities (e.g. the creation of a Cultural Centre in abandoned barracks). Last but not least, no major network construction is proposed but we are limited in developing the necessary road connections and improving the geometric and functional characteristics of the existing network.

It is estimated that the total costs for infrastructure in the area of Chamartín shall be approx. 450.000.000 €. Of course, the Public Sector cannot not bear alone those costs so in this case a Private – Public sector engagement is necessary. Finally, as far as private investors is concerned, a 9 – 12 years pay-back is estimated.

## **10. STAKEHOLDERS**

Due to the new development perspectives that have opened in most cities, Chamartín regeneration project is based on a strategy to attract investment capital. How stakeholders in this project can be involved more actively in the process with regard to the strategic elements?

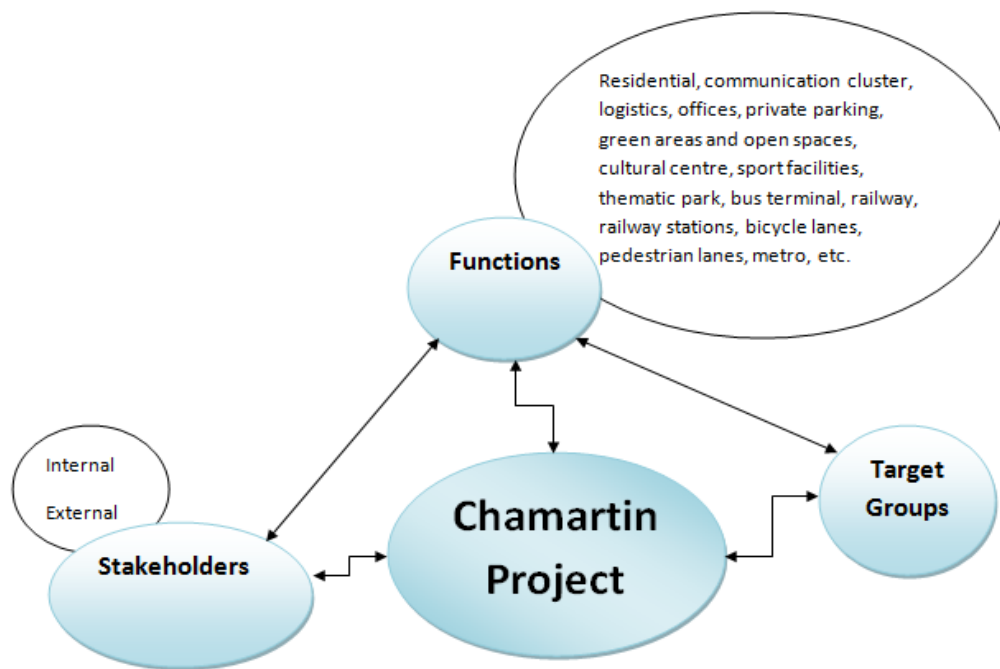


Figure 1.

In Figure 1 are shown the links between the project and the stakeholders, the target groups and the functions. To start with, stakeholders are divided into two categories. Internal stakeholders such as the employees, the end users, the financiers, the customers, the engineers, the planners, the contractors, the suppliers, etc. External stakeholder such as private actors and public actors. For instance, private actors usually are local residents, landowners, environmentalists, companies, etc. Meanwhile, public actors are the local government, the national government, regulatory agencies, highway administration, etc. The academic institutions can also take part in the process either as a public or a private actor.

For many public engagement is a key determinant to success. In the case of Chamartín, the economic decisions are not top priority in the project, but rather those related to cultural uses, social housing, office concentration and the attractiveness of areas.

The most powerful stakeholder to support residential and cultural uses is the local government in coordination with the power and the dynamic role of participants such as former inhabitants so as to help in the decision-making progress, mostly on behalf of citizens benefit. The environmentalists private group in cooperation with the corresponding department of ministry is a powerful combination of stakeholders, too, because they both have a crucial influence on setting up the general objectives of the protection of the green and open space areas. Furthermore, private investors such as



companies, landowners and contractors are good at managing and attracting investments and economic deals so as to manage the offices area, the logistics area solely. Academic departments in collaboration with the local authorities are a good stakeholder to handle the telecommunication center as they are good at promoting educational aspects with public offices or so. Also, the new bicycle lanes, pedestrian lanes and the new railway, metro or mixed stations together with the parking spaces that serve the above movements, could be good to be handled by both public actors and internal stakeholders such as planners because they gather economical, technical, social, and environmental information to sustain these plans. A stakeholder that is strong in order to undertake the uses of sports facilities and the thematic park is public stakeholders such as the end users in coordination with private actors like the local residents because public decision making is preferable in such cases.

Last but not least, policies of sustainable development and urban regeneration rely on the stakeholders contribution to the participatory dimensions of community involvement in their own development, through community participation and, individual analysis in public decision making, as well as public involvement in this process.

## **11. TARGET GROUPS**

The aim of Chamartín Regeneration Project is to serve the needs of people who are attracted by the Chamartín area, due to the amenities which offers. . The following section concerns the main target groups of Chamartín Regeneration Project:

- Entrepreneurs
- New Families
- Pedestrians
- Athletic types
- Creative people
- Technology lovers
- Scientists
- Academics
- People interested about concerts, exhibitions
- Workers in sectors of logistics
- Sensitive social groups
- Nature lovers

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Tzekakis Giorgos 70

## **1. INTRODUCTION - VISION OF CHAMA-GREEN**

Our vision of the Chamartín area is composed of a patchwork of ideas that we had, to make the area, more desirable to the Spanish people and the visitors of Madrid in general. As the name of our project suggests, our goal was to create a more environment-friendly landscape with plenty of green areas and territories, in which cars are not allowed to pass through. Furthermore, public transportation will be privileged. In addition, we tried to convert the Chamartín area in a pole of business attraction. Our goal is to include the area of Chamartín in the urban network of Madrid and to create a continuity throughout the Spanish city.

## **2. OPERATION CHAMARTÍN IN THE FUTURE**

To start with, the purpose of this study is to regenerate the non-usable and abandoned Chamartín area. This area's distinctive feature is the railway tracks which cross the area vertically and from a wider point of view, the shape of the landscape makes Chamartín region the Northern entrance of the city of Madrid.

Our team's view of the future Chamartín area is to embed a new, regenerated area in the Spanish Capital's urban tissue. This area will be distinguished from the surrounding environment but will simultaneously blend in. The green infrastructure together with the mainstream urban function, innovation, housing and education will become a pole of attraction. The area will mainly include green spaces such as parks, thematic parks etc. in a way that the element of natural environment is included in our urban landscape. Business and innovative oriented functions will also exist there, to attract investors, create job opportunities and involve the element of Education in the regenerated area. Finally, a relatively big proportion of the area will be devoted to residential land use, in a way that social mix is achieved.

## **3. OPERATION CHAMARTÍN: URBAN AND METROPOLITAN MOBILITY**

The urban and the metropolitan mobility transport is an issue which agonizes over many cities in the modern world, because there are many problems to be solved to be fully functional for the needs of a big city. All big European cities, including Madrid are turning to more sustainable ways of transport, as for operation Chamartín, the area will relate to the rest of the town with the main roads which are already existing and they are encircling the renovation area. Also, the metro and the bus lines will cover the connection needs of the area with the entire city.

Regarding our study, we decided that there is no need to extend Castellana road because there are already many highways around Chamartín such as M-30, M-11, M-607, Cardenal Herrera Oria etc. which can cover the needs of transport. Also, a significant factor why we decided not to extend Castellana is the fact that we chose not to use cars inside the renovation area as an effort to diminish pollution and achieve a more sustainable and eco-friendly transport system. The new residential zone will be crossed vertically by extreme low traffic and limited access roads, these roads will be used only by the residents to reach their homes with their cars, to load and unload things and to park in their own parking spaces, for visitors there will be parking spots

in the entrances of the area. In addition, another mean of transport which will operate is the tram, there will be a tram line next to the rails and the tram route will start from the Chamartín railway station and it will end at the northern border of the residential area to cover the needs of fast transport inside the whole renovation area of Chamartín. Finally, people will have the possibility to move in the area by using a vast network of pedestrian walkways and a basic bicycle lane system. We designed three main pedestrian walkways in our area which are accompanied with a bicycle lane, our main walkway crosses the area from south to north, it starts from the Castellana road end, it is located at the center of the area and at the eastern boundary of the residential zone and the business center. The second walkway is crossing the residential zone from south to north and the final two main walkways and bicycle lanes are crossing vertically the area to bridge the east part with the west part of the town and overcome the railway barrier.

#### **4. CHAMARTÍN'S URBAN IMAGE AND CITYSCAPE**

As we mentioned in our vision for the area of Chamartín, we needed to transform the area into an attractive place for Spanish people and outsiders, based on green space development and car use reduction. Based on this idea we couldn't be careless with residential and urban density numbers, and building heights that could make the area be a concrete jungle, an image which couldn't be altered by the green spaces we wanted to create.

So, with this in our mind we thought that there could be a specific area of high numbers of densities and building heights and that should be the business center area. This is an area located lightly to the south as be seen from our land uses map, and the land uses in this region require high density and building height levels. Also, we need to provide high numbers in an area just a little more to the south where we placed office buildings land use, but we could set the numbers lower than the business center. Besides these two regions we need to keep a low bar in heights and densities in the rest of the in the rest of the Chamartín area. For example, we need to keep mid to low levels in the residential area which is placed in west side of the sub processed region of Chamartín. There should also be a low height limit in the innovation center, the education center and the sport facilities regions because they are large areas where there isn't a need of big buildings for this kind of land use. The biggest impact in Chamartín's cityscape will be from the slight alteration of the rail tracks land use. In this territory, there are green elements that will be placed alongside the rail tracks which go through into our under-processing area and will represent the environment friendly side of Chamartín.

This area shows our struggle to also keep the residential and urban density numbers, and building heights in a low level, because we could place land uses in this area which would require building structure and other activities which would disrupt the attractive, mostly through green spaces, image we pursue through our vision.

#### **5. GREEN INFRASTRUCTURES, GREEN AND OPEN SPACES**

As projected by the title "Chama-Green", we need to emphasize and embed the natural elements in our proposal of the regenerated area. To start with, the surrounding areas

combine a somewhat residential/green area and in addition the whole city's green zones end up in the northern area in which our case of study is. More specifically, in the study area, there are three types of green areas:

- Thematic parks- located in the Eastern part of the region
- Green spaces that penetrate the residential area
- Enlarged Parks

In addition to this, the fact that in the North-West part directly outside the borders of Madrid, is an area which lies under the NATURA 2000 ecological network protection draws some potential line over the planning of the green region. The existence of this protected natural area creates a physical limitation between the urban fabric and the surrounding district as it sets restrictions on a few activities, since it constitutes a habitat directive site for rare, threatened or endemic species. Furthermore, as mentioned above, the whole region consists of an environmental-friendly type character that promotes natural elements even in the high urban functions such as the business and innovation center. Specifically, the residential zone will acquire a green zone pattern that will act as a disruption of the built landscape in the residential zone. This feature will also enhance social cohesion because it will act as a connective tissue in the built environment. In the area's main block, parallel to the railway tracks, there will be enlarged parks that will provide escape from the urban area through big corridors for pedestrians and bicycles. Finally, Thematic Parks with artistic ideas will act as an attraction for the wider area and not only the renovated region.

## **6. CHAMARTÍN RAILWAY STATION AND RAILWAYS SPECULATION**

The most significant problem of the Chamartín area was to focus on solving the railway station and railways use problem. First, we needed to think outside of this specific problem which locks our focus into a problem which obviously can't be solved with simple solution. So, we thought of this area as an area which we could place land uses to help us materialize our vision. A big part of our vision contained the creation of green spaces in different places of the region and not only in specific areas which is something that wouldn't change the lack of green spaces in the area. After considering that we already had certain spots where we could place large or medium-sized green spaces we were searching of small spaces where we could implant green spaces to improve the image of every area even for a small amount. And we thought that considering the size of the railway area we could place green elements (trees, grass, plants, etc.) with aesthetic purposes in an otherwise urban environment.

So, this idea would be accomplished by finding every possible space that there was no use, and use it for this purpose. In our land use map, it is clear how this created area will relate to all the other land uses considering that it passes through our under-process area and specifically with the business center or the office buildings that as land uses would be good aesthetically to have a space like that besides them. Also, this area would interact with our creation of big green spaces placed east of the residential area and west of the railways, and with the thematic parks and education center which we placed in the east of the railways area on the east side of our under-process area. As for the railway station, it should be placed in the north side of the



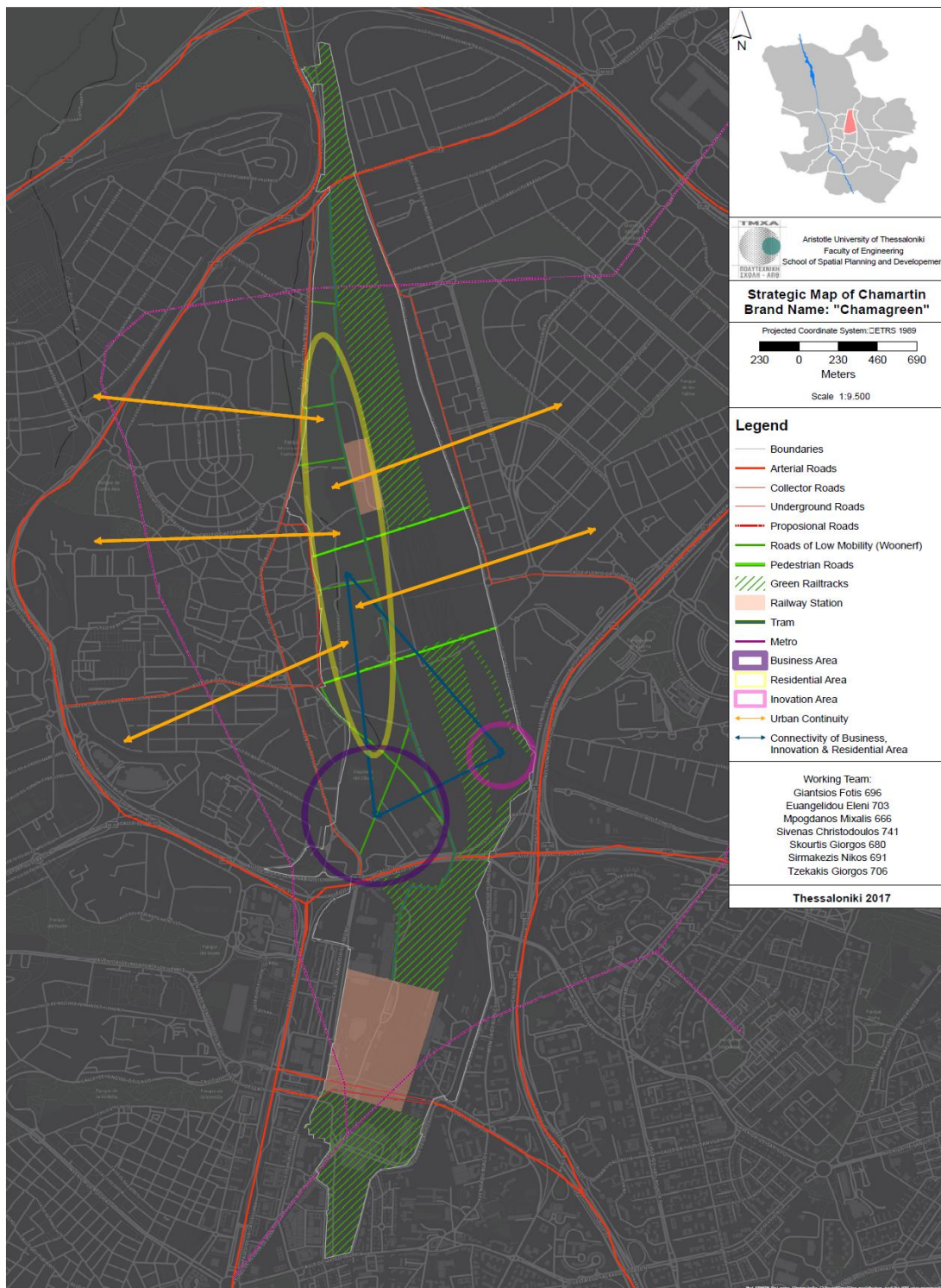
under-study area in a place near the residential area and the education center. This place was chosen for obvious reasons and the most important of those reasons is to make the train station more accessible to the public and more specifically to the ones that its use is more important.

## **7. ACTORS AND STAKEHOLDERS**

Since an urban regeneration policy requires many different actors, who participate in the project in the various stages of the projects implementation we wish to combine a satisfying number of agents as well as a significant amount of funding stakeholders. In this way, we aim to form a collaboration between the public and the private sector. In addition, it is of vital importance to implicate local associations and to promote local involvement in general to maximize the participation level.

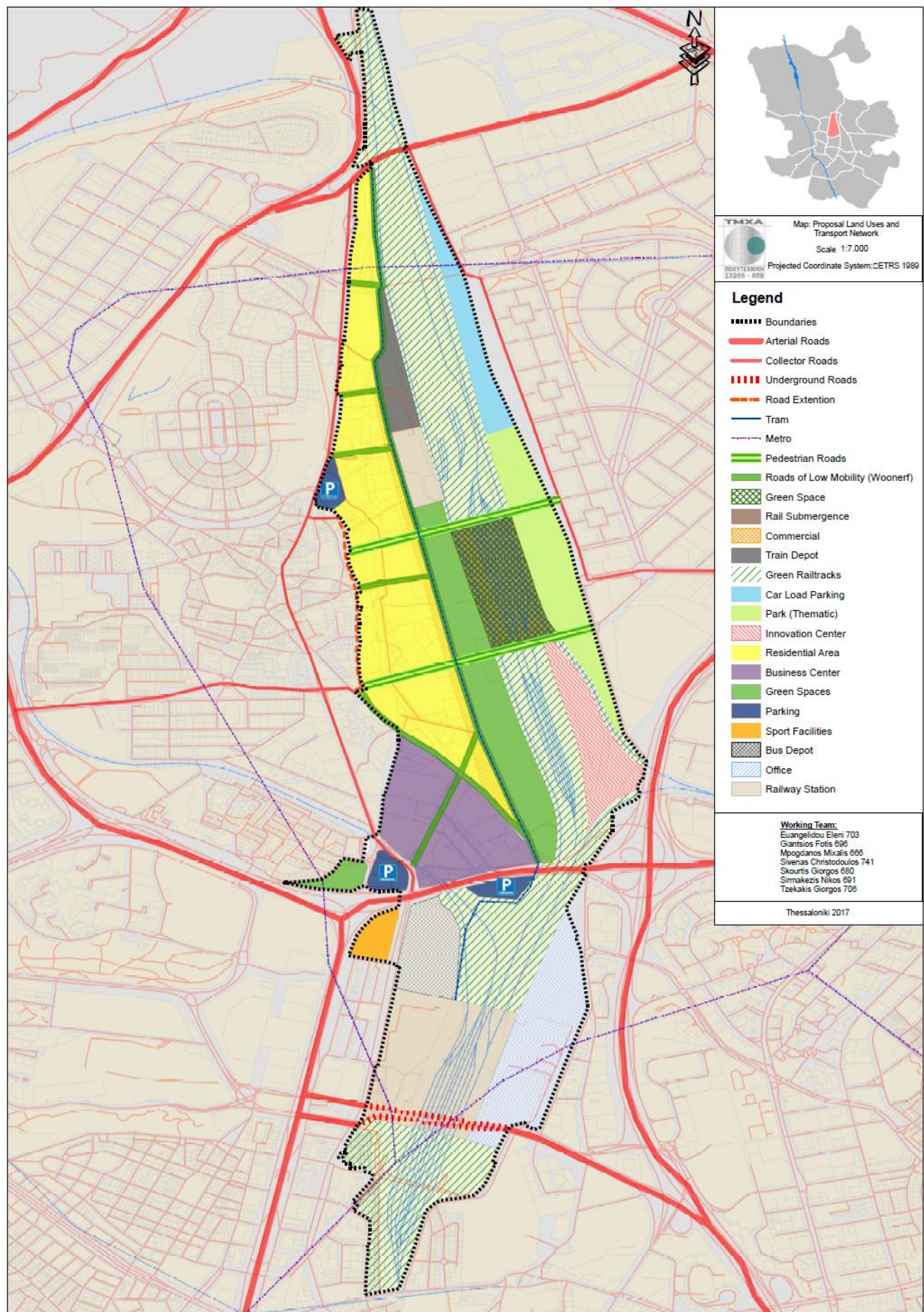
Considering this there is a need to promote synergy and shared roles to form a viable -financially and socially- intervention. Also, it is considered important to enhance the advantages of the active participation of the local population to the challenges facing their community.

## 8. PROPOSAL MAPS

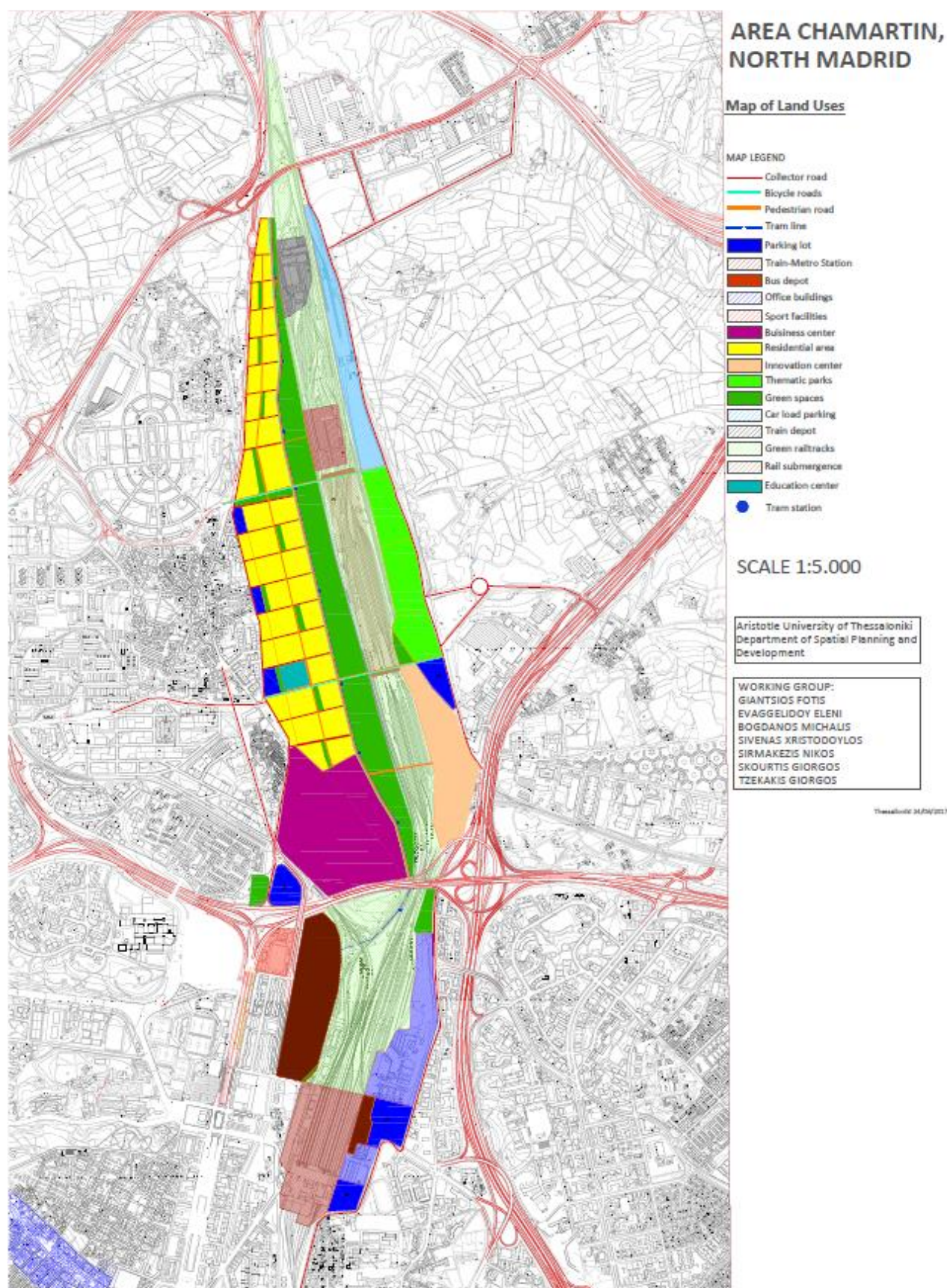


Map: 1 Strategic Map of Chamartin



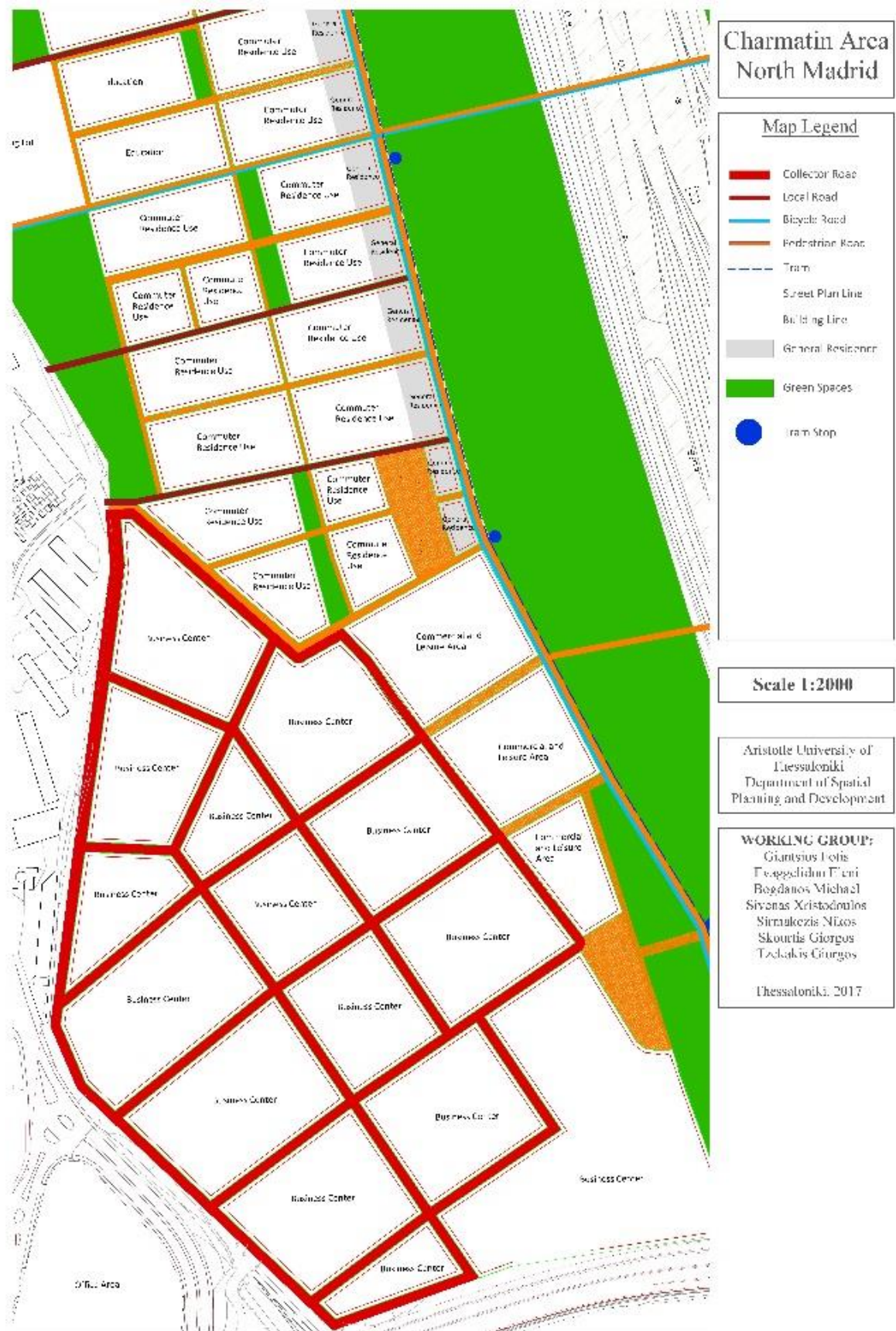






Map: 3 Detailed Land Uses





Map: 4: Detailed Plan



## Joint Urban Workshop

**School of Spatial Planning and Development,**  
Faculty of Engineering, Aristotle University of Thessaloniki

&

**Department of Regional and Urban Planning, Technical School of  
Architecture**

Polytechnic University of Madrid

**Chamartin Valley**  
**HOUSE OF INNOVATION**



### Students:

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*Map: 4 Area of Chamartin*  
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## 1. INTRODUCTION

The aim of this project is to propose a new plan about the urban regeneration of Chamartin which is located northeast of Madrid. The study area is surrounded by the roads Paseo de la Castellana, Calle Mateo Inurria, M-30 highway, Calle de Castillo de Candanchu, M-40 highway and Calle de Ntra. It is a downgraded area due to the existence of railway tracks. This text will focus on the analysis of the area's vision and how it will be developed. Moreover, 3 maps of the area were created in order to analyze the land uses, transportation network and the street plan.

First of all, in the reflection of what should be Operation Chamartín in the future, we recommend increasing the competitiveness of the project area by promoting mixed land uses, creating strategies for social and environmental approaches and generally plan an area which will be stigmatized as the center of social and environmental innovation. Specifically it will include:

- Expansion of Castellana's residence will be one of the main uses of the project area (approximately 10,000 homes). It will include general residence (private housing in parallel with social housing. Some ground floors will be able to accommodate uses such as trade and entertainment. In addition, the construction of pedestrian and bicycle lanes will enhance and improve both the mobility of residents and the quality of living.
- A recreational area which will extend along the train rails. Specifically, the area is to be filled with places of special natural, bicycle and pedestrian lanes, activities significance that have been set aside for peoples protection, enjoyment, mobility and recreation. It is planned to offer both a variety of activities and to isolate the noise pollution of trail lines. The area also will preserve the connectivity of smaller bands and green areas. The aim of this action is to strengthen the green element and achieve sustainable development by eliminating density and compactness.
- The Business center, which will include a cluster of innovation and technology, so as to upgrade the competitiveness and the job opportunities. As a result new jobs will be available to the Chamartin's residents. The establishment of the technological area aims to gain knowledge about internationalization and development.
- Improving the road network and its connections. The design strategies we have chosen is based on green transport (bicycle lanes) and on mass transport networks (tram, metro, etc), in order to solve the problem of urban and metropolitan mobility. However, there is an integrated road network linking Chamartin's area with neighboring areas. Lastly, our purpose in designing transport networks were to achieve the shift of peoples transport habits to a more environmentally friendly means for their every day trips. We have tried to achieve this by designing and connecting the whole area with bicycle lanes and tram networks crossing the residential area, the business center, etc. We have also designed pedestrian networks in some residential neighborhoods in order to make them sustainable and attractive, and to connect in a safety way uses such as residence and education or residence with spaces of civilization.

A big and debatable topic of discussion was the extension of Paseo de la Castellana. Although for some the Castellana extension was deemed necessary, as it would solve the problem of traffic congestion, we do not propose it. Our contradiction is based on the belief that its extension has the effect of separating the area and its cohesion and will shift peoples transport choices to the use of the car as the basic means of transport while at the same time there is an intense development of other means of transport, which are environmentally friendlier, such as the meter, bicycle and the tram in our case.

Concerning the heights of the houses in the project area, they will not exceed the 3 floors, while the building infrastructure within the business center will be constructed as “towers” with underground parking spaces. This action will save space for extra parking areas, and green zones. Furthermore, we recommend densities to be ranging between 100-400 inhabitants per hectare. As a result area will have natural lighting and proper ventilation at the neighborhoods of the area.

The region Chamartin belongs to the northern part of Madrid. It will be an important way of internationalization, which will play a leading role in promoting technological activity in the surrounding areas, thus giving a business character in the field. Two new poles based on economic activities will make their appearance: one based on technology and the other on business. The green zones which will communicate with each other and the upgraded transport network will be an innovation based on both sustainable and environmental development. The northern area of Chamartin will offer well-designed buildings and safe public spaces that will be welcoming and appealing, while serving the lifestyle of the 21st century. All aspects of public life will be strengthened and a new way of life will be created for local and international residents in Madrid.

Regarding the railway station, we suggest that it will remain as it stands, without changing the area or its way of locating. Although we propose changes that will improve the exterior of the building so as to be a trademark of the area. Concerning railway lines, it is proposed to be enhanced by sparse vegetation and trees and green zones, so as to eliminate air and noise pollution. We also propose a part of the railway lanes to link with the tram we propose to be constructed.

Last but not least, we suggest some participation progress to be done. Specifically the role of agents and the number of participation in the proposals (organizations and local people) to be improved. This is important because, through active participation, the final project will benefit all citizens. We recommend a large part of the land to be public with the aim of optimal development of the area and the creation of a city that will respond successfully to the three main pillars of sustainable development: society, environment, economy.

## **2. VISION**

The vision constitutes the motivating force for the redevelopment of the downgraded region of Chamartin. The basic element of our vision is the promotion of the region as a center of innovation and technology. Our priority is the autonomy of its residents through the combination of the mixed land uses with the public transport, aiming at a better and faster service. Moreover, the sustainable mobility is promoted. The redesign

of the region is based on the three pillars of sustainable development: society, economy and environment.



Image 1: Vision map

### **3. GENERAL MAP (1:10000)**

The region of Chamartin is located in the northern part of Madrid and its main characteristic is the railway station. The land uses, the main road network as well as the region's connections to the outside areas are depicted in the map above. The main land use of the region is the residence and specifically is the general housing. In particular, all the floors except the ground floor, which will be used for commercial purposes, will be used for housing. The urban green spaces are significant both extensively between the railway station and the residential area and linearly on the train rails.

There are two cargo handling stations, Fuencarral and Chamartin. Furthermore, the creation of a business center will considerably redevelop the area, providing new job opportunities. It is a cluster of innovation and technology, which will be a landmark for the region. Additionally, the creation of a shopping center in the southeastern part of the area is proposed, which will serve the commercial and recreational needs of the residents. Parking spaces will be built in the residential area closest to the Fuencarral Station for the service of the residents, while in the business center underground parking spaces will be built for its employees. Finally, the bus depot which will serve the largest part of Chamartin is located in the southern part of the area.





Image 2: General map (1:10000)

#### **4. LAND USES AND TRANSPORTATION MAP (1:5000)**

In the cartographic depiction of scale 1:5.000, road connections, rail connections and land uses which are proposed in this project are clearly visible. Inside the area and around, the metro lines, metro stops are designed. Railways intended for easy movement will adequately link the north to the southern part of Chamartin. In addition, underpasses and air bridges will be constructed, contributing to the union of the eastern and western "fronts", but also they can be a connection between Chamartin and the surrounding area. Concerning land uses, the primary use of the area is housing. This will include both private and social housing along the building blocks that extend east and northwest of the area. Extensively in the residential area, will be built cyclists, and special tram routes, making Chamartin more accessible and promoting environmentally friendly means of transport. An innovative and entrepreneurial character in Chamartin will be given by the location of a technology center and innovation cluster in the southwest of the project. More specifically, it aims both at improving the quality of the study area and in attracting new people to create new jobs that will contribute to economic growth. . Within a short distance from the business center and the residential area, a shopping center will be created about the daily needs of the residents, combining them with entertainment and relaxing moments. Large green spaces will be built in the area, like parks including cycle paths and outdoor exercise areas as well as connecting green zones, improving in that way Chamartin aesthetically and qualitatively. Between the main railway lines and the eastbound residential area, it is proposed to install a thick green zone that will prevent noise pollution due to the passage of trains, and will enhance the filtering of contaminated



air. Both the train stations (north and south of the area) and the bus terminal in the southwest will not be changed. Primary and secondary education will be scattered across the educational area for the direct and easy access of students from both Chamartin and neighboring districts. The import of education in the north and south area will be the base of strengthening the educational level of young people. Sports facilities are proposed to the southwest for the purpose of training and entertainment for the residents. In addition, facilities for cultural activities, social work and squares will be located nearby at the residential area. Finally, spacious grounds scattered in Chamartin will be used as parking facilities for both local residents and cluster people or visitors to the shopping center. The actions which mentioned above, are proposed with the aim of upgrading the northern part of Madrid, and promoting sustainable development and mobility.

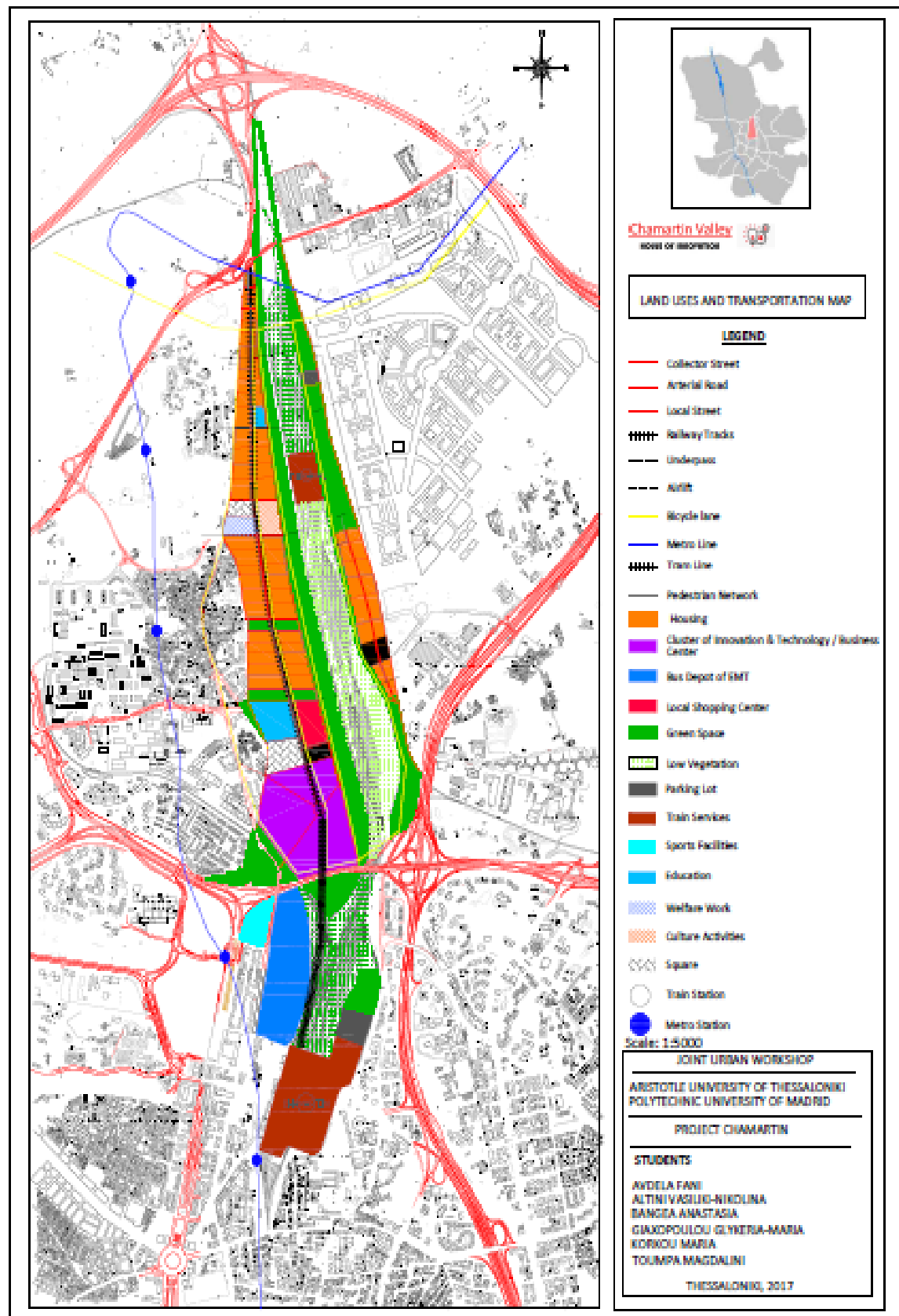
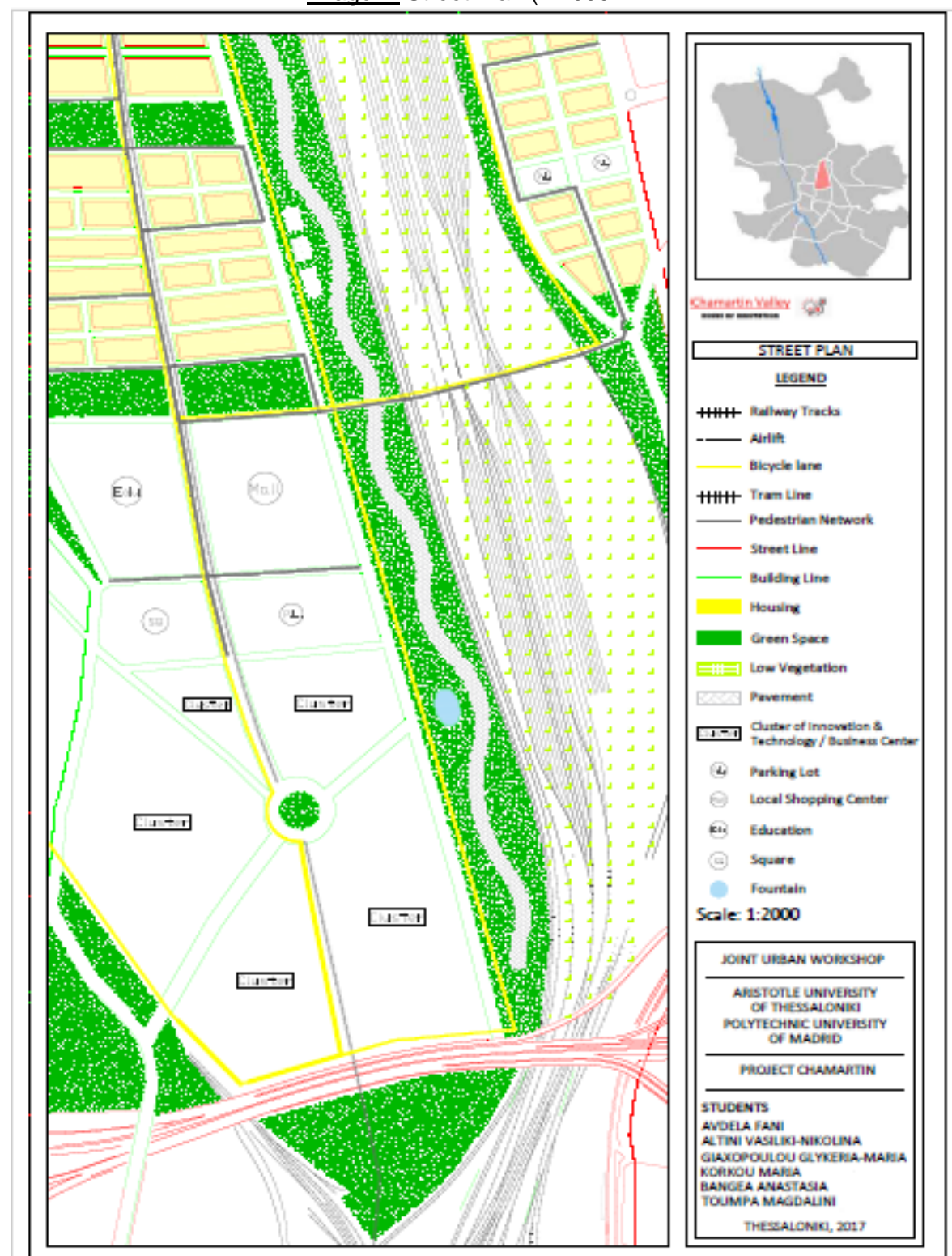


Image 3: Land Uses and Transportation Map (1:5000)

## **5. STREET PLAN (1:2000)**

The 1:2000 map is the street plan of a part of the study area. First of all, the left residence area is traversed by two main roads, one collector road of the area and its width is 20 meters and the other is the secondary/arterial road. Generally, all the roads are mild traffic streets in which not every vehicle is allowed. The main transportation mean is the tram which will be used by the residents in order to go to the parking area, pick their cars and go to their destination. The tram's lines will be 5 meters wide. In addition, in the main street there will be a bicycle lane which will be connected with the bicycle network of the city of Madrid and its total width will be 2,5 meters. The tram and the bicycle line will be separated with a pedestrian network (2,5 meters wide) for residents' and visitors' walks. As it is shown in the map, a pedestrian network will be created in the residence area that will be connected with the central network in the collector road. The width of the secondary road will be 16 meters and the local roads will be 10 meters wide. In the right residence area which is located near the railway tracks and will be traversed by 3 roads. The central road of this area will have 16 meters wide and the two remaining parallel roads will have 12 meters wide. A pedestrian network will be created in the right residence similarly to the left. Furthermore, the airlift which will be constructed will pass through the surrounding areas as well as the Chamartin area connecting the left and right residence areas. According to the map, the streets lines are represented by the color green and the buildings lines by the color red. The street line is the line that delimits the building block in relation to the communal space that it surrounds. Building line is the limit of building construction block. The space between street and building line is the edging plot which is 4 meters wide. In the residence area there will be some green space in order to be a more sustainable environment. In this area there will be a local shopping mall not only for its residents but for its visitors. Moreover, there will be a school space for the area's children and under this there will be a square. Indeed, there will be a parking lot which will be used by the residents in order to leave their cars and take the tram to their homes. A huge part of this plan consists of a cluster of innovation and technology and a business center which will be constructed in this area and it will give a special character in this study area. In this study we decided that the green element will play a significant role in the regeneration area and consequently there will be a linear green space/park which will have a fountain, a pavement in order to walk, a football field, a basketball court and a tennis court. There will also be a bicycle lane which will be connected with the network in the main road. Finally, in the right residence area there will be a 20 meter-wide green space with high trees for sound insulation and a bicycle lane.

Image 4: Street Plan (1:2000)







# MADRID

## Chamartin

### Urban Regeneration Proposal

#### **“OPEN-AGRI”**

*An urban agriculture proposal*

#### **GROUP:**

VALATIDOU ELDINA 687

EVDOU MIRTO 686

KOUKOURIKOU EFTYCHIA 737

ALEXIADOU MARIA 713

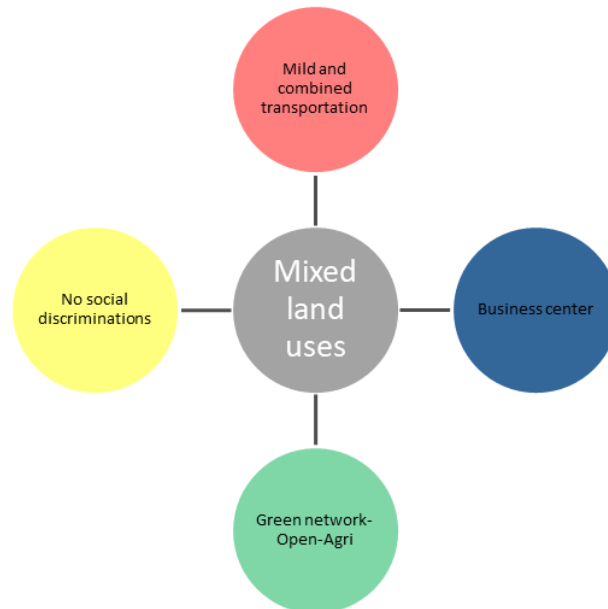
PRODROMIDOU KYRIAKI 718

TAMPOURIDOU ANASTASIA 710



## 1. INTRODUCTION - VISION

*Our vision is to create a sustainable area oriented towards the urban agricultural sector, while combining competitiveness, entrepreneurship, creativity and high accessibility, through combined transportation and mild mobility.*



The purpose of this study is to regenerate the abandoned Chamartin area. The main characteristic is the railway tracks, which cross the area vertically (from North to South). The Chamartin area is supposed to be the Northern entrance of the city of Madrid and constitutes the edge of the urban tissue.

Before starting with the creation of a proposal map, we should first, emphasize a critical idea of our work. This is that the area should acquire a proper identity. In this way, the area will be simultaneously embedded both into the whole, albeit separated from the others. Additionally, it will create a pole and attract people, not only for visiting purposes, but also for permanent residence or work. But before this identity can be analyzed, it is important to mention the main redeveloped proposing changes in the study area. In order to enhance the clarity of our work, we chose to divide the area into 3 sections:

- The South Section - This section operates mainly as a Business area
- The Center Section - This one has more than one land uses
- The North Section - This section is covered mostly by Residential land use

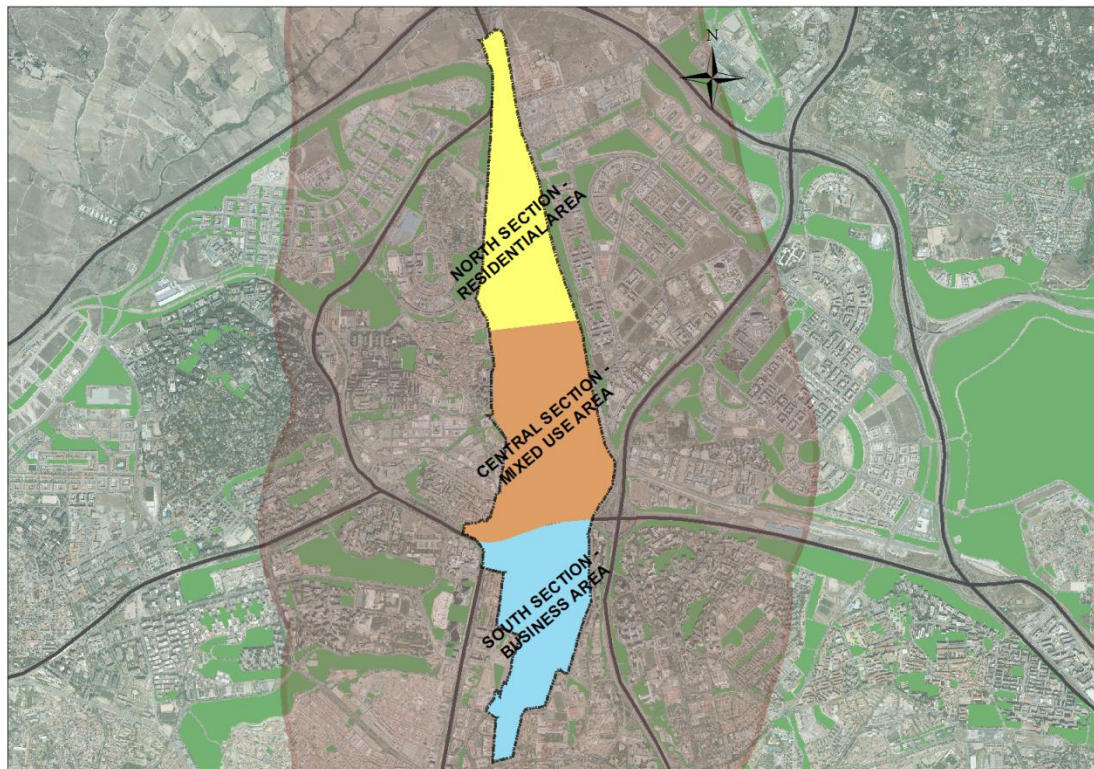


Figure 1 Separating the study area in 3 sections

### ***The South section***

This area aims to become a significant business area of Madrid. It will contain an important number of office and business infrastructures along with automotive industries. The role of this business center will be strategic as it is expected to attract investors, not only from Spain but from Europe as well, and to create new job opportunities. The above is estimated to contribute to the local and national economy. Moreover, the south section will evolve into a transport node of Madrid as it contains the Chamartin Station, which connects the East side of Madrid, where the airport is located, with the Western residential area and the city center of Madrid as well.

### ***The Center section***

This area is supposed to be the core of the Chamartin area, as it will contain the main characteristic of the vision, the “Open- Agri area”, combined with mixed land uses.

### ***The North section***

This section mainly consists of residential land use; more specifically we aim to promote the idea of social mix by combining, with the best way possible, housing of all the different social classes. Furthermore, the specific land use of the area will not be pure residential but it will include other land uses such as commercial use.

This study consists of four different maps. The first one is at the scale of 1:5000 and shows the study area as well as the wider area. The second map is at the scale of 1:2000 and shows a specific part of the project area, which we think constitutes the

“heart” of the project. The other two maps have a strategic content and show the transport and the green networks of the area.

## Analysis of the Land Use Map (1:5000)

Our proposal begins with a more general suggestion of how the area will be developed. The main purpose of the planning is to promote the combined transportation, mild ways of mobility and to reduce the car use.

According to the urban regeneration standards, which suggest a mixed land use system, our proposal follows this policy on the biggest part of the project area. More specifically, the main element that is characteristic of our project area, are the railway lines which expand along the entire Chamartin area. This element creates a distinct discontinuity within the urban fabric, which we attempted to overcome with the horizontal connections. The first such connection (M-603) is located in the northern part and serves mainly car based transportations. The next main transversal connection is Calle Antonio de Cabezón and is an underground road connection which crosses underneath the railway lines and reaches the surface on the northern part of our suggested parking space. Next, we suggest another underground link, on the north part of the Fuencarral Station that will only serve bikes and pedestrians, allowing visitors from the thematic parks to walk/bike to the residential area. The same logic applies to the next suggested underground connection, linking the “open-agri” area and the botanic garden to the residential area on the eastern part of the project area. The final, and most important transversal connection, is the M-30 highway which serves a major part of the overall car transportations in the northern part of Madrid. The southern part, the business area, will be served by a local road network. A major part of our proposal is the vertical collector road which expands along the northern residential area, almost two thirds of it, to finally connect to the M-30 highway. Two more vertical collector roads are suggested to surround the Chamartin area in order to decongest the traffic within its borders, as all the local roads internal the mixed residential area will serve only mild transportation purposes.

It is important to mention that on the northern part of the area, the main land use is proposed to be mixed residential, as a mix of social and regular housing units will be located there, in order to ensure that the necessary interaction of uses will arise. We considered necessary to incorporate a recreational use area adjacent to the mixed residential area and along the entrance of the Fuencarral station, in order to create a new centrality and a permeability element that will attract more visitors.

A green network will serve as a means of transition to the central part of Chamartin where the botanic gardens and the “open-agri” area are located. These elements ascribe the basic identity of the entire proposal, as these green areas provide the main attraction as the core of the Chamartin area. The green network continues southern to the student housing area and the university library, as a means of separation with the industrial area that will remain intact in its existing form.

It should be mentioned that the business area that is already located on the southern part of the M-30 highway, will not face any major changes. The only interventions that are suggested are the five new towers along the M-30 and two new parking spaces, one close to the towers and one south of the Chamartin station to serve combined

transportations.

## **Analysis of the Urban Planning Map (1:2000)**

In this map, the northern section of the area is pictured which mainly consists of low density mixed residential land use. The main goal of the study is to create a social mix, by combining regular and social housing, in order to avoid social separation.

Furthermore, green and open spaces play an important role in the area with the presence of green parts not only in the residential area, but also in the east study of the area where some thematic parks are placed. The main green space, which constitutes the core of the project area, is the “open- agri” area and the botanic garden. The development of the Chamartin area will be based on the function of the “open- agri” area, as it will be able to provide the residents with fresh products that will also be available in the markets and the restaurants placed beside it. Finally, green sound proof shield is necessary in order to protect the area from the noise caused by the function of the rail tracks. All of the green spaces above, combined with the green spaces of the wider area, create a green network which is analyzed in a following chapter.

The commercial character of the area is also significant, as apart from the fact that the commercial use is combined with the residential use, there are also recreational areas related to the “open- agri” area.

As far as the mobility is concerned, the main collector street of the Chamartin area crosses the pictured area connecting the northern section with the southern. The transversal axes are characterized as mild mobility streets and serve mostly the residencies around them. In this residential area, is also located the main pedestrian precinct. The primary bicycle lane, which starts from the eastern wider area, crosses the thematic parks and goes underground (below the rail tracks) till it reaches the main vertical collector. The bicycle lane that crosses the “open- agri” area is also of high importance.

## **2. URBAN AND METROPOLITAN MOBILITY**

As far as the mobility is concerned, the main purpose of the study is to promote mild ways of transportation. For this reason, this type of mobility prevails in the residential area. Also, fixed track transportation is expected to fulfill to a large extend the need of the area's transportation with the lowest carbon dioxide emissions possible. In this study, the mobility is categorized in three groups:

### **Road network**

#### *Vertical axes*

The Chamartin area contains three main collector streets. The first one constitutes the west edge of the study area, the second one crosses it vertically and the third one constitutes its east edge. The main middle collector connects the northern part of the area with the southern, reaching the highway M30. The other two collectors also

connect the northern and the southern area, but are also responsible for the connection between the project area with the eastern and the western area as well.

#### *Transversal axes*

The first transversal axis is the Ring road (M40), which is the Northern connection between the western and eastern regions. The second one is an underground axis, which connects the Chamartin area with the western and eastern residential areas. Lastly, the third axis (M30) separates the business section from the residential one.

## **Fixed track transportation**

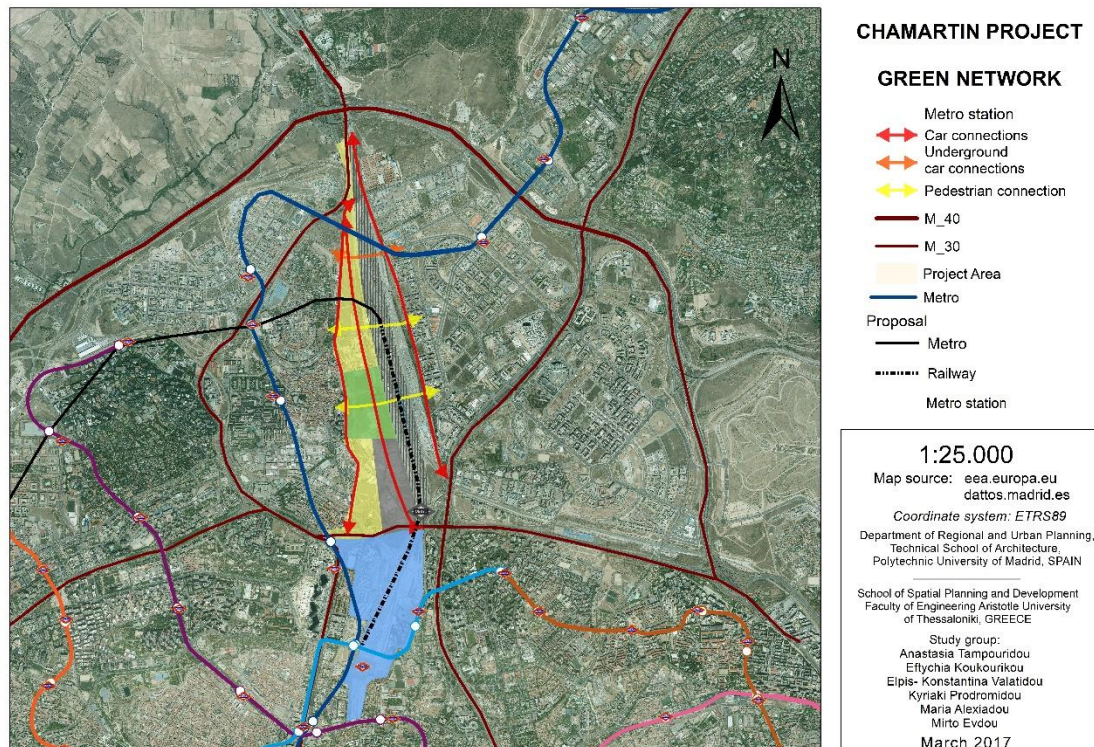
The study aims to a development oriented to fixed track transportation. The area has the characteristic railway tracks, which they connect not only the Chamartin area, from North to South, but also larger scale areas for example the center of Madrid with the suburbs. In addition to the rail tracks, the wider area has four different metro lines. Two of them connect the western regions with the Chamartin area, crossing the Southern edge. One line connects the Northern with the Southern edge in the Chamartin area. Last but not least, a new line that we suggested connects the western regions, crosses the area vertically and ends up to the Chamartin station. From there a connection to the airport and the eastern regions is possible. The study foresees the construction of a new station in the business area, in order to facilitate the connection to the five business towers and to the student housing.

## **Bicycle lanes and pedestrian precincts**

Our main goal in this study is to reduce the car use. For this reason, there are three vertical main bicycle streets parallel with the main collectors. Furthermore, there are two bicycle streets that are transversal. The first one is underground (under the rail tracks) till it reaches the middle collector. The second bicycle lane goes through the botanic park and the urban agriculture area. One smaller bicycle lane crosses the student houses area and another through the thematic parks.

The pedestrian streets play also a very important role to this project. In the residential area, there is the main pedestrian network. There are three main vertical pedestrian streets between each block. The only transversal pedestrian street is the one which separates the botanic park from the urban agriculture area, but there are also smaller pedestrian streets through the residential and green areas as well.





### 3. URBAN IMAGE AND CITYSCAPE

The residential area of the project is divided in two parts: a regular and social housing area and a student housing area. As far as the regular and social housing area is concerned, the building coefficient is estimated at 2.8 and the coverage rate is 70%. As the average residential density is used in this project area (15 residents/km<sup>2</sup>), we have estimated that the number of residents will vary at around 5000 (this number has resulted from the aforementioned residential density and the fact that the buildings of that area will be four stories).

As far as the student housing is concerned, the coverage rate remains at 70% but the building coefficient is now estimated at 3.5 as the buildings height has grown to five stories. So other than the need to house a large number of students, as the university campus is on the SW edge of the area, the higher buildings will serve as a transitional means to the business part of Chamartin. Once again, as the density remains at 15 residents/km<sup>2</sup>, the number of students estimated to populate the area is around 2000.

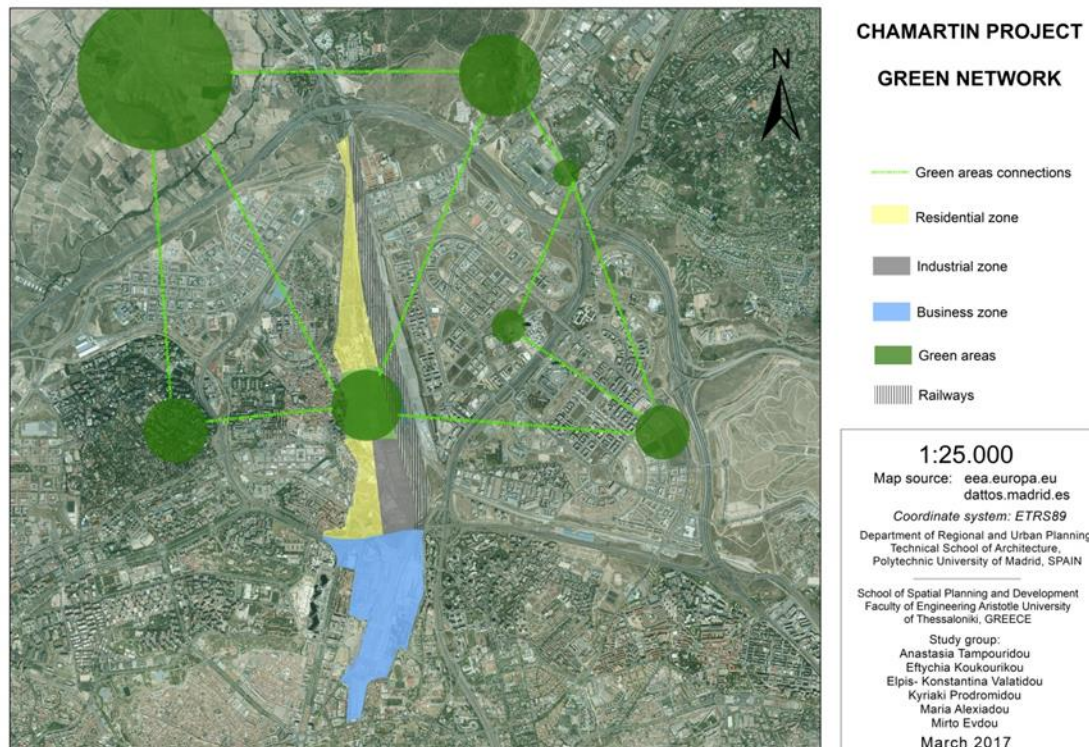


#### 4. GREEN INFRASTRUCTURES, GREEN AND OPEN SPACES

The Chamartin area is embedded into the wider area through the existence of a green space network. More specifically, in the study area, there are four types of green spaces. The largest one is the open agriculture space and the botanic park, which constitutes the identity of the project. The three other types of green spaces are the following:

1. Thematic parks- located across the rail tracks to the eastern edge of the project area
2. High vegetation- aims to become green sound proof shield
3. Green spaces that penetrate the residential area

As far as the west side of the wider area is concerned, there is one main green area which is surrounded by residential land use. At the eastern side of the wider area, three green areas are observed. Lastly, at the Northern side of the project area lies a large green zone, including a Natura 2000 area, that constitutes the limit of the urban expansion of the city of Madrid. By this way, it is created a **poly-nuclear green structure** in the northern area of Madrid.



## 5. CHAMARTIN RAILWAY STATION AND RAIL TRACKS

### *Chamartin station*

The Chamartin station is aimed to be conserved and to rise as an important landmark of the area. The role of the station will increase as the lines passing from there serve not only the connection of the wider area but also fulfill the transportation needs within the Chamartin area. Moreover, the importance of this station will rise as a new line is supposed to end up there in order to integrate to another line heading to the Madrid airport.

### *Rail tracks*

The rail tracks constitute an important element of the image of the Chamartin area. In this proposal we aim to conserve the tracks by converting them into a significant part of the public transportation infrastructures of the area. Additionally, in order to insist on the environmental approach of the proposal, it is proposed to place low vegetation across the rail tracks. Last but not least, in order to avoid visual and sound nuisance it is proposed to place high vegetation which will separate the rail tracks mainly from the residential area.

## 6. ACTORS AND STAKEHOLDERS

After the multicriteria analysis concerning the actors and stakeholders of the three proposals (DUCH (2011), BBVA (2015) and AYUNTAM (2016)) we came to the conclusion that the second proposal has the lead according to the following criteria:



1. number of stakeholders
2. number of funding
3. local social involvement
4. urban agreement
5. compliance with legal systems
6. participation level
7. influence
8. interest
9. political parties involvement
10. international character
11. proposal initiative

In our proposal we aim to conserve the positive aspects of the second proposal and moreover we want to add a few extra elements that the second proposal lacks of. Our proposal wishes to combine a satisfying number of agents as well as a significant number of funding stakeholders along with the involvement of political parties (for example Podemos, Ahora Madrid) and the presence of international agents. In addition, it is of vital importance to implicate local associations (for example AA.VV (Asociaciones Vecinales Federation Regionale Madrid)) and to promote local involvement in general in order to maximize the participation level.

The presence of the above is crucial as the main purpose of the proposal is to promote a community-led development, as far as the management of the “Open-Agri” area is concerned, whilst emphasizing in the cooperation of the agents of all levels (local, national and international). Lastly, the collaboration of the public and the private sector is considered necessary.



## 7. APPENDIX

