

REF

MORPHING

TRANSFORMATIONS



POLITECNICO
MILANO 1863

Politecnico di Milano
School of Architecture, Urban Planning and Construction Engineering
Master of Science in Architecture and Urban Design

SUPERVISOR

Prof. Alessandro Coppola
Prof. Francesco Garofalo

AUTHORS

Giancarlo Argenzio
Zhilin Shen

A.- A. 2020 -2021

RE

**MORPHING
LANDSCAPES**

The Urban Transformation of the Melzi Quarry in
Sesto San Giovanni

MILAN L'È ON
GRAN MILAN

“For receiving these two foreigners, showing them your beautiful side
For Inspiring us to push forward and always look up
To make us understand that our future is as big as our ambitions”

GRAZIE

CHANGE

A word that means so much, a word that even though small has the power to do great things, a word that connects with our project and opens the discussion on how we should conceive the land we inherit. Our landscapes have morphed so much during the time mankind has been on this earth, however, change has never been so radical as the ones happening around a hundred years. The way we find our territory today is a result of how we use to live yesterday, we could even say that human beings are a reflection on what we have done to our territory.

Land is the supporting structure for the evolution of mankind, allowing us to discover agriculture and grow the food needed to settle and urbanize, to the naturally ones that take our breath away and inspire us to create art, to the ones destroyed by industrialization in order to maintain a materialist society. During all of this, we have shaped our landscapes to eat, to create and produce, but is it possible that we might have reached a point of no return? Is it valid to think there is a point of return?

Today we are facing a sad truth, our landscapes are changing without return, they are facing desolation, contamination and exploitation due to our ways of living. Within urban centers, land is a tangible expression of our history and our attributes as society, showing us our past and making us re-think about our future, a future that needs a change in how we approach our territory. Cities are facing with a strong dilemma on how to recover, preserve and transform the land they inherit, how to change them into sustainable ecosystems that they once had and most importantly, how to find the balance between sustainability and our ways of living.

This is the story of how landscapes can change, about how a small word can change an entire area, an entire city and with it, our own life.

Cities are complex structures that have forcefully shaped our built environment, the way we configure and inhabit them has drastically changed during this last century. From agricultural heartlands to industrial landscapes, European cities are one of the best examples of quick urban configuration changes in short time.

Sesto San Giovanni is the example of this shift in urban morphology, the so called "City of Factories" was once a rural parish on the outskirts of Milan, later becoming the industrial core of Italy, concluding in a distortion of land uses and functions, from extraction areas, to service economy districts and residential zones that creates a dormitory city. Here, its citizens coexist with a strong historical background of rural and industrial identity that is juxtaposed with open air quarries and brownfields left by its former glorious days. Since the 21st century, the city has searched a way in which it can recover abandoned areas with new urban interventions, most of them developed individually without an urban plan and not having a clear view for the future of Sesto, therefore, failing to recover the urban cohesion and social dynamics it once had.

For this project, our scope is to find a model that Sesto and other cities can look into, with the goal of stitching the fractured urban tissue left by former industrial | extraction areas.

The project proposes the development of Melzi Quarry into a new resilient urban district. The design goal is to bridge the gap between urban and rural tissues and merge them into a new typology of environment, with the aim of improving the connection between city and rural landscapes. Melzi Quarry will be regenerated to stay as a hinge between the Lambro Environment and the city of Sesto San Giovanni.

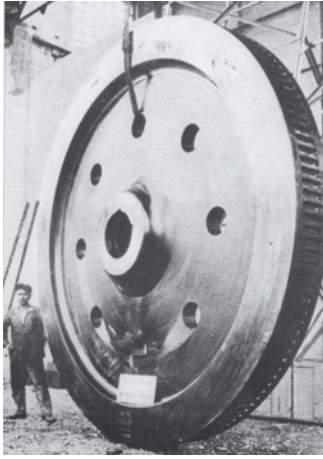
ABSTRACT

Le città sono strutture complesse che hanno modellato con forza il nostro ambiente costruito, il modo in cui le configuriamo e le abitiamo è cambiato drasticamente durante questo secolo. Dal cuore agricolo ai paesaggi industriali, le città europee sono uno dei migliori esempi di cambiamenti nella configurazione urbana in breve tempo.

Sesto San Giovanni è l'esempio di questo cambiamento, la cosiddetta "Città delle fabbriche" era un villaggio rurale alla periferia di Milano, divenendo poi il nucleo industriale d'Italia, concludendosi in uno stravolgimento degli usi e delle funzioni del suolo, dalle zone di estrazione, all'economia dei servizi e alle zone residenziali che creano una città dormitorio. Qui, i suoi cittadini convivono con un forte background storico di identità rurale e industriale che sono giustapposti a cave a cielo aperto e aree dismesse ricordati dai suoi glorioso pasato. A partire dal XXI secolo, la città ha cercato un modo per recuperare aree abbandonate con nuovi interventi urbani, la maggior parte sviluppati senza un piano urbanistico e non avendo una visione chiara per il futuro di Sesto, non riuscendo a recuperare la coesione urbana e le dinamiche sociali che aveva una volta.

Per questo progetto, lo scopo è trovare un modello che Sesto e altre città possano esaminare, con l'obiettivo di ricucire il tessuto urbano fratturato lasciato dall'ex industriale | aree di estrazione.

Il progetto propone la valorizzazione della Cava Melzi in un nuovo quartiere urbano resiliente. L'obiettivo del progetto è colmare il divario tra tessuti urbani e rurali e fonderli in una nuova tipologia di ambiente, con l'obiettivo di migliorare la connessione tra città e paesaggi rurali.



A

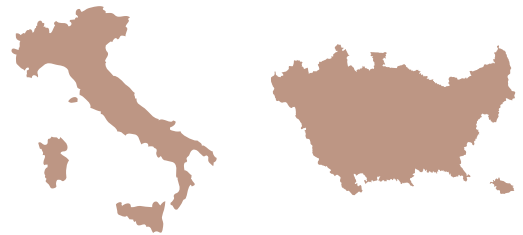
INTRODUCTION AND LITERATURE REVIEW

1) INDUSTRIALIZATION IN ITALY

2) TERRITORIES OF EXTRACTION

NATIONAL SCALE

METROPOLITAN SCALE



E

PROJECT SCALE

RE MORPHING THE FUTURE

10) RE SHAPING PRINCIPLES & OBJECTIVES

11) RE THINKING IDEAS FOR MELZI QUARRY

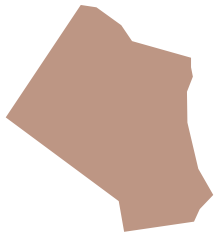
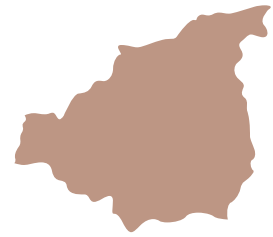
12) RE THINKING DIFFERENT SCENARIOS

13) RE IMAGINING THE MELZI QUARRY



B CITY SCALE

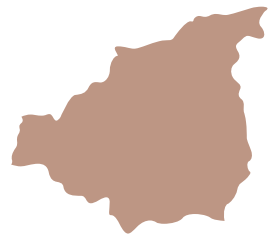
- ANALYSIS OF SESTO 'S INDUSTRIAL TISSUE
- 3) UNRAVELLING THE LAYERS OF THE AREA
- 4) BUILT ENVIRONMENT
- 5) LANDSCAPE AND NATURAL SYSTEMS
- 6) MOBILITY SYSTEMS



C LOCAL SCALE

- ANALYSIS OF THE MELZI QUARRY SITE
- 7) LECTURE OF THE MELZI QUARRY

C



D WORLD SCALE CITY SCALE

- CASE INSPIRATIONS AND SUGGESTIONS
- 8) LEARNING FROM THE PAST
- 9) LOOKING AT DIFFERENT CASE STUDIES



TABLE OF CONTENTS

A_ INTRODUCTION AND LITERATURE REVIEW	17
1_ THE FORMATION OF ITALIAN INDUSTRIAL CITIES.	18
Project Background And Research Subjects . . . . .	. 20
The Italian Industrial Process . . . . .	. 24
Becoming The City Of Factories . . . . .	. 34
Decline Of The Industrial Sesto And Its New Transition . . . . .	. 40
The Birth Of The Milan Metropolis . . . . .	. 48
The Citizens Of The New Metropolis . . . . .	. 56
2_ TERRITORIES OF EXTRACTION.	60
The Extractive Economic Model . . . . .	. 62
Alteration Of Urban Areas By Extractive Processes . . . . .	. 66
Definition Of Quarries And Its Possible Interventions . . . . .	. 70
Legal Framework For Quarries In Italy. . . . .	. 74
Risks And Advantages Of Urban Projects In Former Quarry Sites. . . . .	. 80
Are Territories Of Extraction Valuable For Cities? . . . . .	. 84
Memories And Heritage Of Extraction Sites. . . . .	. 90

B_ ANALYSIS OF SESTO'S INDUSTRIAL TISSUE	95
3_ UNRAVELLING THE LAYERS OF THE AREA.	96
Morphologic Growth Of Sesto San Giovanni	98
Urban Environment Of Sesto's Industrial Zone	102
Future Plans For Sesto's Industrial Zone	106
4_ BUILT ENVIRONMENT	112
Land Uses And Functions	114
Activities Within Public Spaces	120
5_ LANDSCAPE AND NATURAL SYSTEMS	124
Natural Systems	126
Lambro River Analysis	130
Green Areas And Public Spaces	138
6_ MOBILITY SYSTEMS	140
Public Transport And System Network	142
Walkability And Pedestrian Routes	148
C_ ANALYSIS OF THE MELZI QUARRY SITE	155
7_ LECTURE OF THE MELZI QUARRY	156
General Overview Of The Melzi Quarry	158
Processes Inside The Melzi Quarry	164
Future Plans For The Melzi Quarry Site.	170
Planning Legislation For The Development Of The Melzi Quarry Site	174
Reflections On Melzi Quarry	180
D_ CASE INSPIRATIONS AND SUGGESTIONS	183
8_ LEARNING FROM THE PAST	184
Memory Of A Rural Past	186
What Cascina Dei Gatti Means For Sesto San Giovanni	192
Heritage Of The Cascinas Of Sesto San Giovanni	198
Bringing Back Rural Memory Through Landscapes	209
9_ LOOKING AT DIFFERENT CASE STUDIES.	216
Lagunages De Harnes	218
The Nanning Quarry Gardens	222
Quarry Lake At Greenspring.	228
Milan's Ex - Scali Ferroviari	232
What Could Be Learned From These Examples?	242
E_ RE MORHPHING THE FUTURE	245
10_ RE SHAPING PRINCIPLES & OBJECTIVES.	246
Principles For The Project.	248
Objectives And Strategies	252

11_RE THINKING IDEAS FOR MELZI QUARRY	256
Concept Plan	258
Water As A Generator Of Urban Welness	262
1 Project Within 3 Scales	268
12_RE THINKING DIFFERENT SCENARIOS.	276
Scenario # 1 Melzi Quarry As An Agro Park.	278
Scenario # 2 Melzi Quarry As An Urban Park	282
Scenario # 3 Melzi Quarry As A Resilience Quarter	286
13_RE IMAGINING THE MELZI QUARRY	288
Vocations For The New Development	290
Functions And Possible Partners	294
Rules For Mobility And Accessibility	298
Rules For Landscape And Natural Systems	302
Rules For Building Environment	306
Selected Scenario And Its Development	310
F_ CLOSING CHAPTER AND CONCLUSION.	347
14_ CONCLUSION	348
15_ BIBLIOGRAPHY	350
16_ IMAGE TABLE	355

A

**INTRODUCTION
AND
LITERATURE
REVIEW**

1

THE FORMATION OF ITALIAN INDUSTRIAL CITIES

This is the history of a small town in the suburbs of Milan, a city that is dynamic and heroic, a city that have been given many names during its life, a territory shaped by its inhabitants and the steel of its factories.

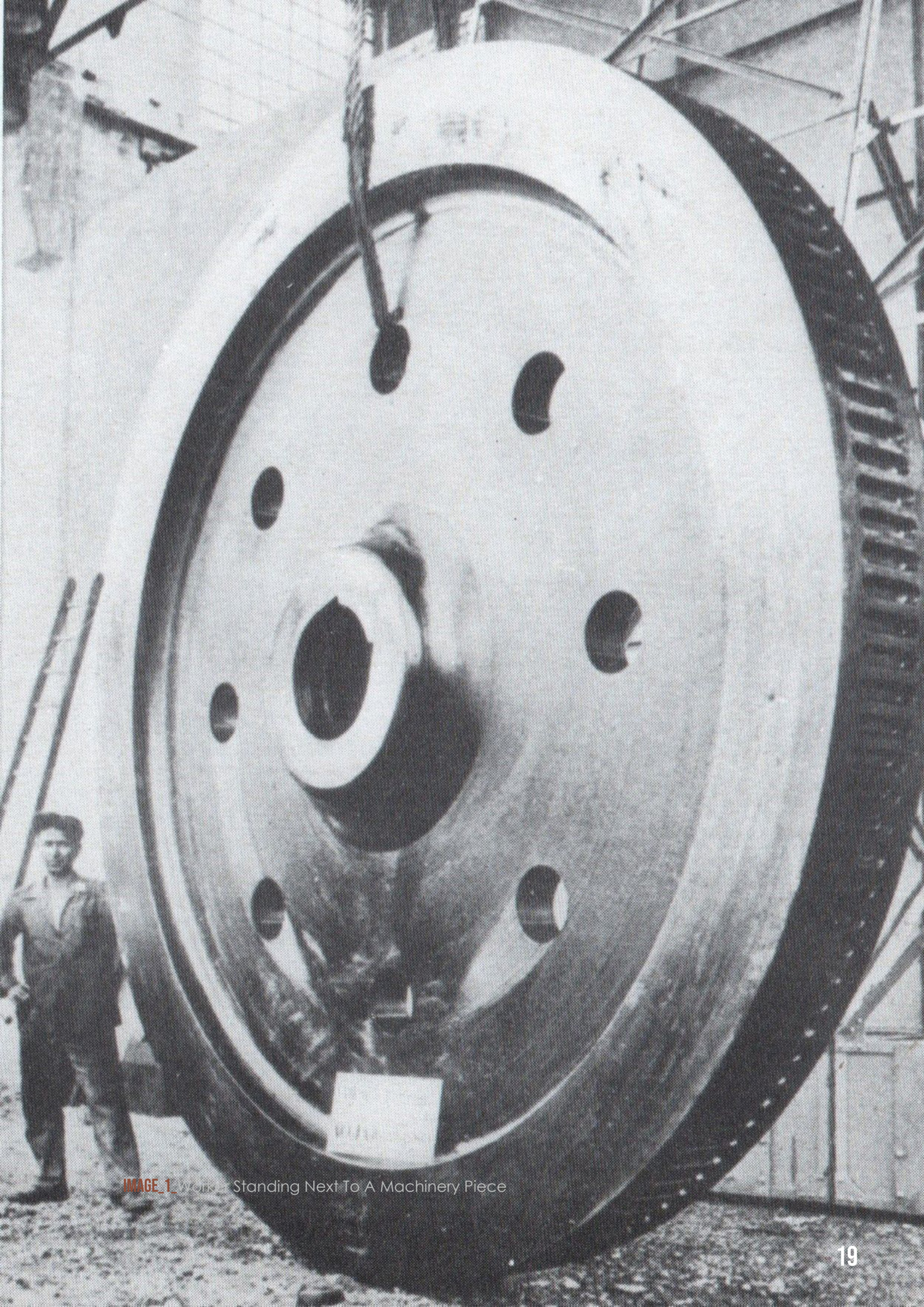
Sesto San Giovanni is officially a division within the Metropolitan City of Milan, located in the north - east side of Milan. Once the Industrial Core of Italy, now it battles with industrial desolation and the uncertainty of its future.

In this sub-chapter the story behind Sesto San Giovanni will be revealed. Starting from the Italian Industrialization Process and how it led to the creation of the new "Industrial North" and the massive industrial cities. Then it shall reveal how Sesto became the "City of Factories" characterized by its heavy industrial presence. Next, it will show the evolution of Sesto and how industrial cities have evolved into the

big Metropolis we know today. After that, revealing how inhabitants of cities coped with this urban evolution and even changed its behaviors within the urban space , evolving into the new metropolitan population in we are today.

Finally, discovering how the industrial downfall the western world led Sesto to a transition from an industrial to a service based city that still is figuring out its projection into the future.

Sesto San Giovanni is an interesting example of former European industrial cities, and how today are they handling their heavy industrial heritage and the transition in becoming new resilient, conscious and smart cities without losing the social and historical tissue that transformed them.



IMAGE_1 | [View](#) - Standing Next To A Machinery Piece

PROJECT BACKGROUND AND RESEARCH SUBJECTS

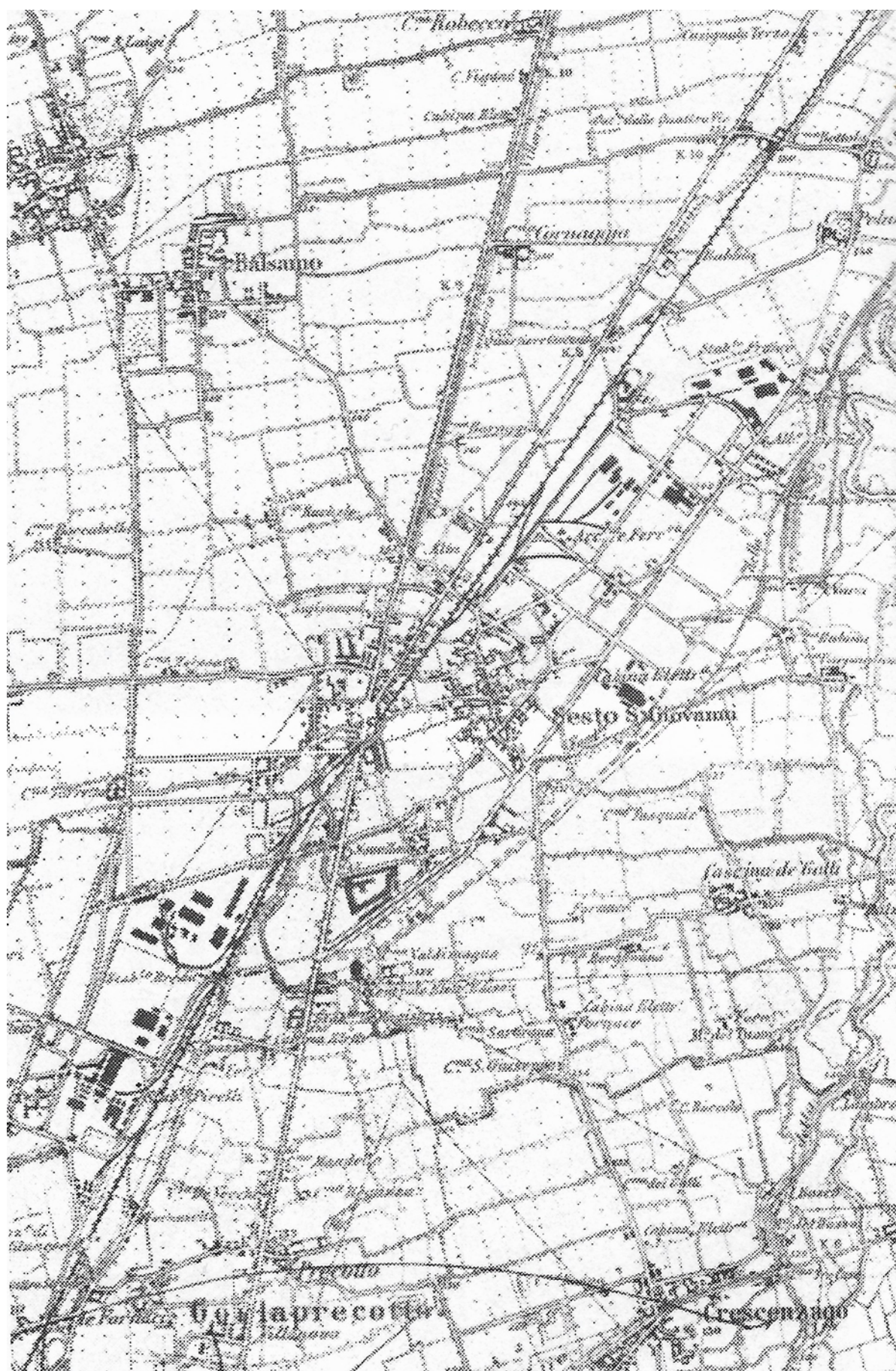
1.1

Sesto San Giovanni is a complex city that has been formed by multiple layers over many years. Its origins are described as an “agricultural Village” more dependent on the territory of Monza rather than to Milan, it is believed that the name of “San Giovanni” was added in 1100, when it was used to remark the dependence of Sesto to the Basilica of San Giovanni in Monza (**Vimercati,2002**).

Industrial activities started in Sesto at the beginning of 1900s, when the expansion project of the Milanese mechanical and metallurgical industries hinged on the railway axis that connected Milan to central Europe through the Gotthard Pass. The industrial settlement was built relatively quickly, between 1903 and 1913, transforming Sesto into one of the most dynamic industrialization centers in Italy. Industrialization was the generator of urban development

and economic growth, emerging new social characteristics, such as, a paternalistic approach by big factories in supplying social services to its workers, and the development of a strong social bonding based on camaraderie and labor union force. These social traits marked the birth of a new industrial society, new characteristics that were visible in many layers and most importantly, their opposition with the former rural society it existed before. During its industrial expansion, Sesto transformed its rural landscape into an industrial one, allowing the acquisition of more rural land and transforming them in new industrial and residential zones.

Starting on the 70's a series of economic difficulties began for the industrialists, started by the world steel crisis in 1971, then followed by the energy crisis in 1974. These global situations lead to the closure of many of Sesto's



IMAGE_2 Map Of Sesto San Giovanni In 1913

industrial complexes. Sesto's industrial emblem, the Falck steel mill suffered many issues during this period, leading to the closure of its Vulcano complex in 1976. Since then, a progressive closure of obsolete factories or departments, reduction of workforce and modernization processes in the remaining plants were forced. In 1980 Falck's workforce was composed by 11,400, in 1986 they had already reduced them to 4,800. In the 90's Falck had to deal with competition of smaller and more modern steel mills, following the framework production quota established by the EEC. In 1995 the last furnace ceased to function, putting an end to Sesto's century old industrial history **(Vimercati,2002)**.

The industrial crisis in Sesto became evident during the 80's, with the disposal of the large manufacturing areas and the social consequences it came with it. Emergence of serious employment, social, economic and urban planning problems, the latter linked to the abandonment and the resulting environmental degradation of extensive areas, mostly industrial and extractive, wedged into the urban fabric. The goal of the public administration was to maintain large business, as well to attract artisan firms by creating newly "equipped areas". This position was entirely oriented to maintain, if not even to increase the industry capacity of Sesto, the administration intention was to block any land speculation aimed at using former industrial areas for purposes other than production. According to the municipal vision, the future of Sesto relied on recovering its industrial areas, considering that the city was capable of promoting "re-qualification" of the industrial system **(Trezzi, 2012)**.

Sesto conforms part of the Milan Metropolitan Area, an area comprising 133 municipalities within a territory over 1,500 square kilometers and a population of more than 3 million inhabitants. The metropolitan

area have merged its territories into a single urban organism, a very complex one that is formed by many different layers. Some heritage from these layers are more known than others, for example, the industrialization impact on the area is widely visible by its society, but, the past of a former rural setting has been mostly forgotten. An antagonistic fact shows that rurality is quite alive in the area, the Milan Metropolitan Area hosts the biggest agro - park bordering an urban area, the "Parco Agricolo Sud Milano" hosts a surface of 46,000 ha and its located on the peripheries of the city. We can observe how a big part of the areas in the Milan region have evolved from a rural background. This rural setting is still visible within the industrial centers, where is possible to find some of its traces, looking at the urban layout of its historic core or even at some of the area names, where the word "Cascina" is included. Cascina is a typological rural building of northern Italy that consist in a big rustic complex in the open countryside used as a dwelling for farmers that incorporated stables and a barn for food production. Even standing today, we can observe in urban areas the trace of the rural heritage has remained mostly in the collective memory.

It is hard to argue that the memory of Sesto and the Milan Metropolitan Area comes from an industrial past, however, we must remember that before industrialization there was another reality, one that was more in touch with its surrounding environment and one that respected its natural ecosystem and beauty. Transformations of urban areas should work on exploring all these layers, in order to bring back the memory of former past, to achieve a communion between urban and rural modernity and most importantly, find a balance between natural ecosystems and built up environments in order to preserve its future. What it should not be omitted is



IMAGE_3_Falck Workers Protest At Galleria Vittorio Emmanuele

the problematics of the urban centers within these big metropolitan areas to find its own identity through the layers of its past, not falling under a single label but to discover the pieces that have been forgotten through the years.

To this date, the situation in Sesto remains complex. It is clear that former industrial areas appears as a permanent reminder of the de-industrialization process and the crisis of the cultural identity from which the city has been defined. This crisis is represented, by the constant decrease of the population and the increase in outgoing migratory flows, which are increasingly moving away from the image of a "city of work". The city council has taken the challenge to seek "a new identity of Sesto, as a center of work, as a city of services capable of developing its own model of technique, of modernity and life

quality" (Vimercati,2002)

The aim of this thesis project is to develop a framework within the disciplines of urban planning and urban design for the re-qualification of a former extraction area . Furthermore, try to understand the dialogue between territories of extraction and urban centers, and how they can be recovered for the benefit of the population, understanding the stance of the Italian legislation on urban planning framework and the viability to act on these type of redevelopment projects. Our final scope would be to provide possible scenarios and guidelines for the urban transformation of the Melzi quarry area into a new development recovering the Lambro environment and connecting it to the fractured urban tissue of the former industrial areas.

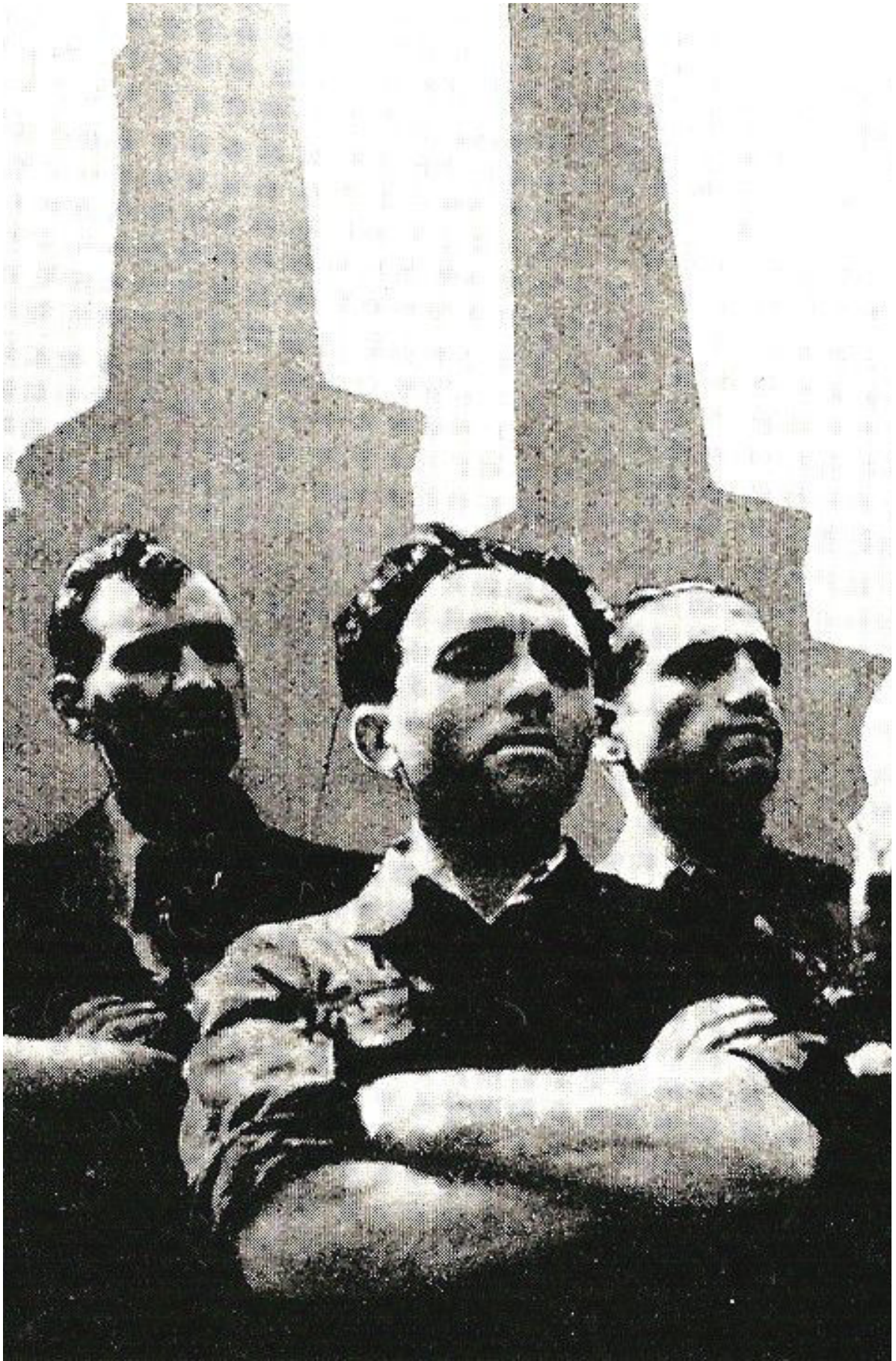
1.2

THE ITALIAN INDUSTRIAL PROCESS

Since the first half of the 1800s industrialization was beginning in England, a long period of economic wealth arrived as the country started to implement new industrial processes for its agricultural and infrastructure sector, this phase sparked an entire revolution in Europe, one that would change its society forever.

When the Kingdom of Italy was proclaimed in 1861, the country found itself with a prevalent agricultural sector, one that was characterized by an impressive product diversification due to the richness of its soil, however, the production structure was carried out by a semi – feudal system that was not technologically advanced compared with neighboring countries **Mori, G. (1974)**. Since the beginning, Italy's industrialization process was delayed in contrast with its European neighbors, moreover, the influence of these countries led to an unequal

arrival of technology into Italy. When the Kingdom was unified, it appointed Turin as capital city, congregating the political power and tight relations with more advanced technological countries, leading to a strong industrial development in the northern areas of Italy. This forced investments in new technologies and infrastructure that allowed faster connections between Italy's northern areas, railroads were built all across the northern regions, connecting cities like Milan and Venice in 1878. Modern connections like these allowed an implementation of technology and logistic processes that modernized the agricultural sector, agricultural regions on the northern Po valley where the first areas to be industrialized and therefore prospering in a span of a couple years. On the other hand, the agricultural development in southern Italy was halted, remaining in a semi - feudal pre industrial dimension.



IMAGE_4 A New Industrial Society Is Born

The unification of all Italy led to the aggregation of more southern areas without trace of industrial technology and which offered little prospective for economic growth, modernization was available only to few areas of the southern areas and permissions to expand the agricultural land was forbidden. Here is when the fracture between north and south was born. "Two Italy's" dramatically distant, on one side the north, that was becoming an industrial society, while the south, remained as an agricultural based society. This would lead to the country's polarization of development **(Mori, G. 1974)**.

The first Italian industrial complexes where built in the north, in particular on the regions of Lombardy, Piedmont and Liguria, these areas received a heavy development of their infrastructure in order to start its industrialization growth. With the development of industrialization, urban areas began to grow. First, receiving a massive exodus from the northern countryside towards the new industrial centers. Then, receiving a big immigration input from southern provinces like Calabria, Puglia, Campania and Sicily **(Image 11)**. The northern cities of Milan, Turin and Genoa exploded demographically and transformed themselves into the industrial core of the country, forming the so called "Industrial Triangle of Italy"**(Image 7)**.

Industrial complexes built inside urban areas where so big that in many occasions space for its construction was not available, leading to an expansion towards smaller adjacent towns. This phenomenon caused an expansion of cities and the industrialization of smaller bordering areas like Lingotto in Turin and Sesto San Giovanni in Milan.

After the fall of industrialization in Italy, the country shifted its production methods, abandoning large industrial

complexes and transferring into smaller industrial districts that were located in peripheral areas around big industrial cities. New industrial satellite towns developed a new network of small urban towns that forged a new built landscape in Italy. For example, many of the big industrial complexes in the north were dismantled and moved to southern regions in search for cheaper production costs, this shift became apparent and the country started to develop small clusters of industrial developments all around its territory **(Image 8)**.

Today we can find the biggest clusters of industrial districts in the regions of Lombardy, Veneto, Emilia Romagna, Tuscany, Marche and Apulia. For the first time, former industrial cities started to loose population and more rural land started to become urbanized, the fracture of an "Industrial" north and "Agricultural" south started to diminish. The fracture north - south was even visible in the type of industrialization areas that were available, from the beginning, the heavy industrial activities of Mechanical and Metallurgical were concentrated in the North, in cities like Milan, Turin, Sesto, Bergamo, etc. While the south had mostly food processing and textile industrial areas in its big urban cores like Napoli, Bari and Palermo **(Image 9)**.

Today, the division of the activities are somewhat different, the north still possesses mechanical and chemical complexes located in peripheral areas in medium to small towns such as Novara, Como, Lecco, Bergamo, Brescia, Verona, Treviso, etc. While the Central - Southern part of the country have seen a big explosion of industries dedicated to consumer goods, especially in the sectors of Building Materials, Jewelry, Textile, Clothing and Food Processing **(Image 10)**.



IMAGE_5_Pirelli Factory Complex In Milan(1900)



IMAGE_6_Ilva Metallurgical Complex In Taranto (2019)

ITALIAN INDUSTRIAL DISTRICTS 1930 - 1950

● Main Industrial Districts



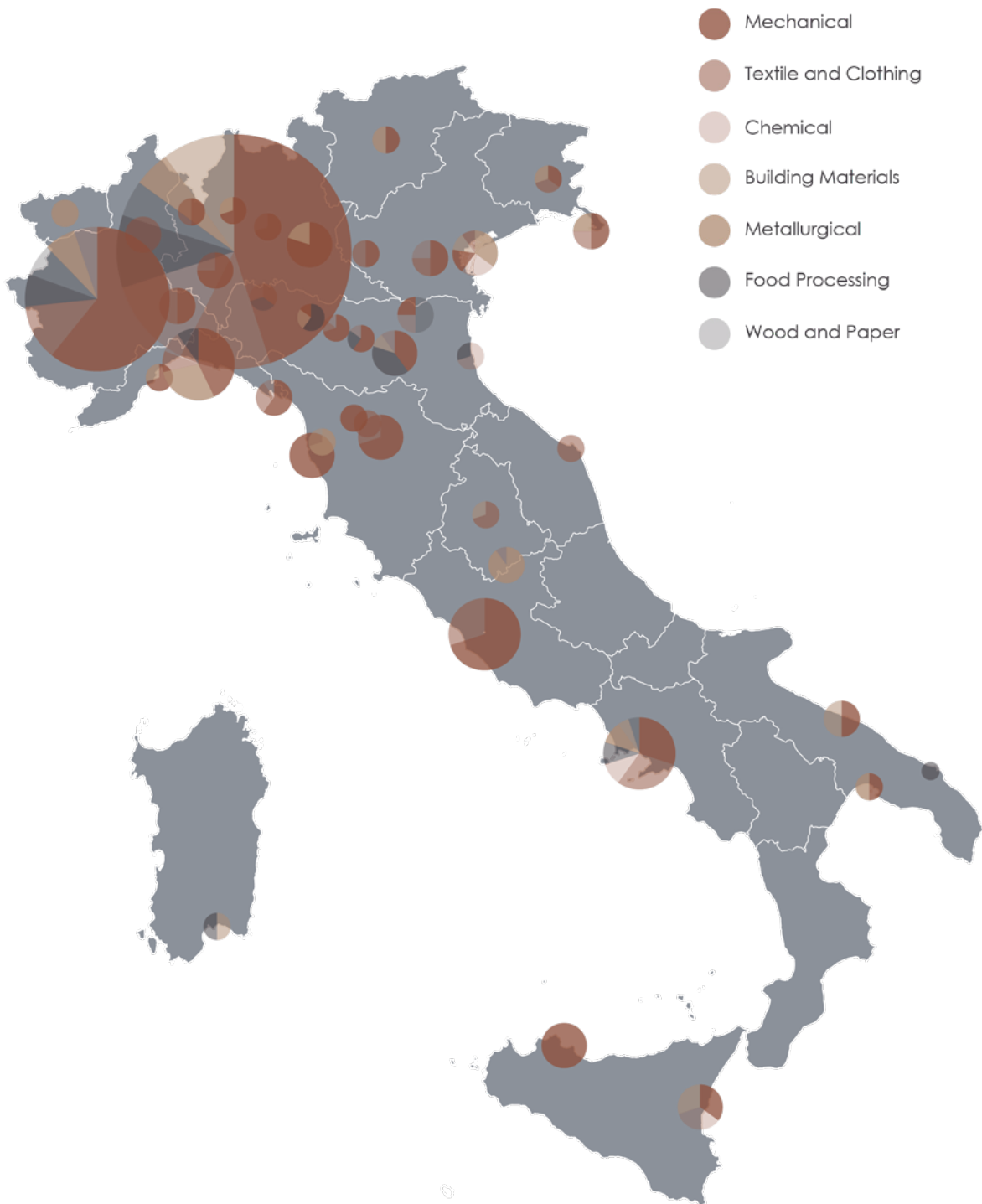
IMAGE_7_Italian Main Industrial Districts In 1950

ITALIAN INDUSTRIAL DISTRICTS 1990 - 2011



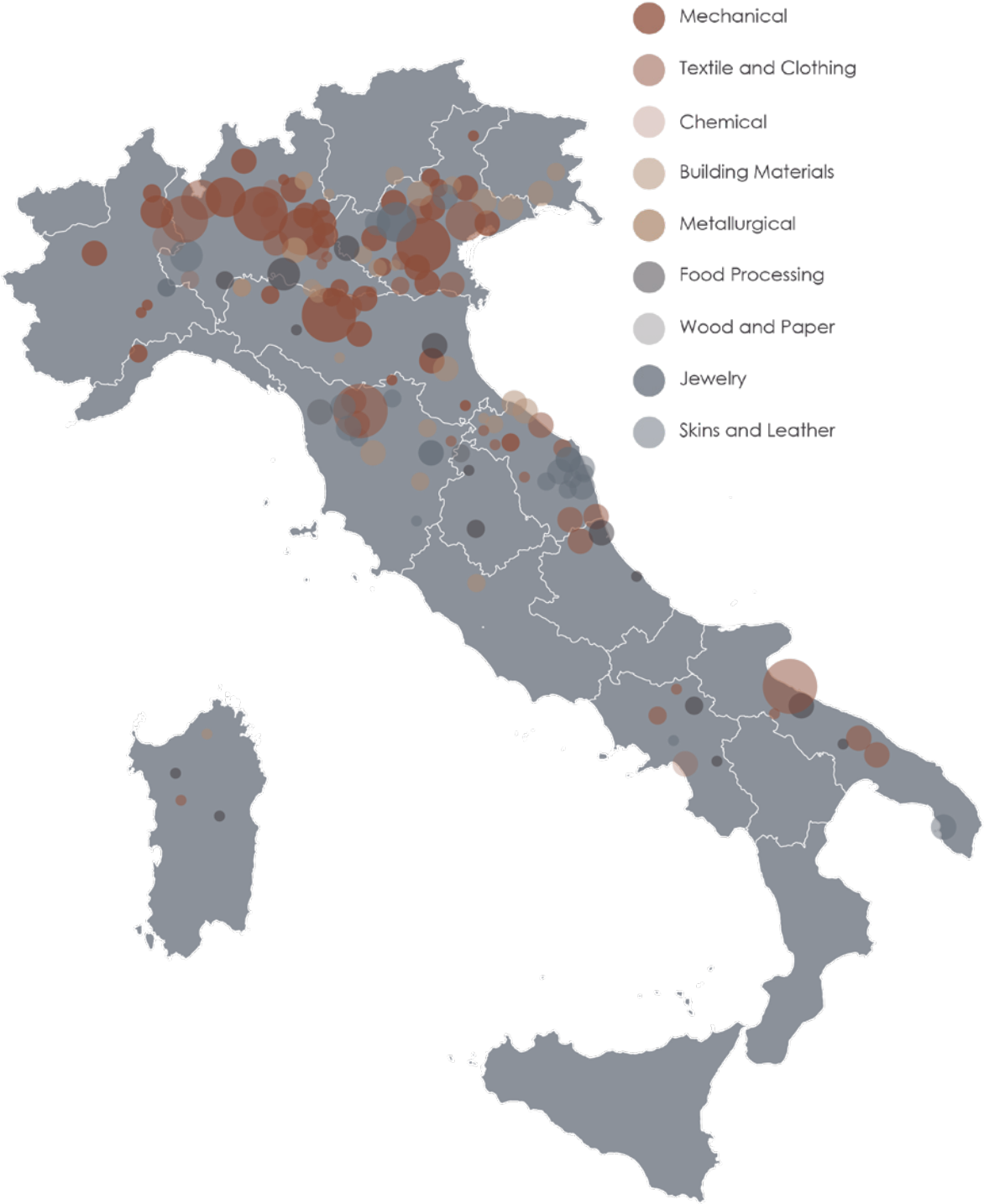
IMAGE_8_Italian Main Industrial Districts In 2011

ITALIAN INDUSTRIES 1930 - 1950



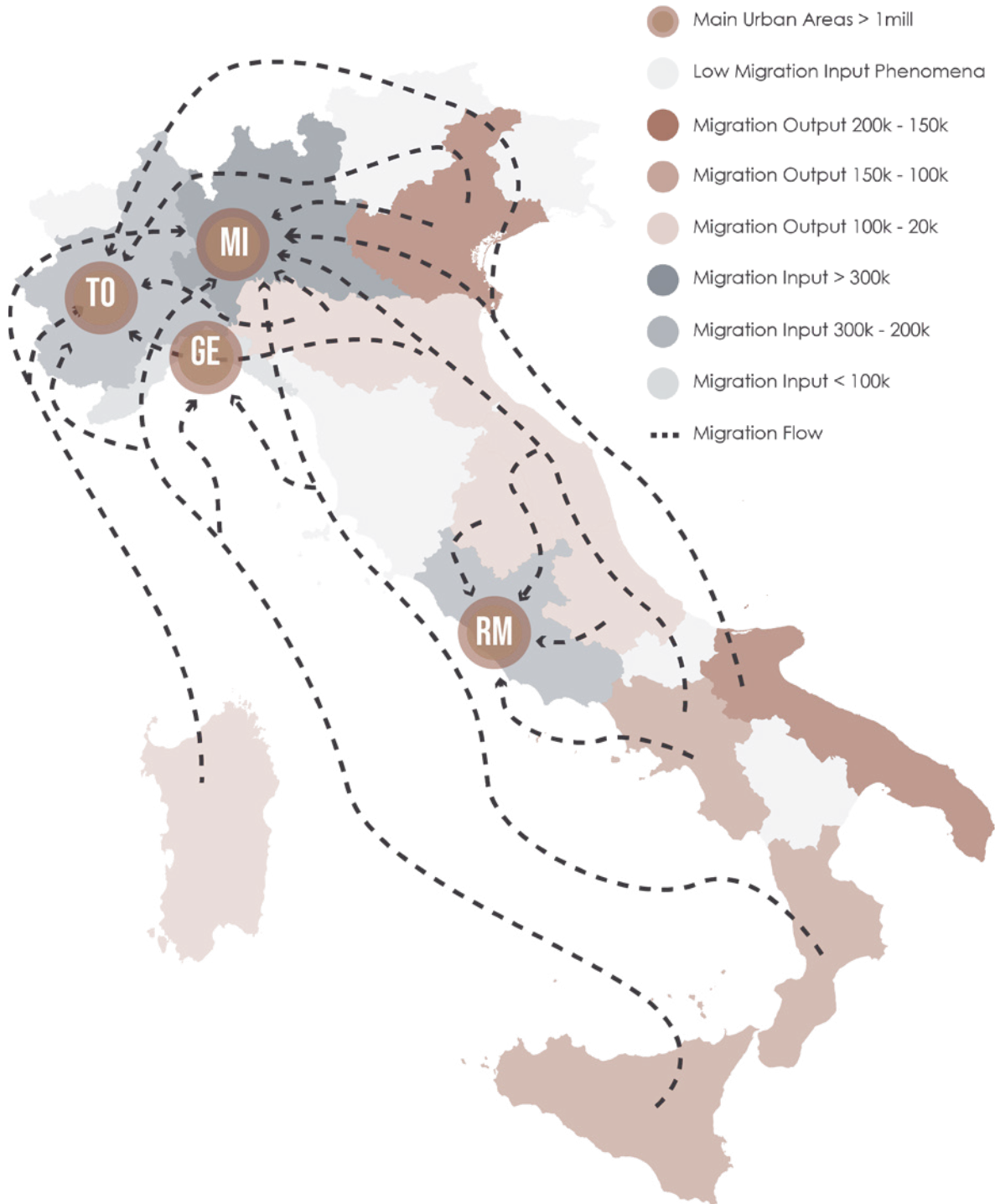
IMAGE_9_Type Of Italian Industrial Complexes In 1950

ITALIAN INDUSTRIES 1990 - 2011



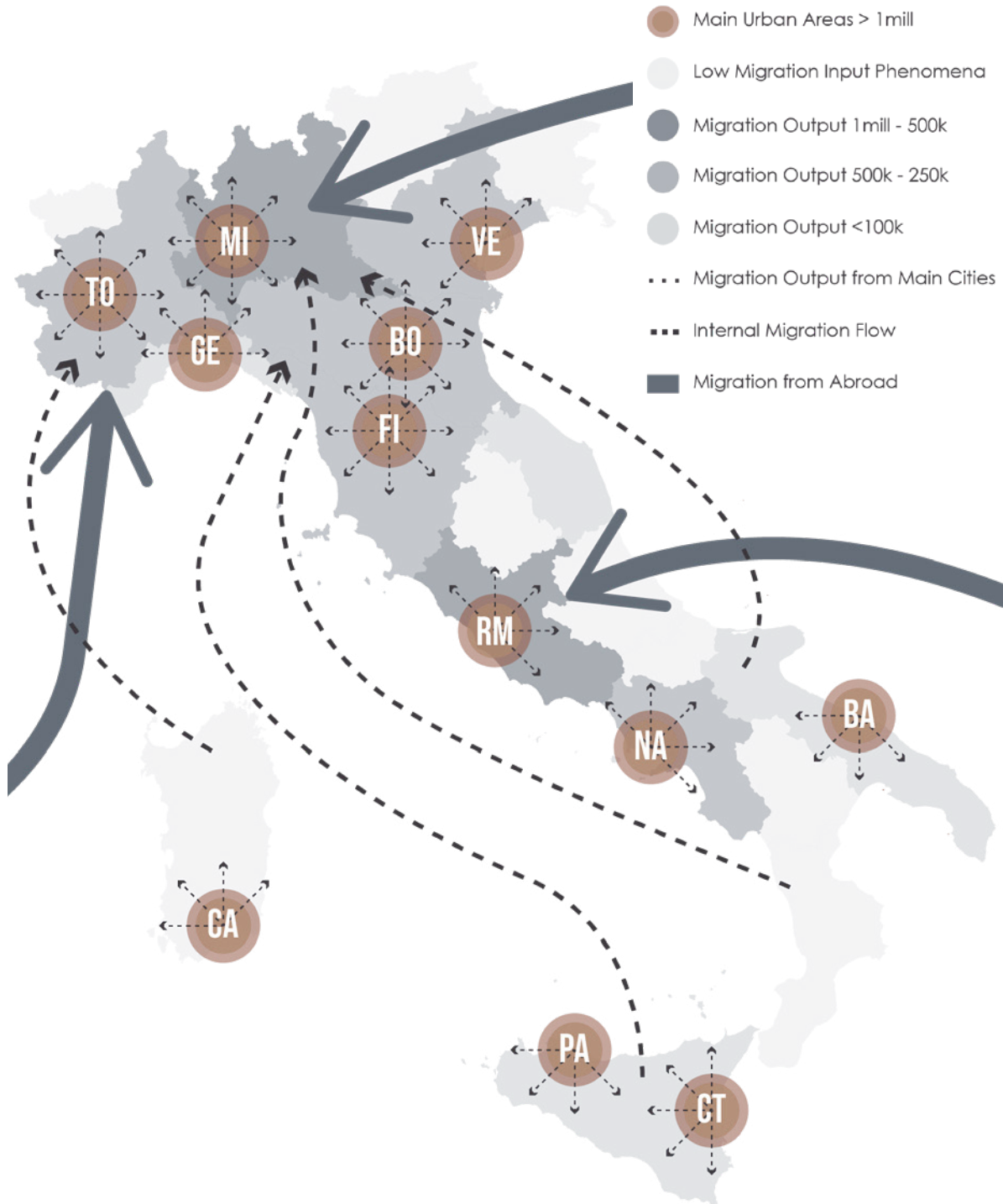
IMAGE_10_Type Of Italian Industrial Complexes In 2011

ITALIAN MIGRATION PHENOMENA 1950 - 1970



IMAGE_11_Italian Migration Phenomena From 1950 - 1970

ITALIAN MIGRATION PHENOMENA 1990 - 2010



IMAGE_12_Italian Migration Phenomena From 1950 - 1970

1.3

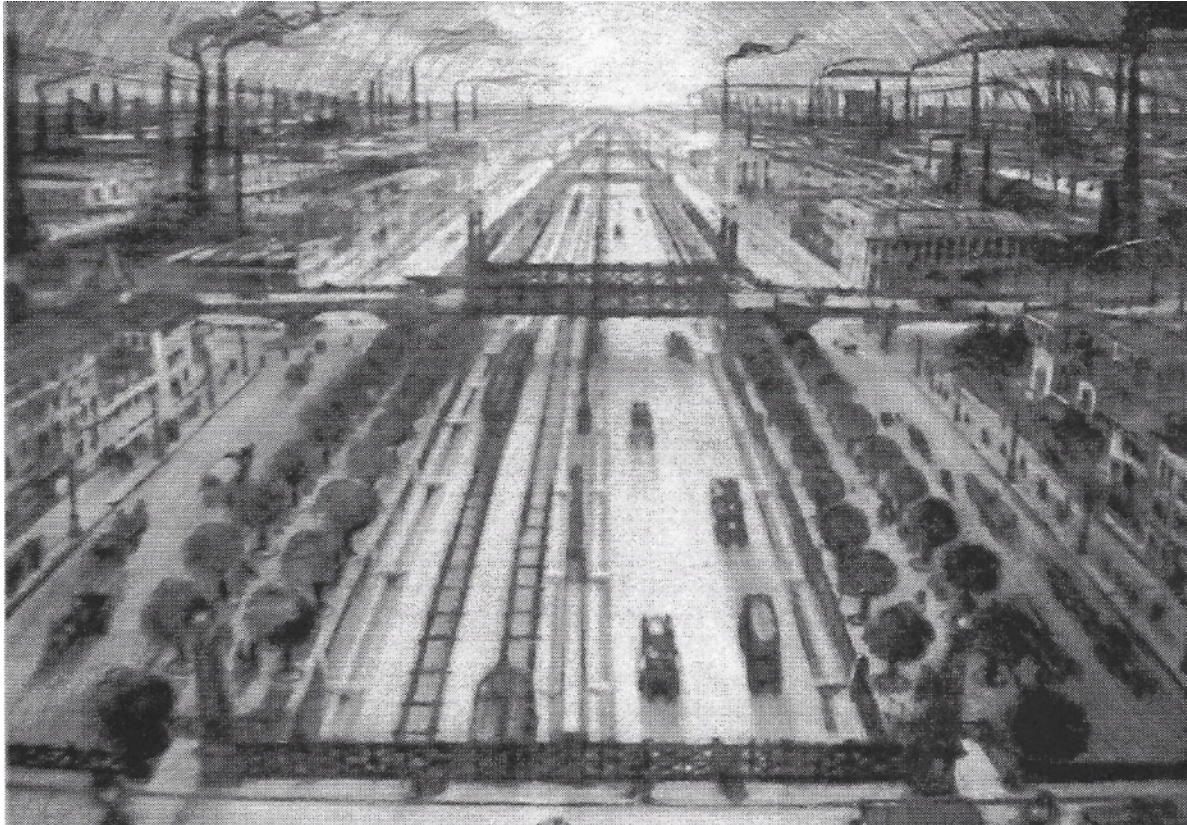
BECOMING THE CITY OF FACTORIES

Sesto is one of the examples of how industrial growth led to the development and consolidation of a city in northern Italy, the city we find today was shaped by the industrial complexes that Sesto hosted from the beginning of 1900's. Sesto was famous for its big amount of industrial complexes and earned the nickname of "Citta delle Fabbriche" (City of Factories). Today, that image is a just a memory, the last big factory closed in 1995, The Falck Steelworks closed its latest production pavilion, putting an end to the Industrial Sesto **(Vimercati,2002)**.

Walking through Sesto one can observe one of the most profound, conspicuous and positive urban challenges that took place in the last part of the twentieth century not only in Italy but in the whole Europe. The way that Sesto became the City of factories took long time to happen,

quick to settle and even quicker to disappear, but its legacy and heritage is still latent until today.

At the very beginning of the twentieth century, Sesto San Giovanni was conceived as the logical expansion of an innovative experience of redesigning the Milanese Industrial complex, the logic of the extension for Italian Mechanical and Metallurgical companies. The transformation of Sesto from an "agricultural village" into an industrial center was the outcome of a development project initiated by the great Milanese companies – Breda, Pirelli, Ercole Marelli and Falck **(Vimercati,2002)**. The expansion of these mechanical and metallurgical industries was hinged on the railway axis that connected Milan to central Europe through the Gotthard in 1840, the first industrial settlement in Sesto occurred in 1904 when Breda manufacturing moves into Sesto,



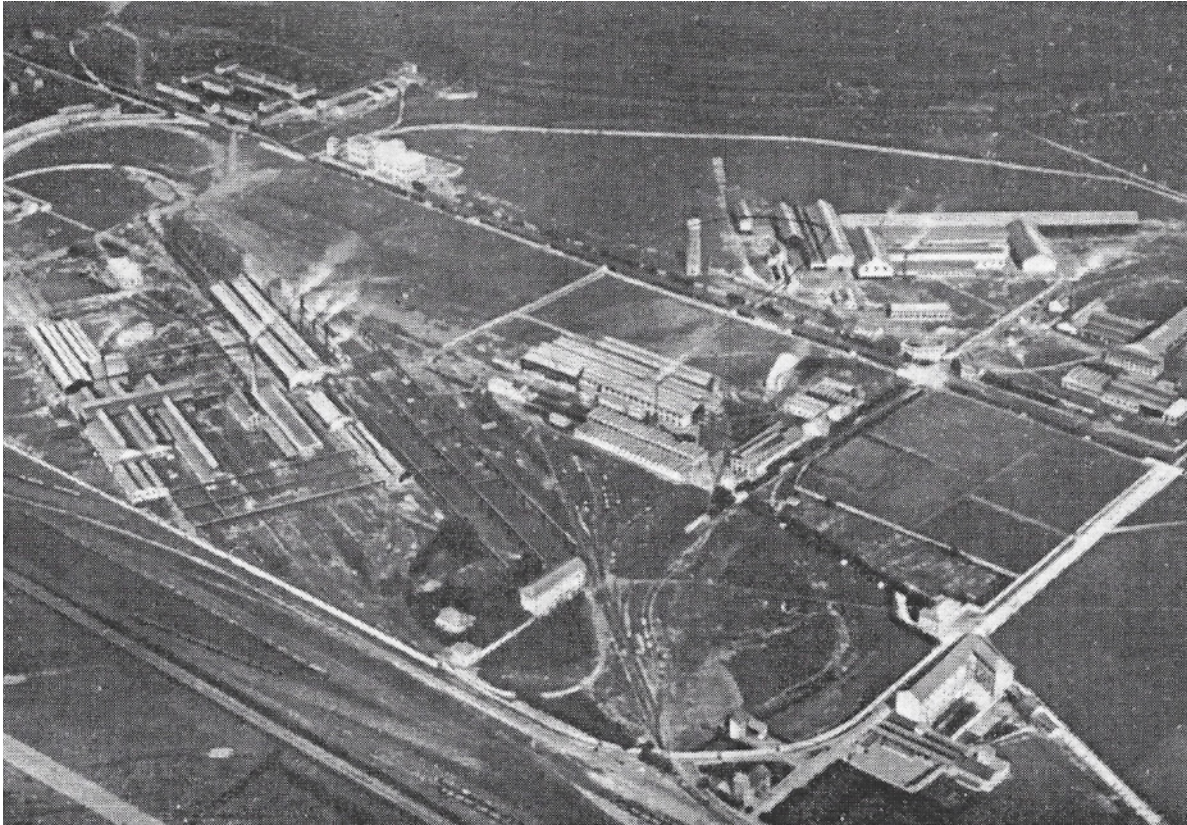
IMAGE_13_ Mario Stoppa's Illustration Of Milan's Industrial Expansion

starting an influx of industrial capital to the town. The first phase of the redefinition of the urban landscape of Sesto was a process governed essentially by the great mechanical and steel enterprise between 1920 and 1930, the growth in the size of these complexes was imposed by the increasing organizational and technological complexity of its production, the territorial and urban reorganization of Sesto implied that new productive vocations and other functions should be built in the area.

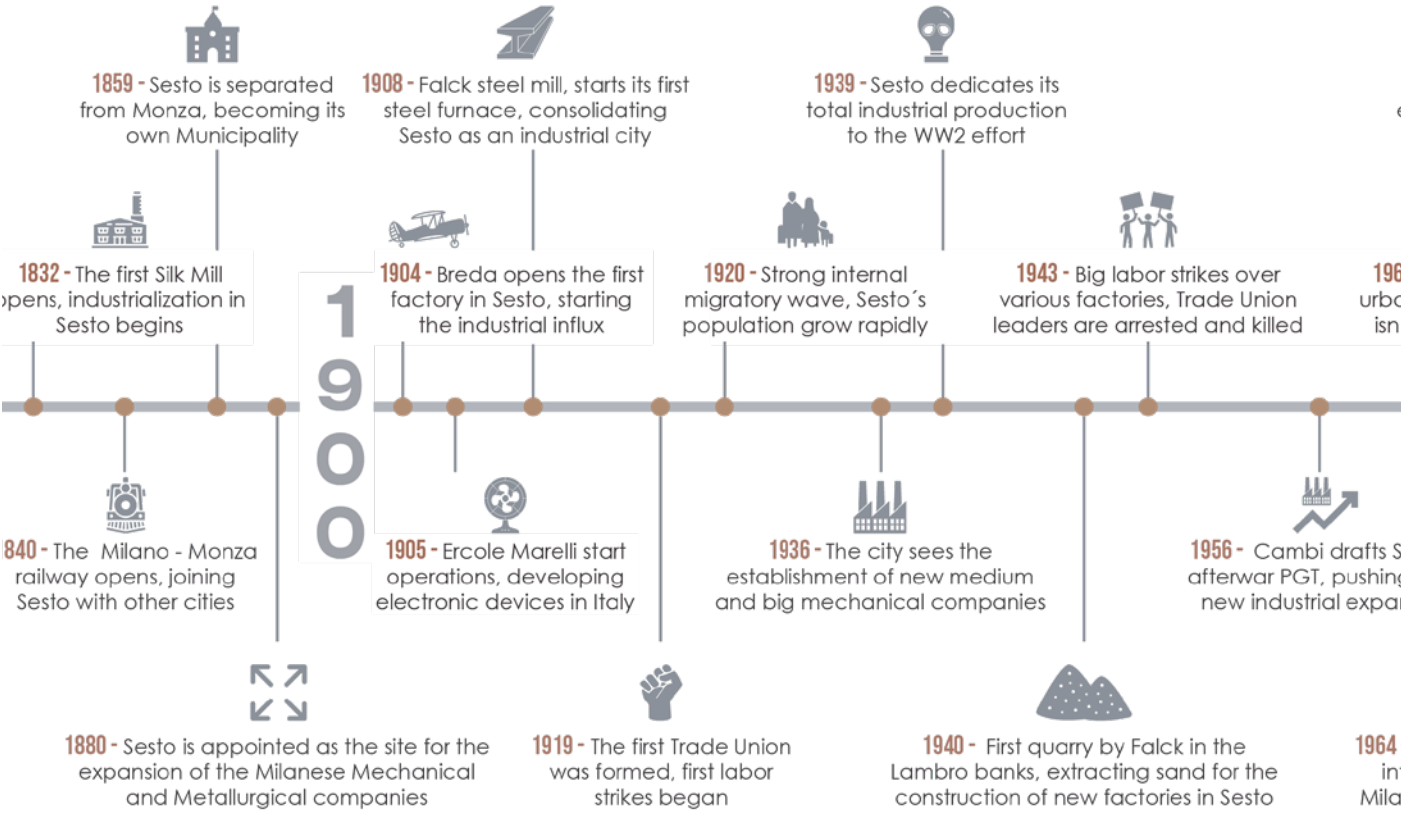
Seeing how Sesto's inhabitants were deprived of basic services (education, housing, health), the big industrial companies stepped in to provide the services its workers needed. Falck, Marelli and Pirelli developed a big network of schools, public housing, hospitals and sports facilities in Sesto for the working class. This approach pushed local authorities

to act, forcing them to step in and provide services long forgotten to its inhabitants and with it, attempting to govern the territory through the local administration. In this key, the government of the territory was a central point for understanding the changes in the Sesto area, from the location of the first large mechanical and steel working plants at the beginning of the twentieth century to the expansion of residential spaces in the fifties and sixties for the pressure of internal migration movements **(Vimercati,2002)**

Sesto represented an original urban experience in the geography of Italian manufacturing cities, because unlike others it was not linked to a single company or a single production sector, but found its constitutive center of gravity in the approach between large and small business and especially between public



IMAGE_14_Aerial View Of The Falck Factory In 1930

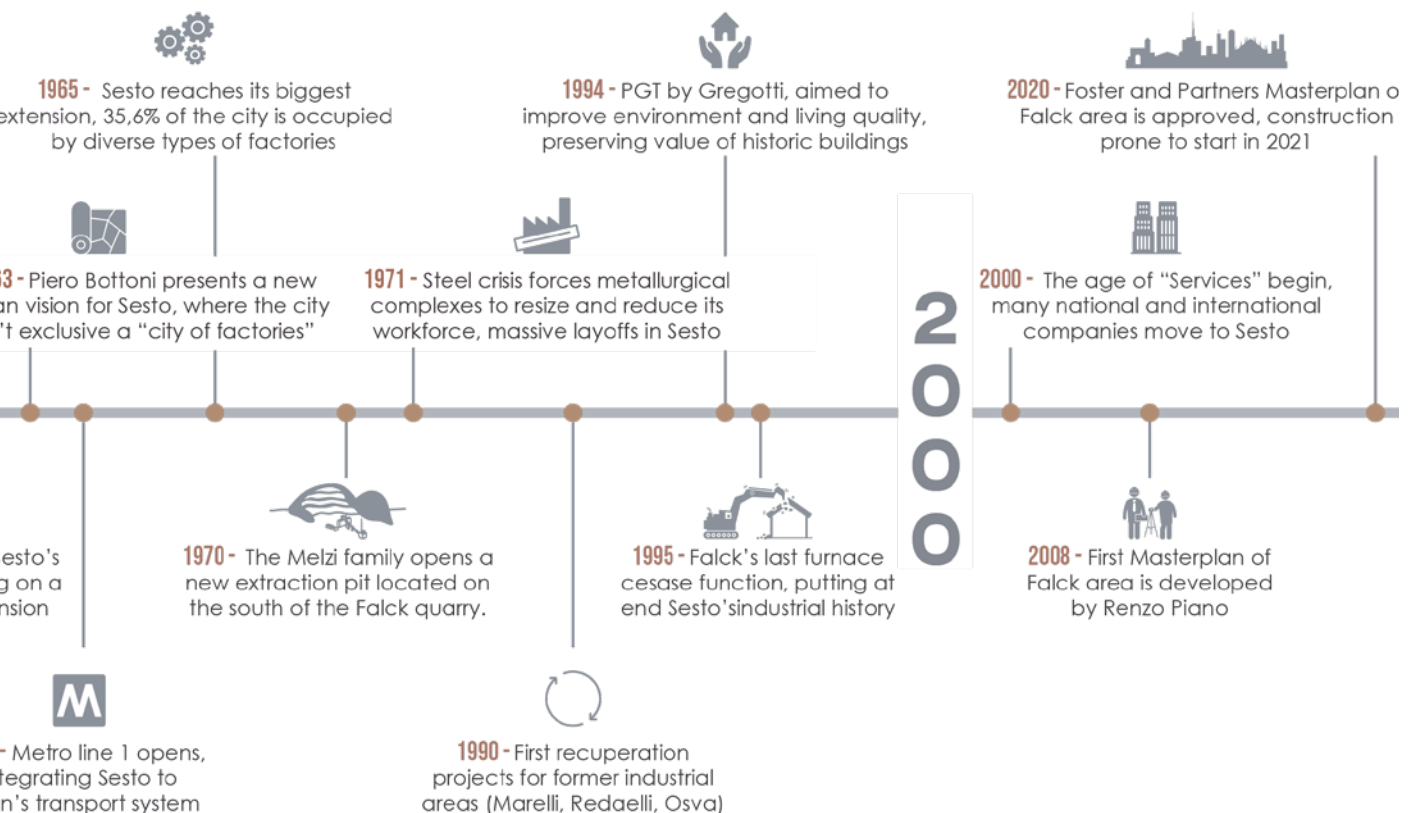


IMAGE_15_Timeline Of Sesto San Giovanni's Main Historic Events

and private industry. Secondly from the fact that a political tradition of the workers movement has been shaped from the factory, capable of combining social conflict with city government, the “class struggle” with “good governance” in a meaning that is far from experiences of the red regions in which rural ancestry is evident and predominant. In the first decades of the twentieth century, the large companies governed not only production but also the territory, with this they could define forms and ways of social life, by the construction of working – class neighborhoods and accommodation for commuters in the nearby areas of the industrial areas. In this sense the industry was a project for the territory and the company destined to mark the life span both for those who lived in the within Sesto and for the commuters who were driven there only for working time (Vimercati,2002).

This “Paternalism” view from the industry led to the creation of the first trade union in 1919 carried by the factory workers and soon after they led to the first strikes in Sesto, employees looked to improve the quality and benefits of the industrial workers, a strong working class community was founded in Sesto through the organization of industrial trade unions. Sesto has had a strong tradition of resistance and fight for workers' rights, so much that has been denominated as well as the “Stalingrad of Italy”.

For the first fifteen years after the second world war period, the “becoming of a city” of Sesto San Giovanni has morphed into something different, either regarding the normal practices and the urban culture consolidated by the fascist regime, or even by the policies pursued at the same time by the centrist administration of the Municipality



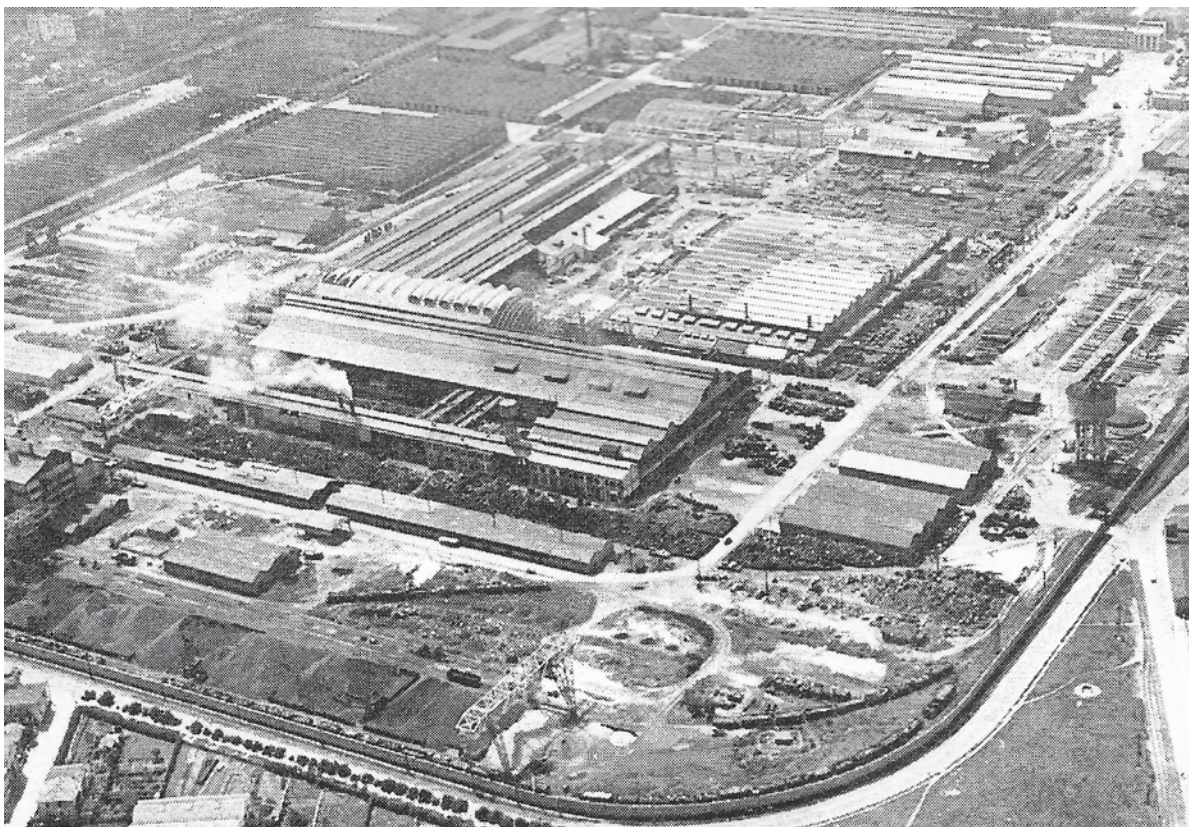
of Milan, and also with respect to the modeling conception of urban planning.

The city that was built from 1946 to 1959, the year of the first post-war PRG, is instead one with the expression of a precise culture of anti-intellectualism praxis by definition, estrange to any theoretical elaboration as to aesthetic research, but not to the language of technology , what was the system of values matured in the factory and in the resistance struggle by those workers, technicians, employees, coming mainly from the Breda, Falck and some other medium-sized industries, which constituted not only the largest percentage of the Sesto population, but formed, for the first time all levels, the leading layer of the new city administration. **(Greco, 2002).**

From the Fascist period the left-wing junta inherited above all things

an abnormal population growth, which grew from 19,205 inhabitants in 1920 to 40,184 in 1940, with an average housing overcrowding in 1946 of 5 inhabitants per room. On the other hand, the aftermath of the war, was even more drastic if we add the increase in the cost of living that reduced family budgets and the rise of unemployment, the demobilization of factories, workers layoffs and the stagnation of private housing. This threatening situation made the administration decide on the protection and extension of the industrial working classes in the factory and in society, the territory was considered in the first place as a resource to be exploited immediately, in a directly productive sense, to respond the needs dictated by reconstruction.

By 1959, under the pressure of a macroscopic development of the



IMAGE_16_ Aerial View Of The Breda Factory In 1950



IMAGE_17_View Of Breda's Boiler Production Room For Locomotives

industrial and residential areas, together with a large internal migratory phenomenon put in evidence the lack of a regulatory urban plan for the city. Looking at this situation, the municipal authorities started to study the possibility of the first urban solution of a zoning plan what would bind the constrain, the orientation and the growth of the developments of the city. It was here, when the first "PGT" of Sesto San Giovanni was implemented, starting the precedent of the future planning of the city.

The forecast of the municipality of Sesto was that the city should be entirely urbanized, creating one of the most urbanized municipalities in the entire country, reaching to levels of 95% of urbanization of the entire area of the city. This plan determined an industrial zone expansion in addition to those actually existing that practically would block with a continues line,

the possibility of an expansion of residential stock. The industrial expansion would occupy all the northern areas arched from the Breda airfield all the way to the railway line, leaving a short stretch to the residential building of the old Sesto and the new housing developments. The streets and spaces left for the connection between this expanding part of the city and the old urban area and its business center where so limited in size and so subjected to industrial traffic and movement of workers to and from various residential areas, that if it has been developed in 1962, one could easily predict a strangulation of industrial activity due to the presence of a mass of inhabitants not always directly interesting and liked to industry and at the same time to reduced residential habitability in the possible worst conditions (**Greco, 2002**).

1.4

DECLINE OF THE INDUSTRIAL SESTO AND ITS NEW TRANSITION

In the 70's the first signs of the industrial slowdowns was showing its effects in Sesto. The city found itself in a delicate situation with the amount of industrial stocks available and the over dependence on the industrial economy to sustain the work and labor within the city. Expansion processes pushed by housing demands and growth of industrial complexes have shaped Sesto into a city of different faces, one that seems fragmented within its interior, the 1959 PGT only reinforced this fragmentation and the question of a future where industry is no longer the main engine behind Sesto was started to develop.

Architect Piero Bottoni was in charge of drafting a new masterplan for Sesto, one that accepts the built up situation of the city but tries to implement a new path for a future without industries. According to Bottoni, two cities emerge within Sesto San

Giovanni, the first one considered the "Old Sesto" on the west side of railway line between Viale F.lli Casiraghi and Viale G. Matteotti, the second one to the east of the railway all the way up to Viale Edison, this is the "Industrial Sesto" considering that the whole south – east side of Edison Avenue was practically a countryside area until the 70's (**Greco, 2002**).

These two cities have been constituted at the same time, but they belong in one single Sesto and it is in here where the fundamental function of the plan is today, to merge the two cities in an easy way, favoring the crossing between east – west which is one of the main problems of Sesto, because on any other direction these two "new cities" are already connected with the consolidated city. So this problem of east-west traffic, in the group of problems concerning traffic, is a pre-eminent one.

For Bottoni, the main problem for Sesto San Giovanni is the determination of the future socio – economic characteristics and structure of the city. There is no doubt that the current city has a very determined shape and physiognomy. Large industry represents practically the core element and constitutes the political generator force of urban development, it hosts the possibilities of creating social bonds in the proletarian sense and the constitution of the political force. The 1962 PGT expressed a continuous band of industrial development that has already started operating, this has deepened the rupture of the urban tissue by deepening the separation of residential areas from recreational facilities and industrial zones. Until the beginning of the 1970's, Sesto San Giovanni's city council has been convinced in the decision to keep industrial complexes on its main priorities in order to generate growth

and development. However, this has to be broken as soon as possible, since the new signs of industrial slowdown are happening it can condition the life of the citizens to a single economy that could collapse at any moment. **(Greco, 2002).**

The last thirty years of the twentieth century saw the phenomena of the territorial transformation of consolidated urban areas and the discharge of its production plants around Europe. The abandoned areas theme arises from a strong structural root, originated from the great economic transformation of the 80's, together with the change of production models that resulted in the abandonment of large industrial complexes which gradually lost their functions. The crisis in Sesto San Giovanni became apparent during the eighties, when the city is affected by a definitive disposal of



IMAGE_18_Sesto's Industrial Zone in 1980



IMAGE_19 Sesto San Giovanni's PGT Of 1962

the large manufacturing factories with the consequences of large unemployment, economic downfall and de – controlled land use expansion, resulting in the environmental degradation of the urban image and the life quality in Sesto.

At the end of the 1970's the demise of industrial areas was a reality in all European cities and Sesto San Giovanni was not an exception. The situations developed in 1971 (World Steel Crisis and 1974 (Energy Crisis) pushed the flight of small – medium industrial companies to other areas, adding a big stock of abandoned industrial zones within the city.

The industrial crisis in Sesto became evident during the 80's, with the disposal of the large "traditional" manufacturing areas and the social consequences it came with

it. The goal of the public administration was to maintain large business, as well to attract artisan firms by creating newly "equipped areas". This position was entirely oriented to maintain, if not even to increase the industry capacity of Sesto, the administration intention was to block any land speculation aimed at using former industrial areas for purposes other than production.

However, the digits from 1983 to 1987 showed a different reality, the job losses amounted to 5683, to which later should be joined with the 2000 workers in "perpetual layoffs", to form a total of 17,834 jobs losses from the beginning of the 70's. Even the biggest factories in Sesto showed the alerting red numbers, Breda (-1046), Falck (-1188) and Marelli (-1046), these figures made clear that the city administration vision was in the wrong and that industrialization in Sesto was in an inflexible point **(Trezzi, 2012)**.



IMAGE_20_Bottoni's Draft Masterplan For Sesto's 1973 PGT



IMAGE_21 New Urban Developments On Former Marelli Factory

The last big factory operating in Sesto was Falck steelworks, which facing the competition of smaller and more modern steel mills and falling to the production quota established by the EEC, followed the ceased of operations of its last furnace and with it putting an end to Sesto's century old industrial history (**Vimercati, 2002**).

The demise of the Sesto industrial areas, left a big abandoned building stock. Redevelopment projects have been proposed through the years with actions between public and private operators, in addition to attempts of collaboration between these two, which few have been successful and most of them have failed. One of these failed attempts was the transformation of the former OSVA factory, its reconversion was thought mainly for a new services

district, in which a 60% of the land surface was intended for green and public areas with various services, in the center a large building that stand out with its central post office and many offices, a sport hall, a multipurpose cultural center, a congress center, a square for outdoor shows event and as well the restoration of the Novella farmhouse, this approach was highly criticized due to the one way direction of thought that land use could have in a really rich area of the city of Sesto.

A different approach was thought in the 80's, following a new trend towards greenery and ecology with the construction of a northern park for the metropolitan area of Milan, in which many different municipalities participated together to transform this former industrial area into a green lung for a highly urbanized area. This project faced problems of small and medium industrial complexes settling

in the area, overlapping two different opposing views that the city was interested **(Trezzi, 2012)**.

The vision for the future of Sesto San Giovanni remains unclear, especially after the dissolution of industrial settlements, employment reduction and growth of abandoned industrial brownfields in the city's northern areas. This has led the city administration to present itself to favor the establishment of different land uses in other areas, new types of industries that can be able to generate new employment sources and the massive re - qualification" projects in former industrial areas to be transformed into new areas based in residence and service areas.

This comes into the framework of re developing the degraded industrial tissue located in the north

of Sesto as well, as the preservation of former industrial buildings that represent the a tangible former heritage and identity of the city.

In the following years, Sesto reconversion will focus on recuperating the abandoned stock of the city, the connection to its surrounding environmental areas, the expansion of greenery as an important way to connect internal urban areas, the preservation of historical buildings and the consolidation of a compact city through the densification of its neighborhoods.

Finally, it is currently discussed the extension of vital services for the city, such as the Metro Line 1 towards Monza, the creation of the Museum of the Factories and the incorporation of the Parco Della Media Valle Del Lambro into its urban premises.



IMAGE_22_Current Brownfields In The Former Falck Factories



IMAGE_23_Satellite Image Of Sesto's Falck Area In 2000



IMAGE_24_Satellite Image Of Sesto's Falck Area In 2019

1.5

THE BIRTH OF THE MILAN METROPOLIS

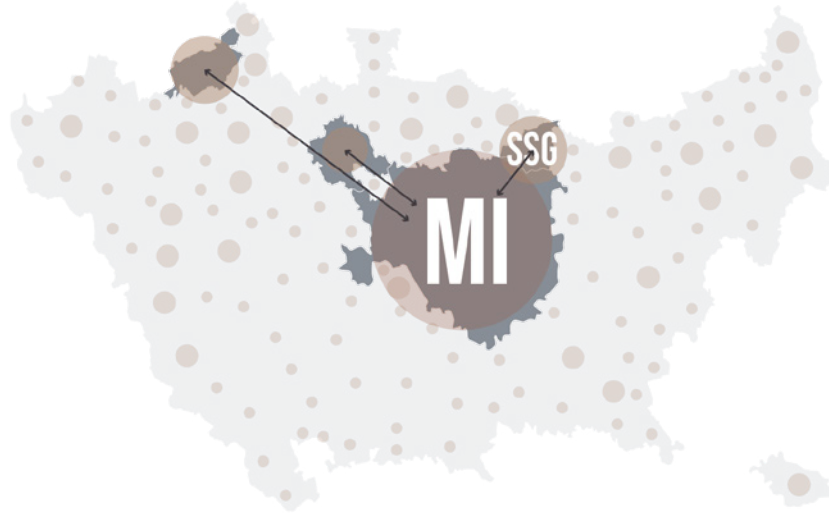
The industrial transformation of European cities was developed from the early 1900's until the late 1970's, this territorial model placed urban areas at the core of the production chain. Therefore, transforming cities in magnets of attraction for economic and urban development. After the industrial downfall, territories shifted towards a model in which each town started to specialize in a particular sector and was connected between each other, this led to the creation of an urban network in a large span of territory. Industrialization has shaped our landscapes in many different levels, economically, spatially and even socially, remaining almost hidden to the regular eye.

The Milan Metropolitan Area is an interesting example on the evolution of former Industrial European cities, Milan shows the various morphological processes a city can go through, from

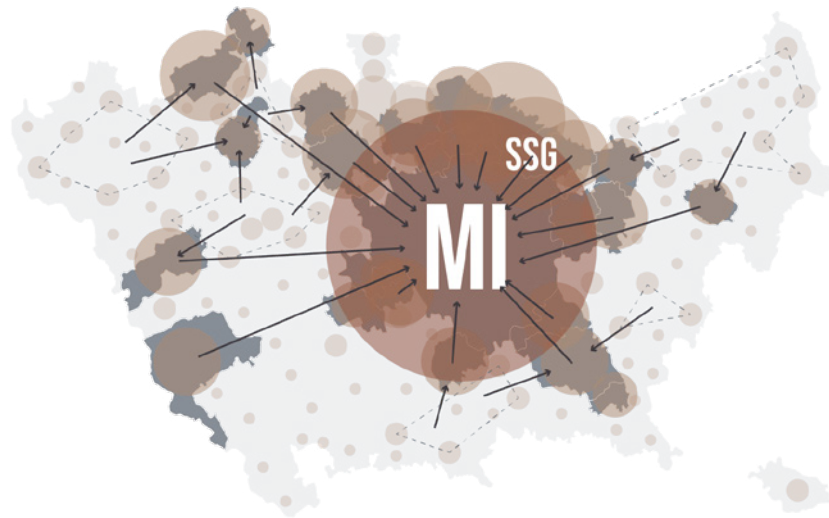
MILAN METROPOLITAN AREA URBAN EVOLUTION MODELS

- Province of Milan
- Industrialized Areas
- Urban Areas > 1mill
- Urban Areas 500k - 100k
- Urban Areas < 50k
- Urban Connections
- - - Rural Connections

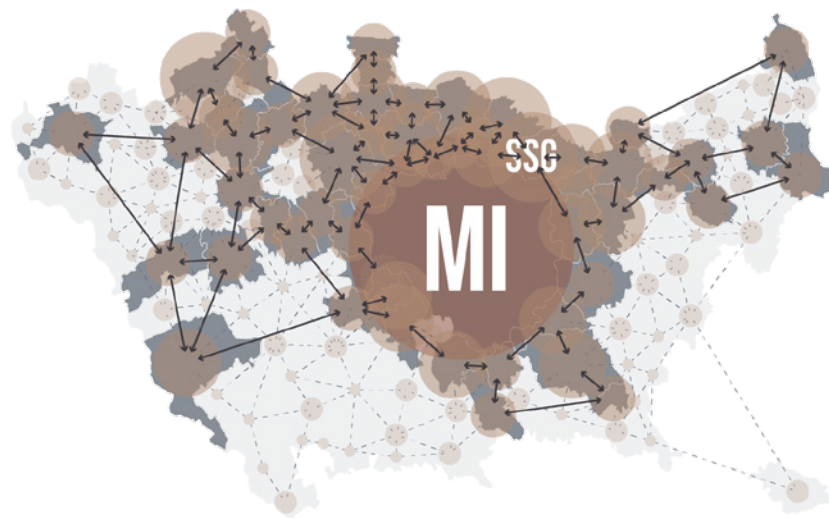
IMAGE_25_Milan Evolution Legend



IMAGE_26_Milan In 1931 "Mono Centric Model"



IMAGE_27_Milan In 1971 "Urban Village Model"



IMAGE_28_Milan In 2011 "Polycentric Model"

an isolated rural model, to an industrial Monocentric city model and finally to the creation of a Polycentric Model, thus becoming a “Metropolis”

The fundamental theory in Urban planning relevant to the urban expansion is the Monocentric city model (**Alonso, 1694; Mills, 1981; Muth, 1961; Weathon, 1974**) in which it is assumed that all economical activities in the city takes places within a single central core, therefore the growth pattern of urban development is then shaped by a trade – off between affordable housing away from this core and the associated commuting costs. The demand of housing areas resulted in a sprawl of the urbanized territory without precedents, leading to an expansion towards bordering towns, sometimes even absorbing former independent rural parishes and incorporating them it to the new urban territory.

In the case of many former industrial cities, its expansion occurred due to a heavy internal immigration phenomenon. Pushed by the need of workforce by local industries, this phenomenon started a big housing demand, expanding city boundaries further and further until reaching surrounding urban areas. This is an example on how Milan grew bigger until it reached into the boundaries of neighboring towns like Sesto San Giovanni and Rho. Peripheral towns forged connections to the central city, building relationships sustained by economic dependency (**Image 26**).

By the year 2000, most of Milan's bordering boroughs have transformed into bustling urban settlements, while the remote peripheral areas remained as small rural settlements. Nevertheless, some of these rural areas started to receive new small



IMAGE_29_Satellite Image Of Milan Metropolitan City Area

scale industrial activities, growing into new development poles. These new "Industrial Villages" hosted a small proportion of economic development that forced them to connect with Milan and at the same time falling into the structure of subordinate productive towns surrounding Milan, here we started to discover the first traces of the formation of a Polycentric configuration **(Image 27)**.

The new morphology of this type of city is likely to make centers (which are linked in urban networks and complement each other on functions) functionally produce a greater critical mass than by operating in isolation, and so increase their overall competitiveness **(Urso, 2016)**.

This would be possible by combining efforts of smaller urban centers and by fostering more co-operative urban – rural relations rather than applying the former excluded interrelations

between the two. This is supposed to favor a distribution of economic and/or economically relevant functions over the urban systems in such a way that a multitude of urban centers rather than one or two gains significance **(Meijers, et al., 2005)** as nodes, thus leading to a more equilibrated territorial balance. With the collapse of the industrial economic model, cities have re – morphed into a more complex system of Polycentric models. When the big industrial complexes left urban centers, they settled into more rural peripheral towns, cities suffered an "emptying" effect and small rural towns gained a sustained growth, creating a new urban settlement in a "new rurality" which is considered when a small parish grow into a town and host modern services and equipment while at the same time maintaining its rural and agricultural landscape. This tendency created a spatial configuration of urban settlements over a large span of territory, one that en globed both urban and rural landscapes into a single organism with multiple cores dependent from one another.

Today Metropolitan cities are large sprawls of urban environments with no physical boundaries that depend economically and socially from each other, conforming a multi scale system that makes really complicated to define them and most importantly, to give it a proper boundary or extension. Polycentricity, being a rather fuzzy concept (Meijers, et al., 2007) means different things when applied to different spatial scales **(Davoudi, 2003)**.

The inter-urban one, more particularly, immediately recalls the conceptual and practical category of "Polycentric Urban Region" **(Parr, 2004)** – a region having two or more separate though well-connected cities, with no one single dominant center, increasingly considered as the more "appropriate" scale for the implementation of



development policies also by urban elites. Polycentricity and city-region, in turns, evokes the issue of rural-urban interactions, which is still largely ignored in the literature on the topic (**Harrison & Heley, 2015**).

ABOUT MILAN METROPOLITAN AREA

The Milan Metropolitan area urban area is not one city, but a system of mutually – dependent urban areas, linked to each other and the rest of the world through a transport network. The provincial capital (Milan) may boast “historic centrality” but the most interesting potential for development is possible to be found on its peripheral areas and in the recovery of the dismissed industrial areas and dormitory cities established in the northern areas of (Sesto San Giovanni, Cologno Monzese, Cinisello Balsamo, Saronno, Rho, Legnano) in the 1950's and 1960's (**Trono & Zerbi, 2002**).

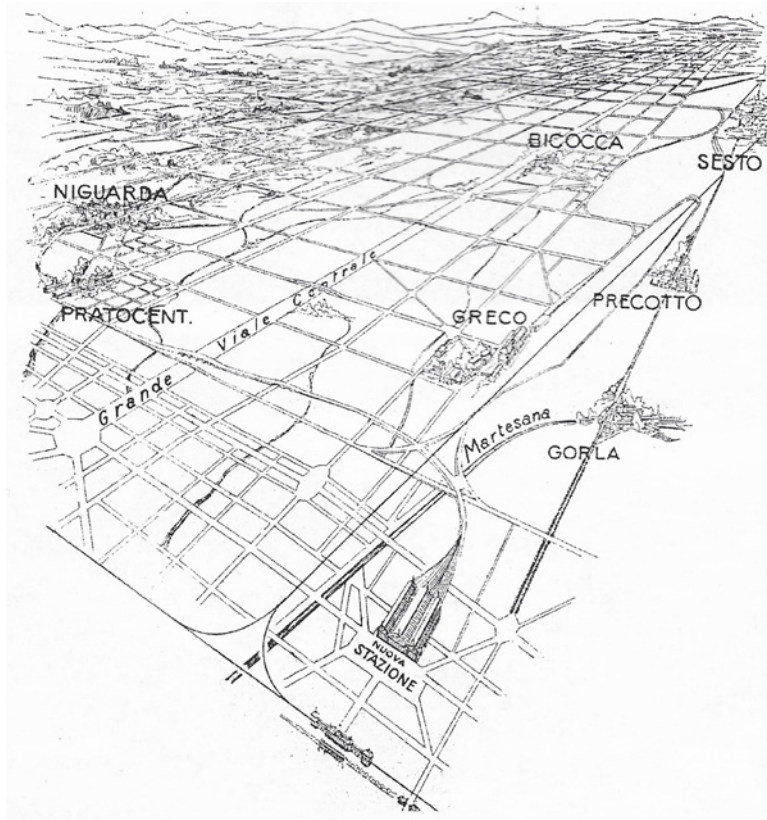
Despite Milan being one of the first cities to see different municipalities come together in a common planning initiative, the “Piano Intercomunale Milanese (PIM)” its official establishment as a metropolitan city was due to 2014 with the Law No. 56/2014 “Delrio Law” (**Boggero, 2016**).

The Milan metropolitan area has a high density core comprising the central nucleus of Milan, its immediate hinterland, and the Sempione and Brianza conurbations. The main towns forming the outer ring of this metropolitan area (Varese, Como, Lecco, Bergamo, Lodi, Pavia, Magenta) are the focal points of a polycentric system of development in the Lombardy Region. Overall, more than a third of the metropolitan territory is urban, and in addition to being densely populated, it has a remarkable concentration of industrial, commercial and service companies. The Milan Metropolitan

Area comprises 188 municipalities, it is home to nearly 4 million inhabitants, 6.5% of the national total and 41.4% of the regional population, with a surface area less than 2,000 km², giving rise to a population density that is among the highest in Italy (1,893.44 inhabitants per km²). The central nucleus, formed by Milan and the older industrialized municipalities (Sesto, Legnano, Rho) has a density of more than 4,000 inhabitants per km².

The most densely populated sections lie to the north of Milan (Rho, Cesano, Maderno, Sesto San Giovanni, Monza and Seregno. Historically, these are the areas where industrialization occurred earliest in the province and where human settlement has a longer tradition of greater density. The lowest population density is found to the South, where only the commune of Corsico has a population density higher than the provincial average, and in the sub-area of Abiateense.

Metropolitan Milan attracts highly skilled and specialized workers from Italy and abroad, and its labor needs are in a state of continuous evolution, employment figures should not obscure the substantial modification to the economic and urban model which took place in the course of the nineties. In the first place, there was a decentralization of the big productive plants pushed by the industrialization collapse. In the second place, most of the traditional industries and sectors facing competition from external developing countries (textiles, leather, glass and basic chemicals) where either subjected to corporate restructuring or closed down. The core of industrial production in the Milan area is still the engineering, metallurgical and electrical sectors, producing components, machine tools and electrical appliances and precision instruments as well as pharmaceuticals, high grade chemicals and clothing.



IMAGE_30_Drawing Of The First Milanese City Expansion Project

Technological evolution and globalization of the economy, which have brought a shift in the Milanese economic system from mass production to producer of services. The strength of the industrial base in the province and the region and the enormous energy of the Milanese service sector have enabled the city to face – without excessive trauma – the transition from manufacturing to services **(Trono & Zerbi, 2002)**.

In the second half of the 1980s, the most significant challenge faced by the Milan Metropolitan area was the restructuring of its industries. The first signs of decline in the major industrial sectors and the consequent move away from industrial uses of land – both within the city and in the surrounding area – was already apparent towards the end of the 1970's. This was a consequence of both global economic transformation and of urban

planning policies that tended to favor the decentralization of industry. At the end of the 1990's the depressed and derelict areas in the Lombardy region as a whole amounted to more than 24,5 million m², concentrated mostly in the province of Milan (9 million m², equivalent to the 36,2% of the total) it may be estimated that in the mid – 1990 the affected areas amounted to more than 6 million of m², a figure substantially similar to that of the mid 1980's, the period in which the restructuring of production in the Milan area was reaching a conclusion.

The distribution of the larger – scale areas in which traditional industrial activity has now been largely abandoned has remained fairly stable. The most important areas are a north west zone (stretching from Bovisio to Saronno) a north-east zone (from Bicocca to Sesto San Giovanni), a belt of ex industrial areas to the east

and south – east of the city which face the railway line and its good yards, and a south – west zone of the Naviglio Grande canal and the Milan – Genova railway. While the small to medium sized former industrial areas have had more successes in the process of conversion. The transformation of these areas began in the 1980's guided by the existing planning regulations) have been built along the main roads leading into the city and there have been many small – scale transformations of individual units or groups of units to handicrafts, workshops, offices, public and private services, business and housing.

In Milan the response to the considerable amount of ex – industrial land is now available for other uses was conditioned by the General Regulatory Plan (PGT) of 1980, which reaffirmed the importance of industry for the city but set a clause of allowance for transformation of maximum 50% of the total m² of the industrial areas towards offices areas and other compatible functions. However, whereas for the larger industrial areas it has been necessary to proceed via “major modifications” to the PGT, which have affected roughly half of the abandoned productive areas. Only a small part of the planned large – scale operations were completed between 1985 and 1995, including the partial conversion of the ex – ALFA Romero areas in the Portello district and the partial implementation of the Tecnocity project **(Trono & Zerbi, 2002)**.

At the end of the 1980s, there was an awareness of the need for new procedures of urban planning and renewal for former industrial sites. After much debate, a revision of the norms of implementation of the PGT was carried out, introducing a greater detail into the town planning specifications – in particular concerning the use of land – and the obligation to provide the services and green areas. The turning

point for the city administration came in the form of the Urban Renewal Programmes (URPs), which operate in two ways: the precise delimitation of urban renewal zones and the creation of common frames of reference to facilitate the articulation of proposals for developments. This device is helpful in the drawing up of plan of action specifying the relationship between the various interested parties, be they public or private, and the local administration, so as to co – ordinate their efforts. The challenge now is to kick start projects which have been languishing for years and to promote new ones. There are currently more sophisticated forms of public – private partnership, which aims to closely integrate town – planning policies (in the narrow sense) with economic policies (for local development, employment, etc.) Via such devices such as “negotiated planning” or “area contracts” “territorial pacts”.

Today, it is de – facto recognized that the greater Milan area exists. Decentralization of the city's top level functions is designed to give a boost to the outlying areas and, with the realization of appropriate town – planning measures, to give the entire urban system a new look, which will make it more attractive for investment, from Italy and abroad and improve the quality for those who live in the metropolitan area.

Milan cannot maintain and perpetuate a closed model, instead it should build a network of cities, in which the relative weight and functions of its components can change rapidly. The Milanese urban region needs to be seen as an incubator of territorial relations on the one hand in a vertical plane, along those axis of governance which oblige the individual localities to talk simultaneously with the various agencies and bodies at the regional level, and on the other in a horizontal plane, enhancing collaboration between local administrations.



IMAGE_31_Low Density City In The Milan Metropolitan Area



IMAGE_32_High Density City In The Milan Metropolitan Area

1.6

THE CITIZENS OF THE NEW METROPOLIS

In Italy since the end of 1970s, there were visible signs of a reversal trend in former urbanization processes. Municipalities with more than 100,000 inhabitants have stopped gaining population, after over a century of uninterrupted growth, this trend was stronger in the industrial economically mature areas of the country, such as Milan, Genoa and Turin. The flight of citizens from big urban areas was found on a nostalgic desire for a rural life, one that is expressed in vague outlines and defined by a collective imagination rather than by real experiences **(Martinotti,2016)**.

The beginning of the population flight toward rural areas originally asserted itself in Anglo – Saxon countries, partially due to the influence of private motorization and the escape to the suburbs of the ever-growing working class. In Europe this model is applicable but with a different social

morphology, in the Anglo – Saxon world the urban suburbs are inhabited mainly by the middle class, while in Europe is characterized by a different historical fabric of settlements, we find suburbs mainly developed for the industrial working classes, i.e. like the “maires rouges” in Paris or the “red belts” in Milan, Turin or Genoa. In both cases, commuting develops and becomes the most widespread experience of the “metropolitan” phenomenon **(Martinotti,2016)**.

Martinotti classified cities in three different generation types of metropolis and how its population behave in each one, creating a behavioral frame to understand how people use the space in the newly formed metropolis.

- *The first generation metropolis, is strongly characterized by the commuting phenomenon. These are expressed by large infrastructure*

for commuting: railways, freeways, tunnels, bridges and underpasses, where most substantial urban investments of the central part of this century have been poured **(Image 33)**.

- The second generation metropolis is born with the birth of "free time" and the reduction of working days, individuals and families move not only to go to work and return home, but to recreate themselves. These populations who live and use the spaces of the big cities leaves them massively at the end of each work week and at certain times of the year. But the big city also attracts a growing mass of people for evening and Sunday recreation, to this transient population is then added that of customers of large commercial functions and users of high cultural functions, from museums to universities, this new population are referred to as "City Users" While the working population that stays in the city for work reasons are within the productive organizations spaces (factories, offices, shops) and where most of the time spend in the city happens, the new temporary population of metropolitan consumers makes an intense and somewhat barbaric use of the city and its public spaces **(Image 33)**.

- Globalization brings the Third Generation Metropolis, with the birth of global trade networks business expanded overseas, bringing in a new user of the city space, the "Metropolitan Businessmen" This population travel in between cities on a short period and required specialized areas of the city equipped with hotels, residences, convention centers, exhibit grounds and so on. The metropolitan businessmen and the city users are not attracted to the historical residential districts, instead they look for picturesque residential areas with a particular environment, they do not give interest to the

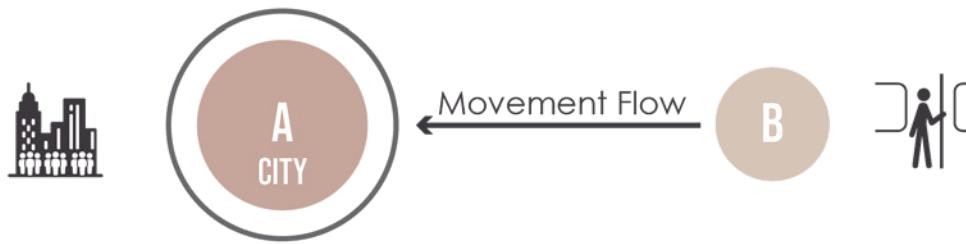
heritage or the ethnic diversity of the inhabitants. The ancient characteristic neighborhoods that were often originally such precisely because they were inhabited by marginal populations: old craftsmen, students, artists or ethnic groups. Under the thrust and demand of the needs of new metropolitan consumers, these areas tend to gradually transform themselves from residential areas into commercial areas. This is the case of SoHo, Quartier Latin, Greenwich Village and Brera **(Image 33)**.

While the traditional model of monocentric city was above all a city of working and living, the contemporary metropolis is a city of recreation and exchanges. In the new city the classic daytime population "commuters" is contracting, or in any case is shrinking because many jobs are being created around large metropolitan areas, leading to a transversal or radial commuting flows. In Italy, these flows are perceived by the direction of people moving in and out the city centers, with consistent movement inbound in the morning and outbound in the evening **(Image 34)**.

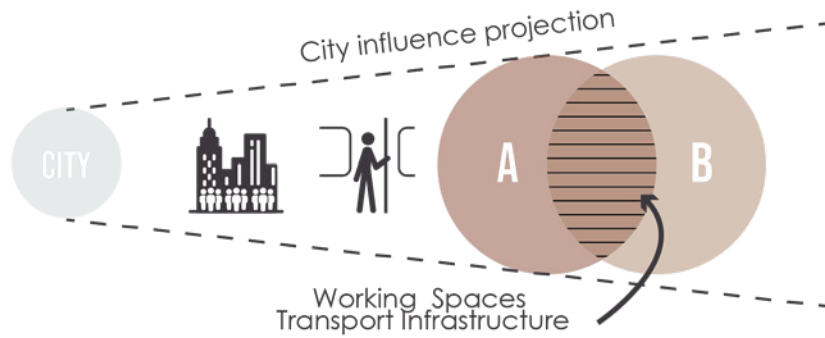
Today, major big companies have increasingly been placed in the bands of the metropolitan areas. If these dynamics continue, the metropolis will tend more and more to divide itself between those who live in the city and those who use it or, better still, consume its services **(Martinotti, 2016)**.

In the case of the Lombard context, the metropolitan system is widespread that it collides and overlaps with the regional entity. There are portions of non-regional territory that already gravitate around the Milan Metropolitan Area, this phenomenon will increase in the future, where boundaries are left only as simple imaginary boundaries for administration purposes.

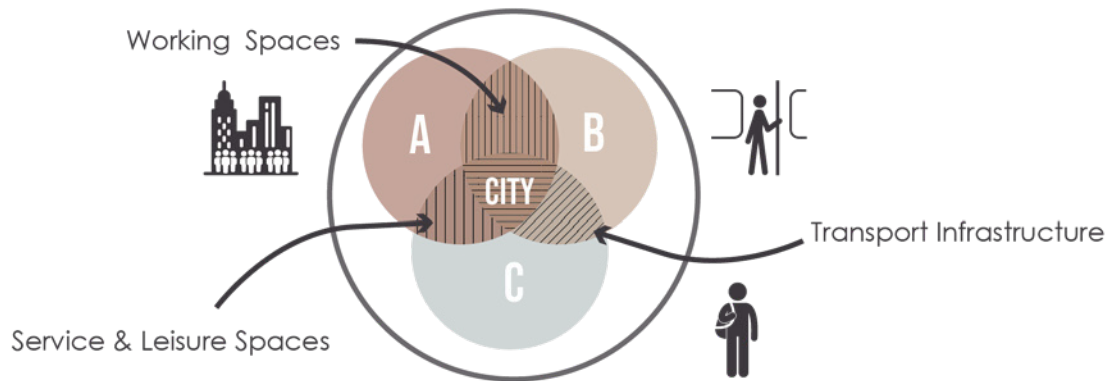
TRADITIONAL CITY



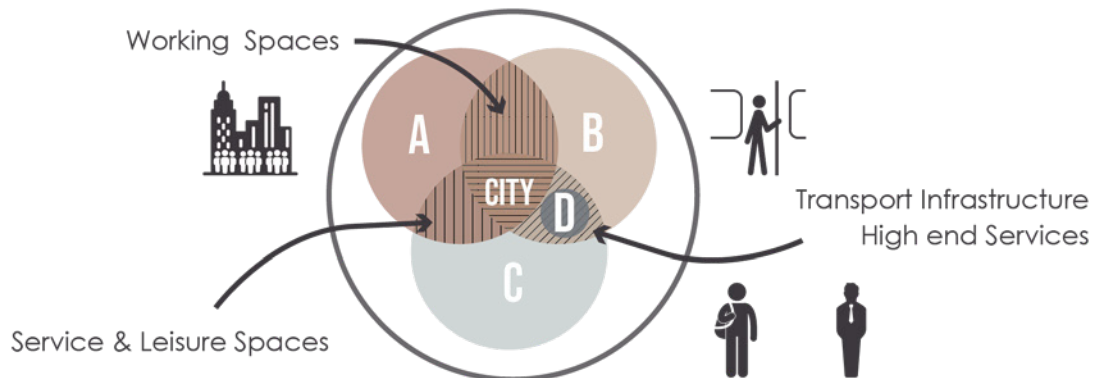
FIRST GENERATION METROPOLIS



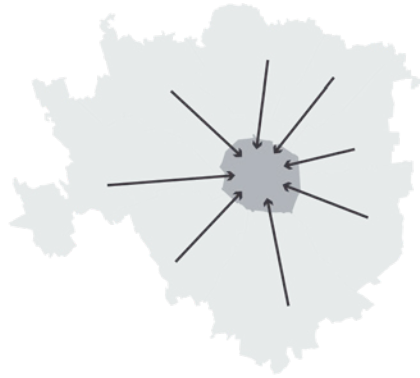
SECOND GENERATION METROPOLIS



THIRD GENERATION METROPOLIS



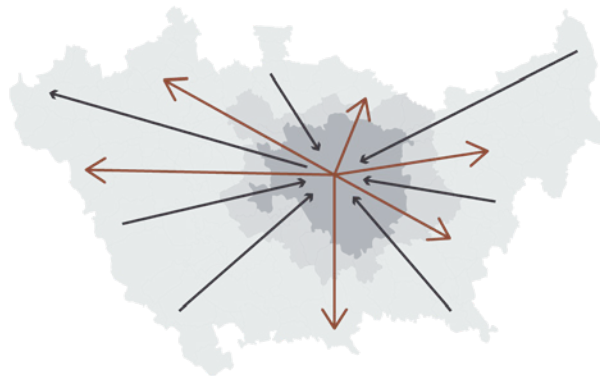
IMAGE_33_Diagram Of Different Generation Cities



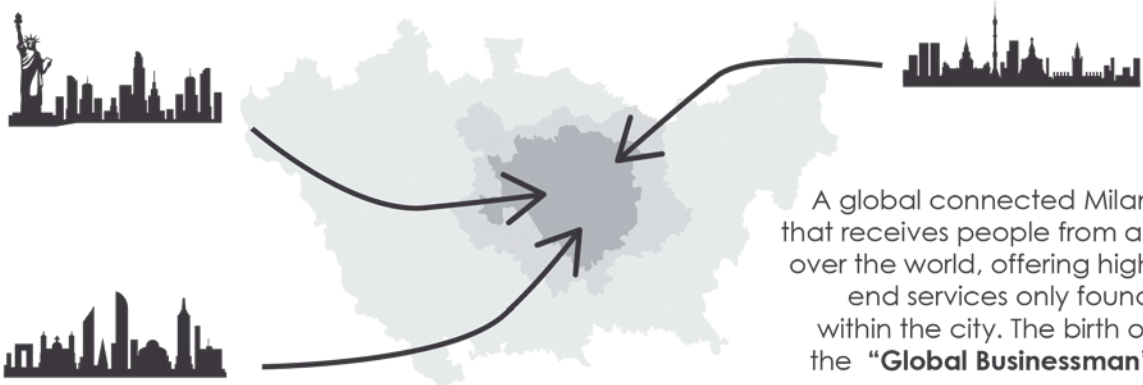
Suburban citizens commuting into Milan for working purposes



Suburban citizens commuting into Milan for working purposes, while Milan's inhabitants "flee" the city on the weekends to escape the urban madness



Milan's citizens move to the outside suburban areas in search for "new environments" while surrounding citizens travel to the city for services only found within Milan, the birth of the "City Users"



A global connected Milan that receives people from all over the world, offering high end services only found within the city. The birth of the "Global Businessman"

IMAGE_34_Milan Metropolitan Area Within Different City Generations

2

TERRITORIES OF EXTRACTION

Humanity is a consumer based society, one that spins around consumerism both on resources and goods. But, have we ever reflected how resources are obtained? How are they extracted, moved and produced ?

The implications of consumerism leads our society to extract resources from wherever it can, damaging landscapes around the world to points of no return. We have understood that we base our society in a linear development rather than in a circular progressive model of development. Bringing us to the thought of territories as a mere sites where we obtain our resources and not on the physical environment where we develop our everyday life, a fragile environment that is necessarily for human life on earth.

On this sub-chapter it will be discussed the world of extraction and how it is manifested in the territory. First,

we shall introduce the concept of "Territories of Extraction". Next, dive deep into the aspects of these territories, how they manage an economy based on exploitation and how it is represented physically on the land. Later, comparing the different types of quarry sites available, so to have an idea of the space a quarry might need and modification they exert into our landscapes.

After that, understand the existent risks and advantages when trying to develop any project within a former extraction site, and how the subject should be approached in order to develop a project idea.

Finally, discover that landscapes of extraction leave tangible and intangible memories on our landscapes and on us, understand that even tough invasive, extraction activities leave some positive traits that are always overlooked by citizens.



IMAGE 35 Inner View Of Melz Quarry Areas

2.1

THE EXTRACTIVE ECONOMIC MODEL

With the industrial downfall in Italy, industrial cities allowed concessions for new land uses never seen before. Sesto San Giovanni began exploring alternative incomes, pushing the development of new service-based districts and land exploitation licenses within its urban core. Initiating an urban transformation to become what it is today.

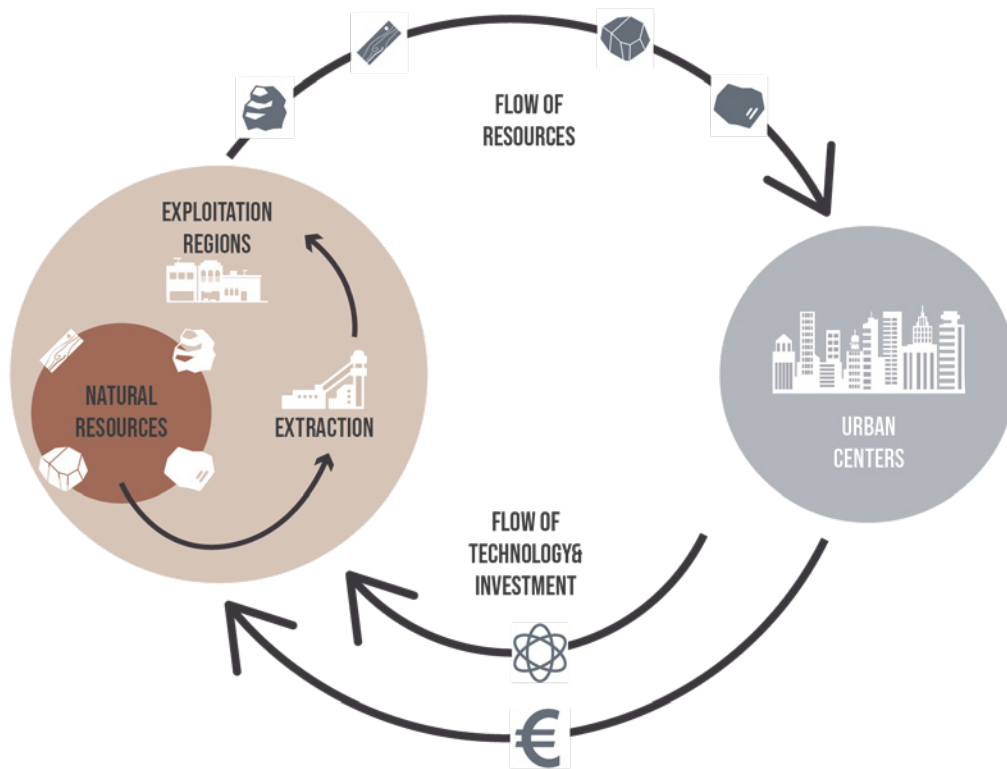
The foundation of the Melzi and Falck Quarry in 70's initiated the extractive activities within the urban area and therefore transforming the city into a complex territory of extraction, one that is included within an active urban area with a strong industrial heritage. This particular case have brought special considerations on this particular area for its inhabitants and planners.

The extraction business is probably one of the most land consuming activities available, land is used in order to be

exploited for their natural resources in order to ensure the development of other urban areas (**Image 36**).

There is no difference from size and legal definition of the settlement that can be exploited but rather a site rich in resources in a given context, they are part of an extraction economy and therefore is governed by its rules, imposing the statement that any area being exploited is automatically considered a "camp" a temporary living hub that is part of the overall extraction process and infrastructure (**Sordi, 2017**).

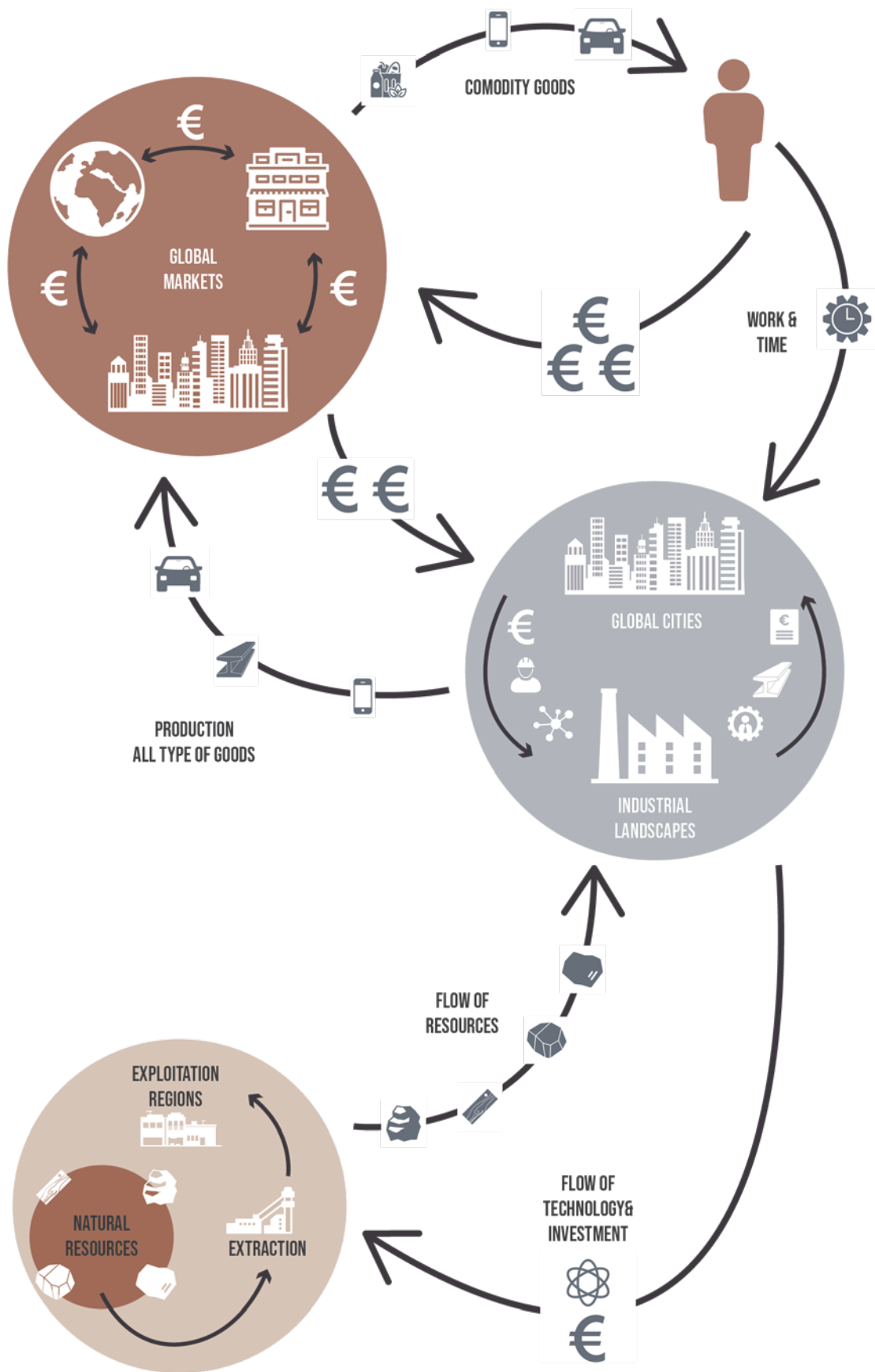
Because of this, we have to ask ourselves, what are the differences that define the camp and the city? What are the considerations for Sesto, is it a city or is it a camp? Sometimes it seems that settlements supporting extractive activities are not cities, but rather extraction camps struggling to fulfill their final aspiration of becoming



IMAGE_36_Diagram Of The Extractive Economic Cycle



IMAGE_37_Coal Extraction Site



IMAGE_38_Diagram Of The Industrial Transformation Economic Cycle



IMAGE_39_ Working Camps For Oil Industries In Irak

cities. Their ultimate goal is rarely accomplished, because camps are merely a singular infrastructure unit within a productive system that has a consumption deadline, while cities, are complex organisms that are sustained by the exploitation of other areas.

Territory is the form of power over geography that interweaves political processes, material metabolism, and spatial form, becoming the object and site for the negotiation of the extractive capital and the state's public expenditures. Many of these cities are designed, operated and viewed from the outside as camps, while in the imagination of their inhabitants are actually experienced and perceived as active cities.

Dweller's living within extraction camps have aspirations similar to dwellers living in cities. However, these aspirations are not fully realized

because of the fact that the life-cycle of these camp settlements can only extend as long as the duration of the extractive activity, following the availability of the resource and the premises of efficiency (**Sordi, 2017**).

However, the experience in Sesto has shown a variation to this rule. Hosting different economic assets within the city, Sesto is partially independent of a singular economic activity or resource, gaining a lighter advantage over "traditional" extraction camps (**Image 38**).

Dwellers in Sesto that were unemployed by the de-industrialization process were able to find jobs in other industries within the city or in the Milan metropolitan area, showing the importance of economic diversification inside urban areas.

2.2

ALTERATION OF URBAN AREAS BY EXTRACTIVE PROCESSES

Extraction is a process that moves and shifts elements through the territory, is the necessity of moving elements, whether may be biological or non-biological. Yet, to extract a resource you also need to move other complimentary elements such as: fuel, machinery, chemicals, energy and labor force among many others.

Through the shift of elements in a territory we can affirm that “extraction activities are a form of landscape modification” this modification has two different flow levels: a quantitative (materials) and an individual flow (persons).

- *Quantitative flow is represented in the flow of materials and energy in form of different inputs and outputs produced by extraction operations (Image 42).*
- *Individual flow is represented by the movement of people willing*

to work at local, regional and global scales, dedicated to the extraction activities, outsourcing and services (Image 43).

The physical alteration of the landscape is a result of the extraction process and it shows the intense complexity behind these operations, sometimes it is only understood by the visible large-scale modifications in the landscape shift.

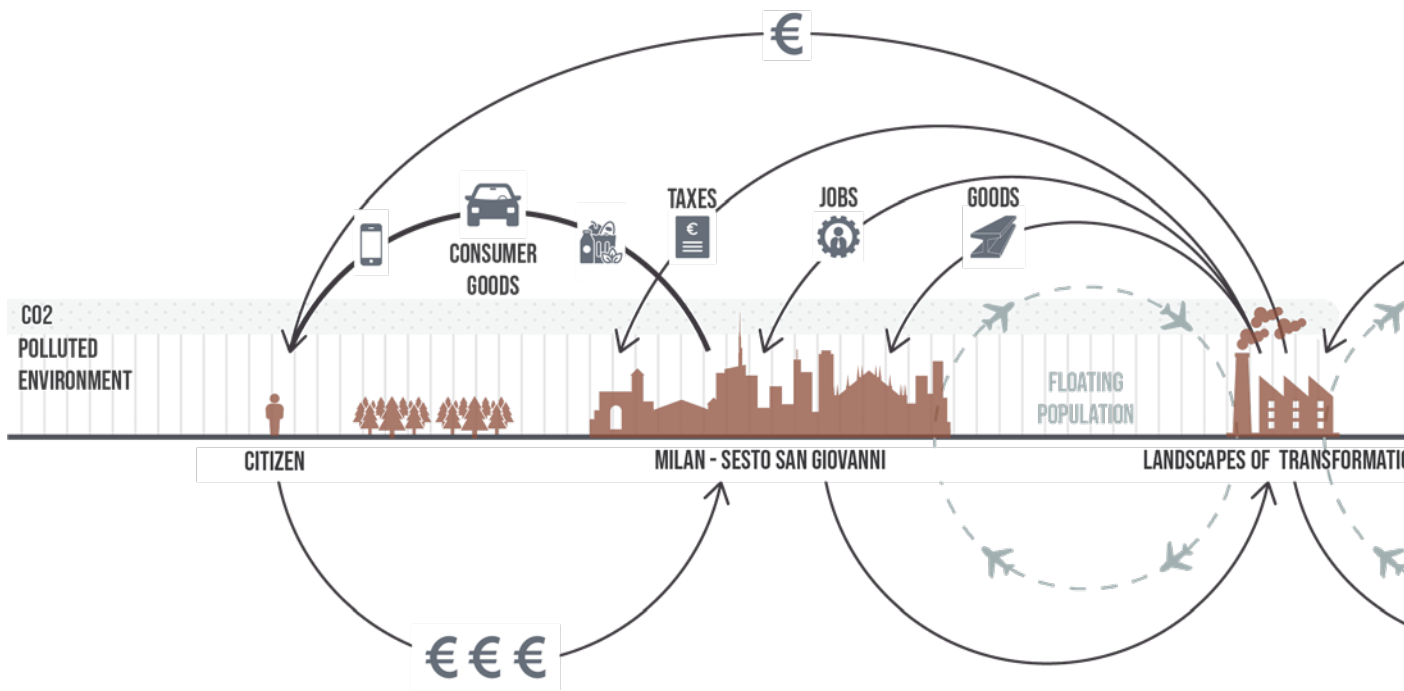
The introduction of new structures of large scale economic and capital investments, logistic facilities and infrastructure networks are some visible man – made consequences of the extractive economy operation grounds, this territorial setting arranges a series of infrastructures inside urbanized areas that pushes human settlements to its borders. In modern extractive operations, it adds the combined relationship with industrial facilities, transportation



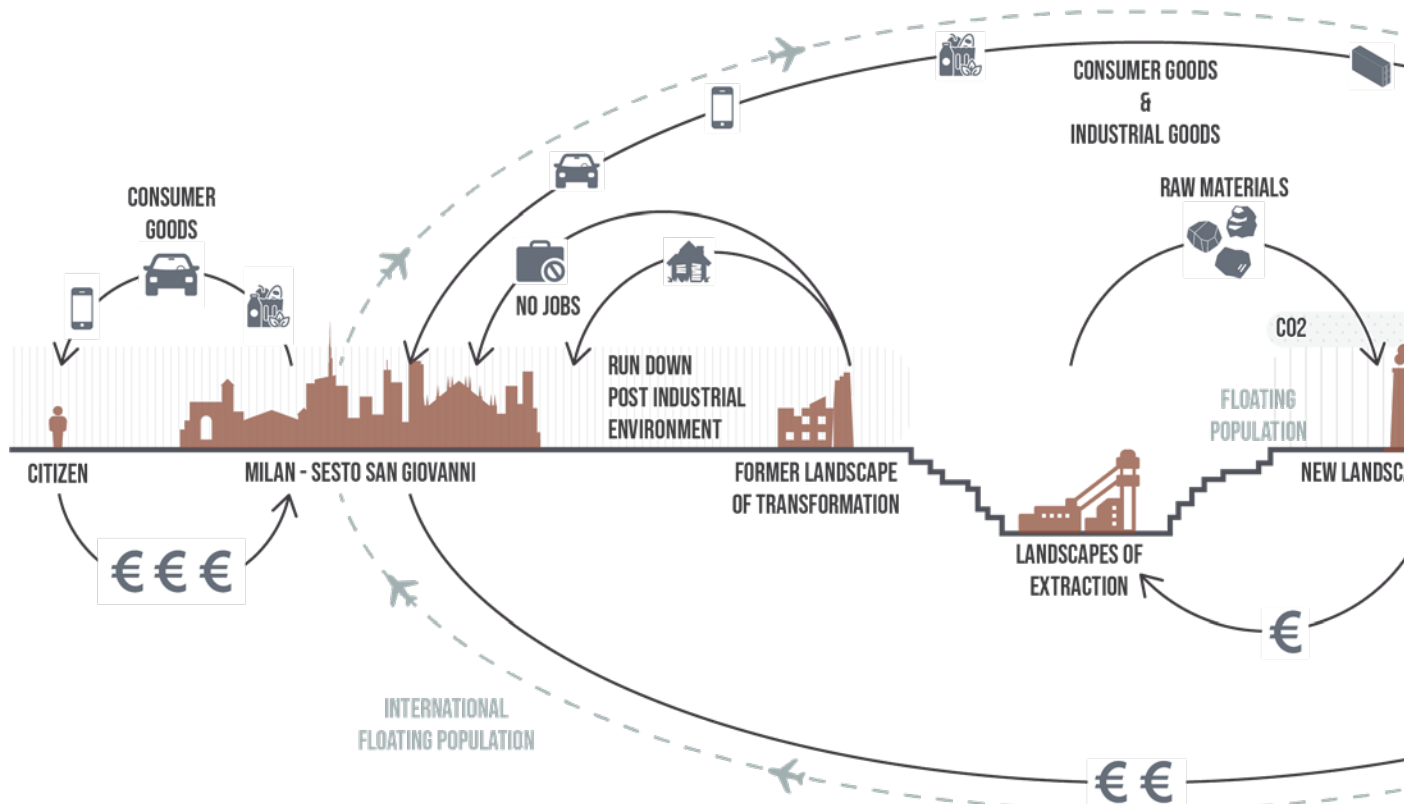
IMAGE_40_Big Infrastructure Areas In Urban Areas Of China



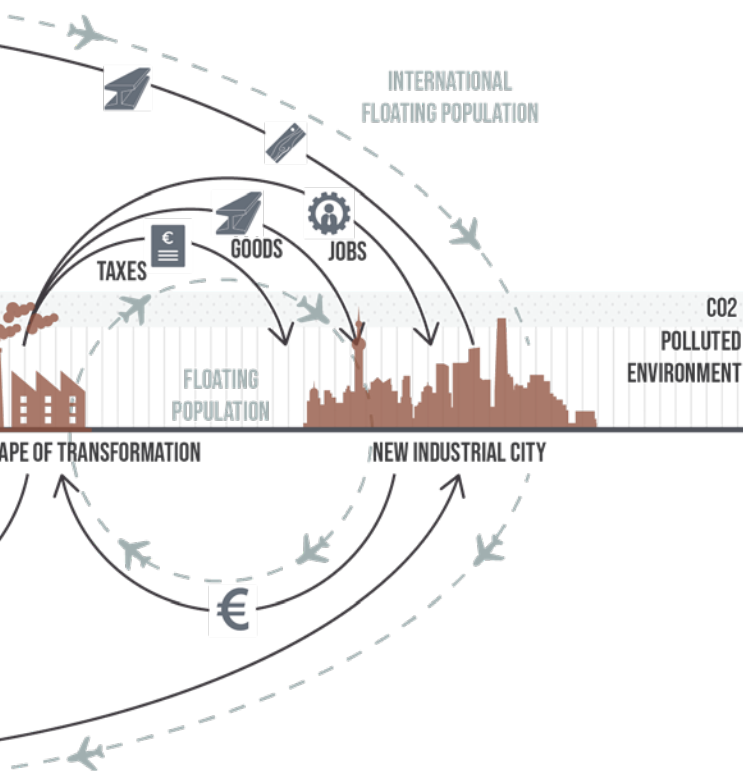
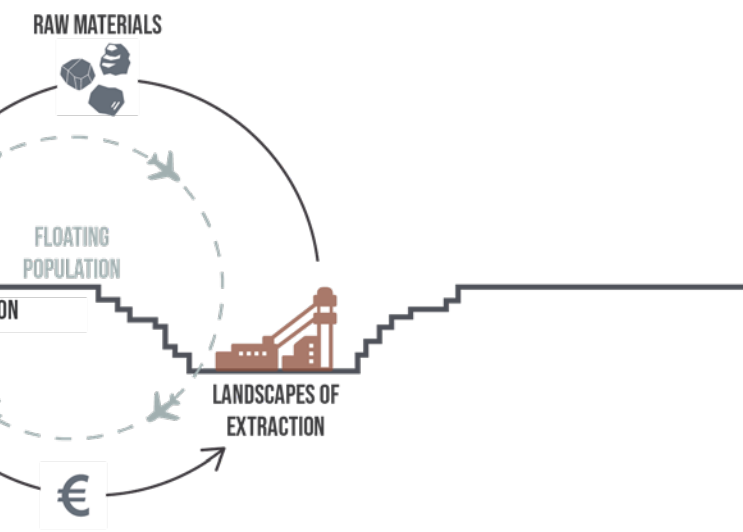
IMAGE_41_Urban Quarry Within The Urban Area Of Atlanta



IMAGE_42_Sesto's Extraction Cycle Before The Industrial Downfall



IMAGE_43_Sesto's Extraction Cycle After The Industrial Downfall



and communication infrastructure, operational areas, camps, roads, railways and highways, which together build a novel territorial scale of infrastructures used for the scope of exploiting resources (Sordi, 2017).

Infrastructures enhancements have left in poor conditions the residential and public areas where the labor force develop their social lives, where the inhabited areas are looked as “Camps” more than of an urban settlement and they are very marginal in the agenda of urban designers, planners, regional administrators and political institutions (Sordi, 2017).

These areas can be considered subordinated to cities or as a side effect of them, makes it so that they are not paid enough attention as place for living or either developing. Most of the neglected areas are considered in a way the negative of cities, they are seen as the hole where resources are obtained in order to ensure the development, prosperity and consolidation of cities, but they are themselves the problem that deploys poverty and precariousness to these areas (Sordi, 2017).

Geography of extraction is not only due to the conflict in spatial superposition of land use and concessions given over the land. It is also because of intense extraction in a given territory as it mobilizes many elements across its space and in an intense way. The structure of these “camps” are not limited only to the physical area where dwellers live or where the extraction process is carried away, but rather can be considered as a compound of all the areas involved in the process of exploitation, making the grasp of extraction to cross even to outer boundaries alien to the extraction sites, even reaching to foreign levels (Sordi, 2017).

2.3 DEFINITION OF QUARRIES AND ITS POSSIBLE INTERVENTIONS

Quarries are developed according to the commercial intentions of the business owners and the land owners that operate in line with the planning conditions set down by local authorities. Quarries have been specifically developed to extract and process materials in a long - life span of time, and therefore have not been thought to host any other development post its time of extraction activity. The primary intention is the production of aggregates for the global markets, hence the extent to which quarries can be used for built developments will vary to a number of factors, these factors will depend on the type of character of the quarry and many variables including:

- *The nature of the material being quarried (E.g., Hard rock, sand or gravel)*
- *The area occupied by the quarry excavation and adjacent land*

- *The depth of mineral workings*
- *Groundwater conditions at the quarry*
- *Restoration agreements and subsequent land use after the end of exploitation activities*
- *The period during which the quarry was worked*

Quarries vary according to the geological settings where they are settled. Sand and gravel quarries are usually relatively shallow with limited quantities of overburden materials that need separated areas of storage **(Image 44)**. By contrast, hard rock quarries are much deeper and depending on the rock type extracted they may range from 20 meters to 200 meters depth. These types of quarries commonly have greater thickness of overburden and superficial deposits that require removal and storage



IMAGE_44_Satellite Image Of A Sand Quarry In The Outskirts Of Milan



IMAGE_45_Satellite Image Of A Marble Quarry In Colonnata



IMAGE_46_Satellite Image Of A Stone Quarry In Frosolone



IMAGE_47_Diagram Of Possible Interventions Within Quarries

everywhere that limits the options of development in the future (**Image 45**). Larger quarries may have spoil tips containing several million cubic meters of waste materials, requiring landscaping activities in order to sustain the extractive activity. Shallow quarries are potentially more advantageous for subsequent built development (**Image 46**).

The size and depth of quarries govern the area occupied by the quarry workings and the ancient operations that include mineral processing, stockpiling and added value operations such as concrete or asphalt batching plants. A large area may be taken up with spoil dumps or with lagoons and tailing facilities used to settle fine discards from mineral processing. It is often found that the out of excavation area required for various facilities that comprises a significant proportion of the whole quarry site, like areas of excavation, mineral processing and stockpiling areas. Built developments at a quarry site is of course not restricted to the previous mineral working area by may include the out of excavation land provided ground conditions area, or can be made, acceptable. Large quarry sites may give rise to extensive areas for future development, but to some degree this depends on the depths of workings.

The last consideration for quarries division is the depth. Quarries depth does not necessarily relate to the excavation area suitable for built development. Instead, they comprise series of excavated faces with depths in excess to 10 – 15 meters that require benched faces to ensure adequate safety in accordance with international regulations. Benching system comprises faces that are typically inclined in hard rock quarries at 70 – 80 meters depth and benches that often varies with the intention to prevent material falling from above onto those working below. The floor

of the quarry may be constrained by a variety of factors including: Groundwater levels, geological configurations, working constraints.

Depending on the type of quarry site there are two different approaches for its intervention: Remodeling and Not Remodeling (**Image 47**).

Remodeling consists in an “artificial” approach, due to the will of physical modification of the territory, this is reached by using natural features or man made structures. Within this situation we have the following sub - categories:

- *Filling, consisting on the filling of the quarries excavation area with natural or artificial elements.*
- *Modification, consists in modify or enhance the shape of the quarry walls, this is done to emphasize the shape of man made modification on the territory.*
- *Insertion, proposes the addition of a man made structure within the topography of the quarry sites, but instead of modifying its shape the new element is shaped around the former quarry walls.*
- *Not Remodeling consists in a less invasive approach, which includes a non intervention idea or the use of man made structures to be built on the topography site. Within this situation we have the following categories:*
 - *Small interventions or Natural Interventions, in which the shape of the quarry is left untouched, only modifying partial elements that could be structurally dangerous or leaving it for natural modification processes.*
 - *Attached, where man made structures are built on the quarries banks and walls, often to make contrast between the quarry shape and new constructions.*

2.4 LEGAL FRAMEWORK FOR QUARRIES IN ITALY

According to the Italian Legislation (Royal Decree of 1927) a quarry is commonly understood as any area of activities in open pit excavations of rocks and minerals. Apart from the more artisan aspects, a quarry can appear as an industrial complex organized for the purpose of economically exploiting a field, in surface or at a small depth, by means of works that take place on the surface of the soil.

In mining legislation, the reason for administrative opportunities (mainly relating to distinction of quarries from mines in relation to the traditional concepts of ownership of the fund in which the mining activity is carried out) have imposed an exclusively definition on the type of material extracted. In Italy, quarrying activities started to be regulated by the Royal Decree no.1443 of 29 July 1927. This decree classifies the cultivation of

lithic materials and peat as quarries. According to the decree, unlike the mine, the quarry is left free to the landowner exploitation will (unless public utility reasons leading to an expropriation). Due to the definition based on the type of mineral exploited it may happen that there are quarries in which the demolition work takes place partially or totally underground. In most cases, the quarry, legally defined, includes, mainly or totally, open – air exploitation works for which there is a certain agreement with the common authority (**Garbella, 1968**). In Italy, due to the scarcity of mines, the term “activity” tends to be used for extractive activities in a broader sense.

The regulatory framework of mining is still regulated, on a national level, by the Royal Decree no. 1443 of 29 July 1927 (subsequently supplemented by law no. 1360 of November 7 1941)

issued during a historical period in which the economic, productive and cultural conditions were remarkably different to the current ones. According to this decree, the competences regarding mines and quarries belong to the Italian State which exercises its control through the Ministry of Industry – Corps of Mines (Ministero dell'Industria – Corpo delle Miniere).

In Italy, mineral resources and quarry materials are divided into two categories:

- *First category materials, of vital importance to the Italian State, including material of significant economic interests, such as metals, metalloids, fuels, etc. Whose extraction takes place within a mine.*
- *Second category materials, of only local interests, includes materials from construction, peat and other substances grown in the quarry which overall are of lesser value cheap. Hence the terms “mine” and “quarry” which in the common sense are associated with different extraction methods and environments, differ in the current legislation for the quality of the extracted materials and for the economic value attributed to them.*

This decree, precisely because it was born in a period in which the “quarry emergency” was not known, prescribed limitations to cultivation: the depletion of the deposit or the lack of interests in the market for the extracted substance represented the only “natural” constraint to exploitation. Starting from the post – war period, under the pressure of reconstruction and modernization needs Italy had a strong need to find raw materials for construction and therefore there has been a proliferation on the territory of quarries that are distributed continuously, in number clearly superior to mines and which sometimes supply materials with

a higher market value compared to the substances that the Royal Decree of 1927 classifies in the first category.

The DPR April 9, 1959, n.128 “Policies and rules for mines and quarries” (Norme di polizia delle miniere e cave) introduces the rules that they ensure the safety and health of workers and ensure regular performance of processing in compliance with the safety of third parties and activities of paramount interest general and to ensure the good governance of the mineral deposits as they belong to state heritage.

In the 70s, with the DPR n. 2/1972 and with the DPR n. 616/1977, implementing legislative powers, the state administrative functions related to quarries have been transferred to the regions. The Italian State has maintained the supervisory tasks on the quarries located in areas subject to the restriction landscape under the law n. 1497/1939, of the law n. 431/1985 (the so – called “law Galasso”) and subsequent regulations. Following these measures, the Regions have begun to legislate on quarries introducing management criteria that have taken into account the production needs but without neglect the requirements aimed at environmental protection. Currently all the Regions, except Calabria, have produced specific regulations that consider mining as a process whose duration and extension are not linked only to the size of the field or the market demands, but are functional to the characteristics of vulnerability, stability and value landscape of the territory (**Regione Marche**).

An innovative element introduced by regional legislation is relating to the legal regime of quarries: in fact, at least in most cases, the cultivation of the deposit is subject to regime of the “concession” for which the field is part of the unavailable assets of the Region and therefore the owner of the land

does not have the availability of the quarry material (but the is entitled to compensation) and whoever wants to undertake cultivation must have the preventive regional concession. The most innovative factor brought about by regional regulations is the introduction of public control aimed at stemming the harmful effects of a private management, which their maximum expression happened in the 60 – 70s, a period in which Italy has often undertaken without the necessary precautions, the creation of works with strong environmental impact for the modernization of infrastructural network. The management of the quarries, considered among the activities with the greatest environmental impact, has under the pressure of a matured environmental awareness, in the context of planning territorial.

This activity must be scheduled in a project that is compatible with the regional mining activity plan (Prae). Among Prae objectives, is the consideration of the final reorganization of the area affected by the quarry exploitation. In fact, for regional regulations the authorization for extractive cultivation is bound to the presentation of an executive project for environmental recovery of the exhausted quarry. In various Regions planning on the matter has been delegated to the Provinces through the infra – regional plans for extractive activities (Piae). These tools have the task, among other things, of assessing the needs of regional markets, national and foreign of the various materials, according to medium and long term hypotheses, in order to graduate the use of areas reserved for mining, thus placing a limit on quantity of materials to be extracted. However, despite the considerable progress made in mining management, there are still delays, organizational chaos and major differences in operations within in several regions (**Regione Marche**).

Regions delays and deficient planning can be tracked back, among other things, to competition from various departments in the drafting of the Prae and the consequent lack of a clear institutional set – up. To this confusing situation is added a lack of information and statistical data, such as to make it difficult to legislate and plan on the subject.

Furthermore, there are few disused quarries that have been subject to environmental recovery. It would be of the utmost importance to arrive at an updated and adequate national framework law to social, economic and environmental situations, which introduces the general principles, ensure a homogeneous regulation of activities and implement an appropriate control system in compliance of regional autonomy.

However, as claimed, there is no institutional set – up on the clear matter updated. In this regard, various legislative proposals have drawn up in recent years. In these bills some fundamental principles relating to research and cultivation of quarry materials as follows:

- *Respects for all cultural, environmental and scientific values*
- *Quarrying activities are to be realized in specific identified areas by regional authorities*
- *The exercise of the mining activity is subjected by specific requirements, registered within the appropriate regional register.*
- *Obligation of environmental reorganization during and within one year from the end of the activity extractive.*
- *The prohibition of cultivation in areas subject to hydrological constraints and the prohibition of extraction from the bed of waterways, beaches and sea beds.*

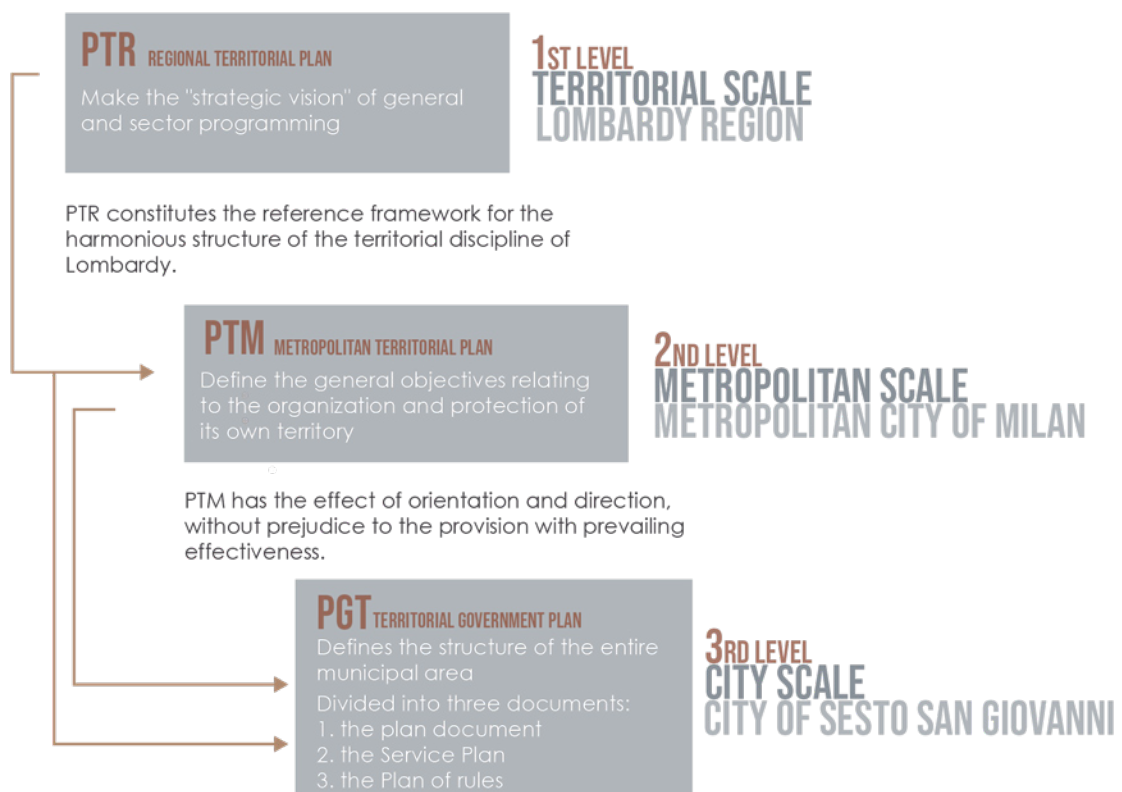
The current inner legislation to which quarries have to respond within the region of Lombardy is the “Regional Law of the Lombardy Region - 8 of August 1988, N.14”. This law governs the regional planning for research, cultivation and development of quarry minerals and the exercise of the related activity in the Lombardy Region (**Regione Lombardia**).

PROGRAMMING OF THE EXPLOITATION

The planning of the activities referred to in this law is implemented through provincial plans, also divided by types of materials extracted, proposed by the Provinces and approved by the Regional Council with administrative resolution. The plans establish the location, the quality of the usable resources, identified in the territory, by type of material and by its importance (**Regione Lombardia**).

REGIONAL COORDINATION

The functions governed by this law are exercised in accordance with the instruments of regional planning and in compliance with the guidelines and coordination acts issued by the Regional Council. The regional council also establishes guidelines and technical provisions for use in public works and large infrastructures for mobility. The Region and the Provinces encourage and activate plants for processing inert materials for recycling in order to avoid the use of public landfills for the disposal of inert waste (**Regione Lombardia**).



IMAGE_48_Legal Framework For Quarries In Italy

EXPERT DELEGATIONS

In case of technical information or inspections, a group of "Experts" are delegated to the provinces by regional authorities in the following way:

- *The administrative functions relating to the exercise of the quarry business.*
- *The administrative functions inherent to the hydro-geological constraint referred to in article 1 and 7 of the Decree of 30 December 1923, n.3267 "Reorganization and reform of the legislation on woods and mountain land" and art. 25 of Regional Law 5 April 1976, n.8 "Regional Forest Law".*
- *Technical assistance to municipalities, if required.*
- *Substitutive interventions in the field of supervision, if the Municipalities, previously warned, fail to carry out the necessary acts.*

The following are delegated to the Municipalities for their respective territories:

- *Supervision of activities carried out within the extractive territorial areas for the part in which they fall within the municipal territory.*
- *The granting of the authorization to access the properties for research purposes.*
- *The ex officio execution of environmental recovery works.*
- *The suspension and termination of the mining activity, in the cases provided for by this law, after consultation with the territorially competent Province.*
- *The determination and application of administrative sanctions for the delegated functions.*

- *Determination of the intended use of the area at the end of the cultivation of the field.*

The provinces and municipalities provide, within the terms provided by this law, for the completion of the necessary acts; The Regional Council determines the criteria and methods for exercising the delegated functions. Criteria and directives for the formation of the plans of the quarries, the regional council determines the criteria for the formation of the provincial plans, with particular reference to:

- *To the definition of the deposits which can be exploited or in progress.*
- *The identification of the territorial areas of extraction, understood as sites in which the extraction activity can be carried out, including the field and the service areas.*
- *To the definition of the provincial territorial production basins.*
- *To the indication of the catchment areas related to the type of material produced.*
- *The quality and quantity of the quarry substance which can be allowed to be cultivated with reference to the regional and provincial determination, to be carried out according to a prudential estimate.*
- *The methods of cultivation by type of field.*
- *To the final layout of the area being excavated in implementation of the project envisaged for the individual territorial areas.*
- *To the final use of the mining area. (Regione Lombardia)*

Agreement with the Municipality

The issuing of the authorization is subject to the presentation of the agreement stipulated, on the basis of a standard scheme prepared by

the Regional Government, between the applicant and the Municipality or Municipalities concerned.

To pay annually to the municipality, in a single solution, a sum as a contribution to the expenditure necessary for the construction of infrastructures and public interventions for environmental recovery of the area directly affected by the mining activity, in addition to those charged to of the authorization holder.

To agree, if the mining activity is even partially within the perimeter of a regional park, the payment to the park managing body of a sum not exceeding one third of that by way of sharing in the costs of recovering the values of naturalness of the surrounding area of the quarry

If, upon exhaustion of the field, the holder of the authorization is the owner of the area, the agreement may include a commitment to sell the area to the municipality or municipalities concerned once the environmental reorganization works as foreseen have been completed. In the authorization, provided that the municipal planning instrument in force at the time of issue has foreseen a destination for public use **(Regione Lombardia)**.

ASSET GUARANTEES

The granting of the authorization is subject to the provision of capital guarantees, the fulfillment of the commitments undertaken with the agreement referred to in art. 15, as well as the reimbursement of the expenses foreseen for the environmental reorganization works consequent to the cessation of the excavation activity **(Regione Lombardia)**.

Forfeiture of authorization

Failure to start mining within 12 months from the execution of the authorization provision or the suspension of said activity for a period exceeding 6

months, or 9 months in territories classified as mountain, entails the forfeiture of the authorization.

The forfeiture of the authorization is also pronounced

When the technical and economic skills have failed

When the owner, previously warned, has not fulfilled the obligations and conditions imposed by the authorization provision or by the agreement.

In the event of forfeiture, the holder of the authorization is the owner of the area, the field can be acquired from the unavailable assets of the Province upon payment of an indemnity equal to that provided for the expropriation of the area pursuant to state laws in force **(Regione Lombardia)**.

RISKS AND ADVANTAGES OF URBAN PROJECTS IN FORMER QUARRY SITES

2.5

Working with developments on former extraction areas may be complicated from different perspectives, and therefore, many implications should be considered and studied before any decision can be made. In the following section it is possible to observe general risks and advantages to encounter during an urban development in former quarry sites

ADVANTAGES

- *Through the reconversion of former extractive sites, territory acquires new opportunities for development in both economic and ecological sectors. Quarries are transformed from "Gray Infrastructures" to "Green Infrastructures" (Jarvis, 2006).*
- *Agricultural land is seen as a prime national resource, a type of higher quality land to be protected. Quarrying activities have taken big*

part of these precious land type, however, with the reconversion of former territories of extraction into agricultural and mixed land use there is a sustained growth and maintenance of these high-quality land by private investors.

- *In the past, quarries were seen as a "temporary" activity, one that could extend over many decades. Today with the current land use plan and land protection policies, quarrying activities are forced to operate into a smaller lifespan and with less impact over the territory given. These actions are taken to ensure a "natural" transition of former quarries into agriculture, forestry, nature or conservation lands, expanding the green spots over the city.*
- *Quarries can be used as a clean slate to converge nature conservation activities together with built development, these actions are*

appropriate for sustaining a long-term land use that gives funding to the city in order to enhance the natural landscape and fulfill social and environmental objectives **(Image 49)**.

- Preferential tax treatments, for tax purposes, income derived from the exploitation of minerals is treated as 50% revenue and 50% of capital income, each attracting different tax treatments. Revenues from built development would almost be certainly treated as 100% capital, attracting different tax profiles and investors willing to invest and develop these former extraction sites **(Jarvis, 2006)**.
- Housing demand in urban areas. Their location inside the urban tissue and proximity to key infrastructures makes these former extraction areas extremely attractive for future buyers. In these circumstances, the developer would seek higher returns for which it

would force the value of the land to the landowner or operator upwards, pushing a win – win situation.

RISKS

- Quarries are still seen as a negative and damaging spot inside the urban tissue. Historically, they had unmitigated environmental impacts. Public view desire quarries to be contained, as short term as possible and returned to their former land use, which is mostly mono use for agricultural development.
- A build up development inside a former quarry would concur into environmental issues that may affect nearby inhabitants, making the developer to take further actions in order to protect the surrounding environment from visual, noise, dust, biological and geological nuisances **(Image 50)**.



IMAGE_49_Intercontinental Shanghai Quarry Hotel

- Quarry planning for built development take a long time in planning, design, assessment, application and initial site development. Traditionally, they have not been designed to receive built developments. There is a long lead – in time and, even if thinking were to change immediately, it would be many years before a quarry planned from the outset for built development was ready to commence building operations.

- Ability to secure funding for big developments will often be a hurdle to owners / operators with no track record of development. Even if such party is able to secure funding, such lending will likely be at a higher rate of interests, reflecting the higher perceived risk, of the inexperienced (in terms of development) landowner / developer.

- Land ownership is again relevant to the developer of the built development. Probably more often than not, interests in former or existing mineral workings for built development will be acquired either by way of an option exercisable on grant of planning permission or, on an entirely speculative basis (**Jarvis, 2006**).

- The physical condition of the site will be a very relevant financial consideration for the developer. Costs of moving waste and overburden materials, reshaping quarry faces and floors will impact on the viability of the development. However, such impacts will not be negative in every instance particularly if the developer is able to work with the landowner/operator at an early stage in creating the final landforms for the development (**Jarvis, 2006**).



IMAGE_50_Quarry Used As A City Park In Shanghai, China



IMAGE_51_Quarry Collapse In Borba, Portugal (2018)



IMAGE_52_Quarry Collapse Inside An Urban Area In Malta

2.6 ARE TERRITORIES OF EXTRACTION VALUABLE FOR CITIES?

The reorganization of extractive industries into transnational supply chains had led the integration of dispersed elements of production and brought together natural resources and built environments (**Arboleda, 2019**). In order to understand if extractive territories are valuable to urban environments we have to understand the hidden notions behind the production scheme.

The current notion of extractive activities stands on the premise of “exploiting raw materials in order to process them and generate development” however, recent articles by Veronica Gago, Sandro Mezzadra, and Brett Neilson (**Gago and Mezzadra 2015 ; Gago and Mezzadra 2017; Mezzadra and Neilson 2017**) have called for an “expanded conception of extractivism” one that can be thought in different dimensions and interconnected with

different urban reactions, rather than following the linear “cause – effect” of the “simplistic” view.

According to the authors, extractive processes, provide important analytical insights for clarifying the importance the role of rent, primitive accumulation and economic forces behind extractive capitalism, that shapes our urban environments. In order to understand the relationship between exploitation – commodity production, Arboleda (**Arboleda, 2019**) proposes a model of three contradictory and yet integrated circuits of extraction:

- **A productive circuit of extraction**, which encompasses territoriality and the material processes of raw material production
- **A commodity circuit of extraction**, formed by the web of infrastructure and logistical

connectivity from extraction sites to their realization in the market

- **A money circuit of extraction,** which entails all the financial actors, instruments and institutions that mediate the activity of exploitation industries.

The productive circuit of extraction is pointed to the moment of value production when fixed and variable capitals are expended in order to yield minerals, oil or foodstuffs. It encompasses all the processes and the territorial landscape that form the urban spot produced by extractive activities. Urban areas have been physically altered in order to host this circuit, it has reconfigured itself many times according to the production needs in order to boost productivity, therefore, modifying directly the environment where we live. In the early stages of extractive development, urban settlements were structured around relatively equitable and socially homogeneous "company towns" for the salaried workers of these companies.

The commodity circuit of extraction comprises the physical and social infrastructures that are put in place in order to facilitate the swift movement of primary commodities from the point of production to their subsequent realization in the market. Always taking the task of reducing the time that it takes for capital to transition from its determination as commodity form.

This tendency to constantly modernize and overhaul infrastructures of transportation has been the "gift" of industrial capitalism since its inception, by contrast, cities have become places in constant expansion in which infrastructures have captured a big proportional area of its territory. The infrastructure transformation revolves around the construction of ports, railways, roads, canals, highways,

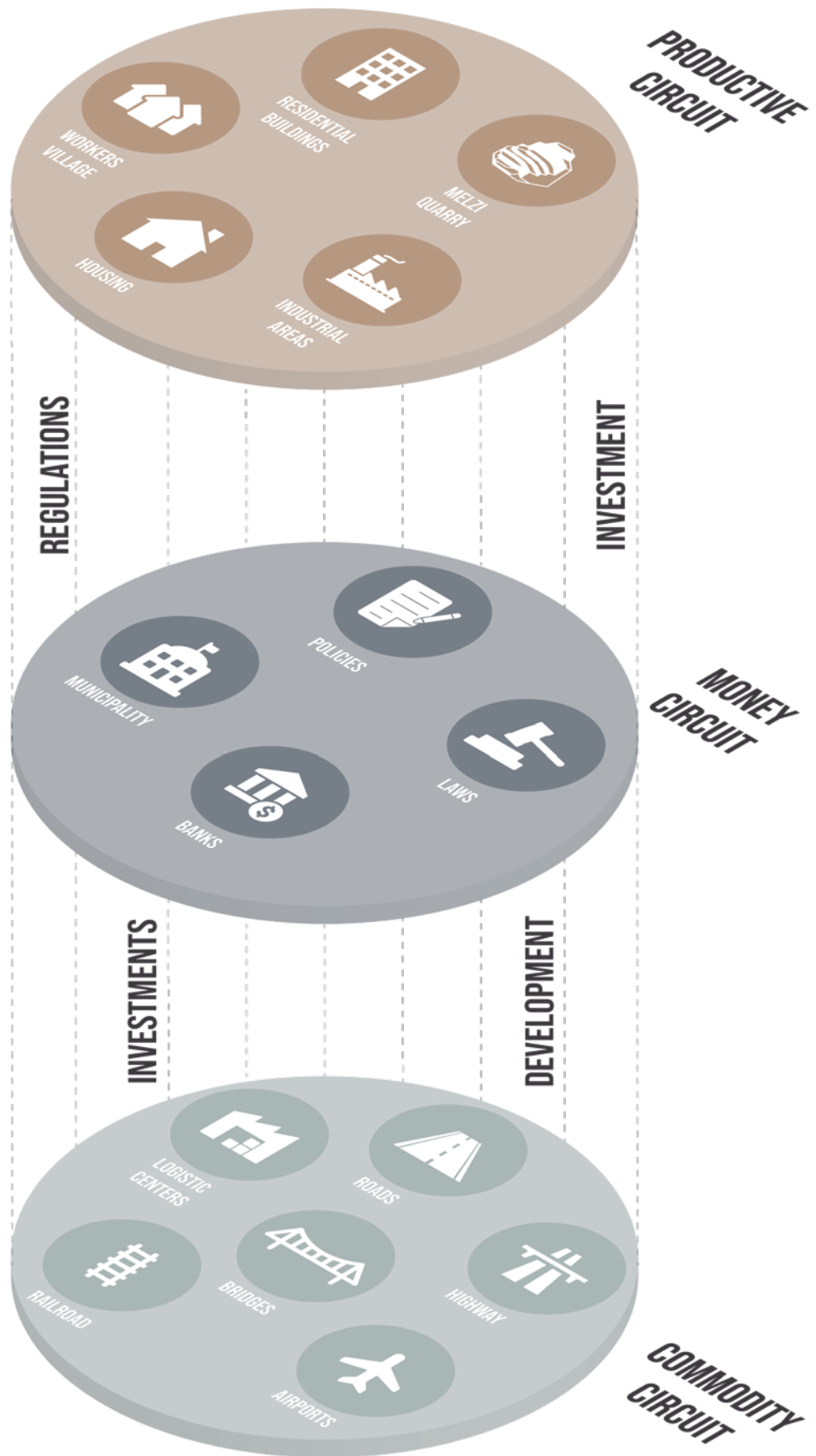
airports, logistic centers, bridges for the swift movement of raw materials.

Working as a mediator for the first two circuits we find the money circuit of extraction, it is built through "political" figures, this can be seen as financial institutions, banks, regulation policies, legal frameworks, etc. Through this circuit, the financial system has sustained the technological innovations and changes in the transport systems and pushing the construction of infrastructural development across industrial countries **(Bunkerand Ciccantell, 2005).**

In fact, the possibility for landscapes of extraction to become capitalized has been thanks to the mediation of a complex network of financial actors, regulations and practices. Financing investments and strategies have served as a lever to the expansion of extractive operations across the globe. This, in turn, has increased the capital in urban areas, affecting the income for city inhabitants and living labor.

The relation between financial circuit, extraction activities and urban development can be divided in three scales or domains:

- *First, sovereign debt that have functioned as the key mechanism for financing mega – infrastructural systems required to attract foreign investors.*
- *Second, physical producers have developed engagements with the credit system, as well as reorient their corporate behavior and strategies towards speculation of financial operations, leading to a big movement of money that is in need of physical infrastructure and therefore building new business districts.*
- *Third, consumer depth has increasingly assured as one of the sources of financial liquidity for*



IMAGE_53_ Diagram Of Productive Circuits Model

commodities, leading to the creation of a massive credit system used by people to buy commodities that affect the urban configuration (Acquisition of housing, offices, cars, etc.).

The urban implications that underpin the realization of the capital are notably theorized by **David Harvey (1982,1985,2006)** through the notion of “capital switching” (**Harvey 1985**) claims that crisis tendencies emerge when over accumulation in one circuit yields surpluses that cannot be reabsorbed in the productive process. As a result, money flows onwards a “secondary circuit” which is formed by physical framework for investment within the built environment, and therefore, entails the creation of spatial arrangements within urban areas. The transformation of the urban landscape is a result of surpluses that originate in the first circuit and latter “dumped” into the secondary circuit, this system has been the same since the beginning of the industrial revolution.

There are clear studies showing the case/effect relationship affirming this theory, such as the case in California, which the vast material wealth spring from the silver and gold rushes during the mid-19th century fueled similar construction and real estate speculation booms in San Francisco (**Brechins,2006**). Joe Feagin's study (**Feagin 1990**) of the oil boom in the postwar period concludes that Aberdeen and Houston were reconfigured through similar dynamics of capital circulation and investment in the built environment.

It is precisely the increasing structural circularity which exists between extraction and urbanization that has given rise to

a vibrant new dimension of the “urban extractivism” notion. This concept is used to designate the rise of a frontier culture that is starkly reminiscent of which tends to predominate extractive industries and which is treating land as a financial asset, mobilizing monopoly power, displacing urban populations, plundering natural resources, enclosing public spaces and mainly deploying aggressive techniques of urban rent –action. The question remains if the massive urban development and contamination of the environment generated by extractivism activities is justified as a method for development.

CIRCUITS OF DEVELOPMENT MODELS FOR SESTO SAN GIOVANNI

Following the model proposed by Arboleda, a reconstruction of the same system is developed for the case of Sesto San Giovanni's industrial and extraction activities. This is done in order to show an approximate representation on how they work (used to work in the case of industrialization activities). Being a former industrial city, much of Sesto's urban area was shaped in the needs of these three circuits, however, by looking at the current traces of the former industrial areas, it might seem how this single circuit would be “predominant” (productive circuit) over the others (money circuit and commodity circuit), when in reality the situation facing is the result of the proper balance and execution between these three circuits working together.

The most visible circuit in Sesto without a doubt is the productive circuit, which appears mostly with the big amount of former industrial areas around the city. Sesto's productive circuit encompasses mainly the urban spot of the city, as it is the clear result

of the changes made to the territory in order to host any type of extraction or production activities. We can list a small list of the physical representation of this circle that is currently visible, Melzi Quarry, Falck Steelworks Area, Marelli Factories, Campari Area, Breda Plants, Falck Workers Villages, Housing facilities for former industrial workers, housing areas, etc. All these elements conformed the support base for the extraction and production activities that made Sesto famous.

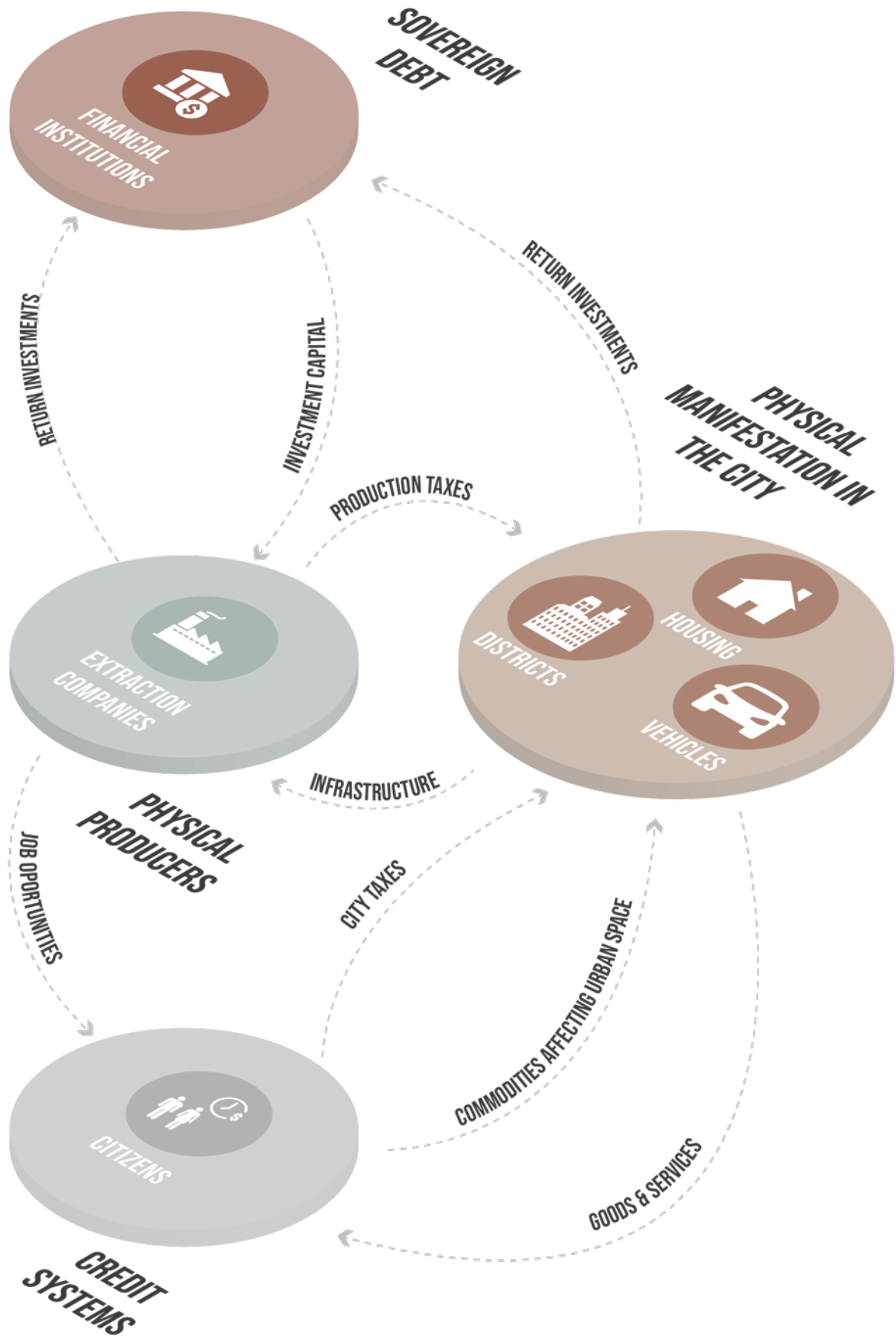
In the center of the system the money circuit is located, working as the intermediary between the production chain and the commodities network that Sesto hosts. Inside this circuit we can find economic and political actors that have the ability to invest and take decisions on the territory.

The economic actors take shapes of private enterprises, such as: banks, investors, private funds and any type of private monetary firm that has the ability and resources to invest into the production circuit to keep it running, on the other hand, the political actors are the one in charge of planning, regulating the activities and developments that might change the urban areas of Sesto San Giovanni, such as: Lombardy Region (Territorial Level), Milan Metropolitan Area (Metropolitan Level), Municipality of Sesto San Giovanni (Local Level), through these actors a series of legal mechanisms are enacted in the form of development plans to regulate the activities of the first circuit, such as the PTR (Regional Territory Plan), PTM (Metropolitan Territorial Plan), PGT (Territorial Government Plan), PLIS (Supra Municipal Interest Plan), etc.

Finally we can find the commodity circuit, in here are included all the physical and social infrastructures that the production system of Sesto San Giovanni needs to put its goods on the market, these infrastructures are usually built by the secondary money

circuit and pushed by the needs of the first productive circuit. Here we can find diverse infrastructures types in Sesto, such as : Highways (Tangenziale Nord Milano – Tangenziale Est Milano – Autostrada A4), Railways (Ferrovia Milano – Chiasso), Roads (Viale Edison, Viale Italia, Viale Gramsci, Viale Monza, etc) Bridges (Cavalcavia Vulcano)

These three circuits support each other and compresses the entire tangible and intangible behind the production line, **(Image 52)**. It is shown graphically its relationship between each other. And as well the relationship between financial circuits. Extraction activities and the result in the urban development **(Image 53)**.



IMAGE_54_Relationship Between Financial And Extraction Circuits

2.7

MEMORIES AND HERITAGE OF EXTRACTION SITES

The industrial landscape represents an atypical landscape category, as it extends the land use perception to places, such as those of production, which are born and developed without any aesthetic purpose from the people who made them. Industrial spots, once finished in their productive activity, reveal unsuspected aesthetics qualities, useful for possible operations of the conservation and valorisation of these sites. The importance of the industrial landscape is not related to the new aesthetics associated with places of work, but also to the conservation of the cultural value of the place for allocation of a different and original function, compatible with the society of our time.

Extraction areas compose a particular landscape in which the technological heritage is intertwined with the environmental one, that requires an innovative form of protection and

valorisation . The “voids” left by the de – industrialization where synonymous with the tabula rasa, which erased all the productive traces jointly with the memory of a past by forgetting everything else. Similarly, with ancient urban tissues, in the industrial areas it is also possible to trace a consistent depth of historical stratification. They are deposits of a more recent history but are no less intense: histories of fights, hard work conditions, solidarity between workers and antagonism for the industrial discipline. The depth of the memory of the workplaces is undeniable and it represents one of the main components of the immaterial heritage. **(Talentó, et al, 2020)**

Industrial landscape is constituted as an “anti – landscape” rather than a traditional one **(Talentó, et al, 2020)** Traditional landscape is based on the traces of the long-



IMAGE_55_C - Mine Square Project In Belgium

standing history of the territory. The industrial landscape, instead, is the landscape of discontinuity, as its appearance indicates a breaking point, compared to the previous history, and a new beginning in the events of the territory **(Talento, et al, 2020)**. Industrial landscape is the landscape of metamorphosis, is the landscape of community values, rich in social cohesion and human interaction. Due to this, the transformation of these areas implies the need for urban regeneration to re – think economy, the function, and the destination of use of the abandoned industrial sites **(Image 55)**.

The recovery of abandoned quarries has to be thought in function of re – appropriating the cultural aspects of the territory and not only of the former industrial site, where there is possibility to

reinvent the anthropic landscape and its relation with the natural one. The regeneration force exercisable by these marginal voids is becoming the strong point of the so called “new ecologies” which utilizes the existent heritage at the center of the project for the contemporary city. The intention is of generating new life cycles from the devastated territory, which has suffered the most aggressive forms of degradation.

Interventions as the Emscher Park in Germany produced new ecosystems characterized by a complexity that maintains a balance of its industrial heritage and constant public spaces. Communities around the park accept the dismissed areas for a multitude of collective uses, taking the opportunity to embrace a former industrial heritage and enjoy the big areas of this pole, now transformed for its citizens **(Image 56)**.



IMAGE_56_Industrial Heritage In Zollverein Park, Germany



IMAGE_57_Industrial And Natural Landscapes In Emscher Park, Germany

B

**ANALYSIS
OF SESTO'S
INDUSTRIAL
TISSUE**

3

UNRAVELLING THE LAYERS OF THE AREA

As mentioned before, Sesto San Giovanni is an interesting example of European industrial city. This is due to the immense variety of tissues you can find within its urban area.

From all of these tissues, there are two in particular that are opposed to each other: Industrial and Extraction. Finding a case where former extraction sites coexists within industrial complexes is really fascinating. Here is where the question begins, How a quarry could be developed next to an industrial complex? Is it something common to have within meters away two areas with different visions? One to extract materials in order to move them around the territory, other two receive the raw materials sent from extraction sites in order to transform them into goods that later are moved as well into the territory and further away.

This sub-chapter will take you through the different events that led this

particular situation to develop in Sesto San Giovanni.

First, by explaining how the Melzi Quarry appeared within Sesto, how it gained exploitation rights from local authorities and what is the current situation within the quarry.

Then, look through the legal framework of mining activities of the Italian Republic, this is done in order to understand the different levels of hierarchy available within Italy and how quarries can be operated legally inside the Italian territory.

Finally, discover if these two types of tissues are valuable for urban areas, most certainty understand if their existence and maintenance within urban areas are necessary in todays world. Foremost, understand if they contribute to something positive towards the urban environment in which they are hosted.



IMAGE_58 Inside Melzi Quarry Overlooking The Falck Area

3.1

MORPHOLOGIC GROWTH OF SESTO SAN GIOVANNI

The evolution of the urban tissue in Sesto San Giovanni is a complex but interesting story, one shared by many former industrial European cities.

Sesto began as a small agglomeration of peasant and rural houses, which its thought to be founded by the Romans. In the 1800's, Sesto remained as a tiny rural village settled near the current Rondo area and was surrounded by extensive agricultural fields, the main road available was one connecting Milan towards Monza (Current Viale Ercole Marelli). In 1840 the Milan - Monza railway station was constructed, this railway line had a station on Sesto San Giovanni, allowing faster movement of people and goods between cities, leading to a small housing expansion within the center of Sesto.

In the beginning of the 1900's, pushed by new railway connections with other cities, early signs of industrialization

SSG TISSUE GROWTH 1840 - 1968

- Main Historic Center
- Historic Center Expansion
- Residential Areas
- Industrial Areas
- Agricultural Land
- Genesis Roundabout
- Main Road
- Secondary Road
- Railway Milano - Monza

IMAGE_59_ Legend Of Sesto's Growth



IMAGE_60_Sesto San Giovanni In 1840



IMAGE_61_Sesto San Giovanni In 1888



IMAGE_62_Sesto San Giovanni In 1914



IMAGE_63_Sesto San Giovanni In 1936



IMAGE_64_Sesto San Giovanni In 1968



IMAGE_65_Satellite View Of Sesto In 2000

started to appear, factories were built shaping Sesto's urban tissue. In 1904 Breda Manufacturing opens its complex on the south west and in 1905 Ercole Marelli does the same. In 1908 Falck steelworks opens the biggest metallurgical factory in Italy on the north west side of Sesto. By 1917 Sesto San Giovanni has officially become a city of factories.

By the year 1936, the industrial development and expansion continued. Pushed by the war effort and the fascist regime, several small and medium mechanical and electromechanical sized companies appeared around Sesto, filling the voids left on the territory by the "Sesto Giants" (Marelli, Falck, Breda & Campari). The demand of man power for its factories produced a massive migration flow towards Sesto, creating a big development of housing units around the areas of "Rondo" and "Marelli"

By the 1970's the industrial society arrived to its growth peak. Industrial complexes were built all around the east side of the historic core, while many other factories simply expanded their premises into sizes never seen before. Sesto's growth was so big that it led to the absorption of the other semi-independent parishes that surrounded it, such as Cascina Gatti, Pelucca and Torretta.

After the collapse of the Italian industrialization, many factories left town or simply went bankrupt, Sesto found itself with many abandoned industrial stock. The city pushed different ideas to reconvert these brownfields into service based office areas without much success.

Today Sesto is planning a massive urban re-qualification project for the Falck Area. This project will inject new vitality into the northern part of the city and possibly repair the broken urban fabric caused by industrial decline.



IMAGE_66_Satellite View Of Sesto In 2020

3.2

URBAN ENVIRONMENT OF SESTO'S INDUSTRIAL ZONE

The Melzi - Parpagliona Quarries occupy an area of about 224,600 square meters in the municipality of Sesto San Giovanni. The big extension of the quarry surface and its location has made it possible for the quarry to be surrounded by different environments.

The quarry is located on the north - east side of Sesto San Giovanni, on the territorial division called "Zone 3: Pelucca - Cascina Gatti | Parpagliona". An area known for its former rural heritage and where the majority of its lands were dedicated to farmlands. Inside the quarry, there are four different fronts:

- **On the north and west**, the Falck Area and its big industrial brownfields (Industrial) (Image 67 - 68).
- **On the south**, Piazza Nagasaki, the new graveyard of Sesto San Giovanni and the CECA neighborhood (Services and Residential) (Image 69).

- **On the east**, the North Ring Highway and the Parco Media Valle del Lambro (Transport Infrastructure and Natural Area) (Image 70).

- In addition, there is the presence of two **historic rural buildings**: Cascina Rubina on the east, Cascina Parpagliona on the south.

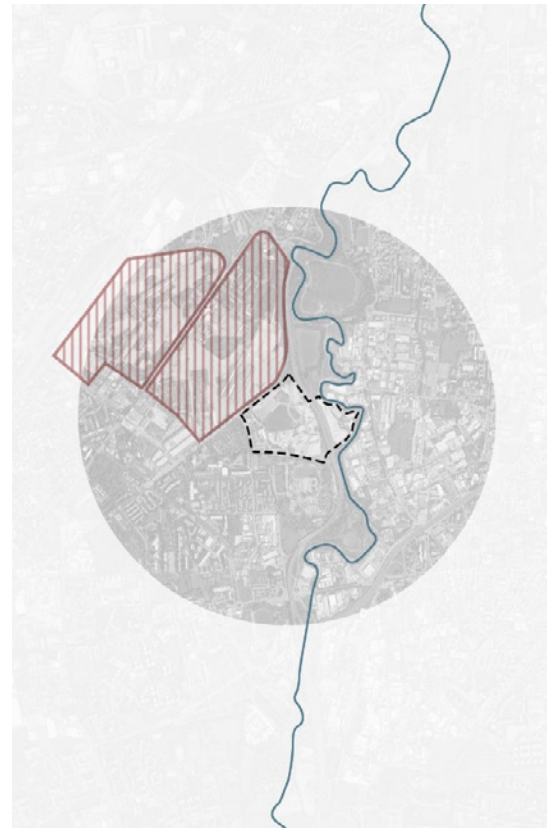
Accessibility towards the site is one of the biggest problems, due to its particular location within the Zone 3, the access to the area is limited. Public transport is limited and the main access is through the "Thomas Alva Edison" road, a double lane road dividing the Falck brownfields from the Melzi Quarry. The location of the site and the poor accessibility options have isolated the site from the rest of Sesto.

Other important issue for the site is the urban image that surrounds the quarry. On the north - west side

its possible to find several cases of abandoned buildings, transforming the area into brownfields. The Falck area has been abandoned since the 90's leaving large industrial structures covered by rust and decadence. This situation is joined by an abandoned water treatment plant located just opposed of Cascina Rubina.

In the southern side of the quarry we can find a variety of residential stock ranging from mid - high density towers rising from 4 to 9 floors high, to single family housing units belonging to the historic CECA neighborhood. The variety of building typologies gives the south side a closer approach to the "urban environment" of Sesto.

The eastern border of the site is enclosed by the "Milan East Ring Road" splitting the quarry's area in two sides. The east side of the quarry is located within the territory of a big metropolitan park, the "Parco Media



IMAGE_67_Surroundings Of The Melzi Quarry



IMAGE_68_Urban Environment Of Sesto's Industrial Area

Valle del Lambro, being the only natural environment around the site.

Parco Media Valle del Lambro is a metropolitan scale park that extends for 660 hectares along the cause of the Lambro river, crossing the municipalities of Monza, Brugherio, Cologno Monzese, Sesto San Giovanni and Milan, all within the Metropolitan City of Milan.

This formidable green infrastructure constitutes a connection between green areas and important urban spaces within the Metropolitan territory of Milan. To the north, it connects the center of Monza and then with the park of the Royal Villa. To the south, it connects the new Adriano neighborhood and the Martesana Canal with the center of Milan. To the west, through the Falck area and in the future reaching towards Parco Nord. To the east, again through the Martesana channel, it will connect

to the new conceived East Quarry Park. This natural hinge of great scale project that concerns a complex territory, one that has been exploited and modified by an invasive industrial history (around 60 hectares of its land is made up of former quarries and hills of foundry slag). Bordering cities use the park as defense mechanism towards the small hydraulic risk represented by the Lambro river.

This territory has been progressively eroded by urbanization processes and the pollution of its soil, legacy of the industrial history of the area, being the park a response of landscape reorganization of a "violated" territory creating an environment that was depleted.



IMAGE_69_T5 Building In The Area Falck



IMAGE_70_CECA Residential Neighborhood



IMAGE_71_North Ring Highway Milano

3.3

FUTURE PLANS FOR SESTO'S INDUSTRIAL ZONE

Sesto San Giovanni is currently in a transformation process, one that is looking to recover its former industrial areas and transform them into new dynamic zones for the city.

One of the most important planning projects in Sesto is the re - qualification for its northern part, which covers mostly the abandoned brownfields of the Falck Area and its surroundings. The first masterplan was drafted by Italian Architect Renzo Piano studio in 2005, then re-developed by Foster+ Partner studio in 2020.

The Foster + Partners proposal calls for a layout made up of closed city blocks, keeping with the existing layout previously proposed by Piano, with two main roads: Viale Italia, running north-south, and a new road, running diagonally in a curved shaped across the site east-west. The project will cover more than 1.5 million square meters, and its foreseen to be

finished by the year 2030. Once the work is completed, it will host over 50,000 people between residents, businessmen, students and city users **(Comune di Sesto San Giovanni)**.

The current masterplan foresees a progressive development over the next years with greenery, residential areas, new squares, retail and executive spaces and above all, human scale spaces to connect people. The masterplan will include different projects such as the City of Health and Research, a crucial public hub for clinical and scientific excellence formed by the new branches of the Besta Neurological Institute and the Tumor Institute **(MilanoSesto)**.

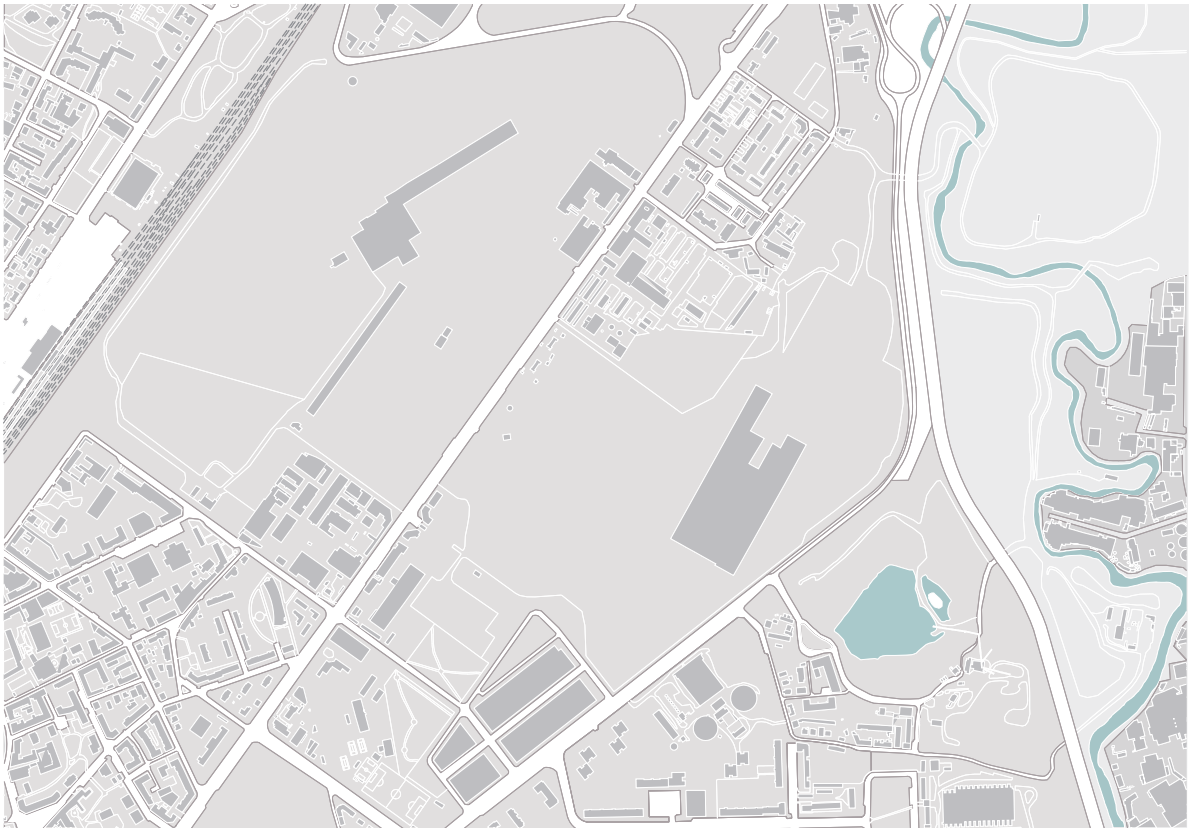
The urban plan design is based on three fundamental principles: Firstly, the sensitive redevelopment of the site's great "temples of labor". These icons of industrial archaeology are being conserved as guardians of the



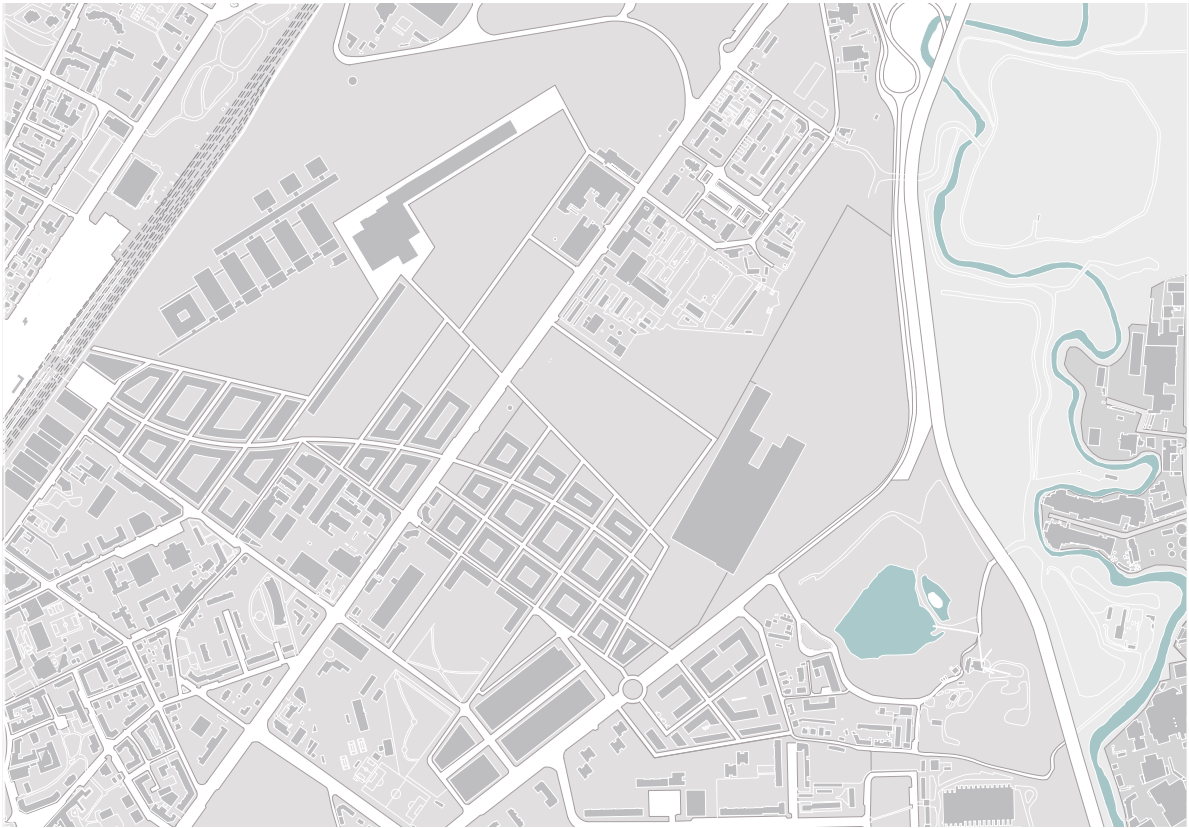
IMAGE_72_Former Masterplan Of Falck Area By RPBW



IMAGE_73_Falck's Masterplan By Foster And Partners



IMAGE_74_ Situation Of Falck Area After Urban Intervention



IMAGE_75_ Situation Of Falck Area Before Intervention



IMAGE_76_Proposed Residential Areas In The New Falck Development

site's history. Although this approach is argued due to the use of industrial heritage as picturesque ruins instead of a proper rescue and reuse part of the masterplan development.

Secondly, these industrial buildings play a part in establishing the new urban grid called for by the masterplan. These industrial giants won't change their fundamental structure, their renovation includes the insertion of new functional volumes, making the buildings attractive to future tenants. However, the use of the industrial structure as "skeletons" in order to host different functions is discussed as a non - adaptive way to reconstruct former industrial heritage.

Thirdly, the essential re-linking of the different tissues within Sesto – the historic city and the former industrial sites. This is accomplished by removing the 'Falck walls', the fences that surrounded and defined

the old industrial area, physical barriers that separate the factory site from its immediate surroundings, allowing users to experience different environments within a single area, evoking a historical trail within an urban project **(RPBW)**.

The railway connection is an essential part of the project, since it has the objective of connecting both of the tissues previously described, this will be accomplished by the creation of a new inter-modal train station that acts as a bridge for pedestrians and passengers, joining within a single building the transportation services of train, buses, metro(M1) and stitching this industrial zone with the rest of Sesto San Giovanni. The main east-west axis will start from the station and will flow all the way towards the Falck T5 Electric Furnace, generate a big green boulevard connecting all the project with it **(MilanoSesto)**.



IMAGE_77_Future Project for Sesto'a Train Station



IMAGE_78_Future City Of Health Project



IMAGE_79_Interior Rendering Of Falck Area Project



IMAGE_80_Interior view Of Sesto's New Train Station



IMAGE_81_Future City Of Health Project



IMAGE_82_Rendering Of Falck Area Project

4

BUILT ENVIRONMENT

When visiting Sesto San Giovanni one of the first perceptions is that is a city with a very complex mosaic of building assets. From former rural buildings to industrial complexes, Sesto has it all. Then the question appears, how could be possible to decipher the soul of a city that is ever changing?

In this sub-chapter, will be possible to gaze into the urban scale of Sesto San Giovanni in order to analyze the city and the built environment it has developed.

First, starting with an observation of the morphological evolution of Sesto, showcasing its transformation from a small rural town into a busy industrial city. Later, revealing the particularities of Sesto's historical layers, showcasing the rural heritage left in town with the presence of the many Cascinas. Next, discovering what is going to be happening in Sesto in the upcoming years, specially

with the re - development project of the Falck Area, an area that promise will become the biggest real estate development in Europe in over 20 years. After that, a revision of the land uses and functions will come in handy, this shall be used to understand how much will the city change with the transformation of the Falck Area. Later on, revealing the social component of Sesto, in particular, where are the main public spaces and what kind of activities are being held in those spaces. Finally, looking to the area of the Melzi Quarry and analyze the divisions inside the terrain for which different activities are still being carried on.

A proper analysis of the built environment is crucial to support the design decisions of this thesis project, in order to develop a cohesive proposal for the new transformation of Melzi Quarry.



4.1

LAND USES AND FUNCTIONS

The current land use situation in the area surrounding the Melzi Quarry shows the lack of planning of the area and therefore the future complications of development in the area.

In order to develop a proper site analysis, the area have been delimited into an area that responds within the future development of Sesto.

- **To the North**, *Cavalcavia Vulcano and the Falck Area, within Sesto's divisions of zone #3 (Pelucca - Cascina Gatti).*
- **On the South**, *Via Generale Ettore Cantore, both areas within Sesto's divisions of zone #3 (Pelucca - Cascina Gatti).*
- **On the East**, *Rondinella neighborhood, included in the Zone #2 (Rondo - Stazione).*
- **On the West**, *the banks of the Lambro river and the Parco Media*

Valle del Lambro located within Zone #3 (Pelucca - Cascina Gatti)

In the current situation, residential and industrial are the main two land uses in the area, residential areas appears to be concentrated on the Rondinella (west), Rondo (south - west), and Cascina Gatti (south - west) areas. These residential zones are characterized by having a mixed use development, with commercial spaces on the ground floor and residential use on the higher floors. The skyline of these areas is composed by medium | high density building stock, with residential towers ranging from 4 to 10 floors.

The building typology within these residential zones is very diverse, it is possible to find residential "row houses" constructed in 1908 (Villagio Attilio Franco Falck) passing through modernist high rise "tower buildings" from 1972 (Quartiere Gescal) and



IMAGE_84_The Residential Surroundings Of Melzi Quarry



IMAGE_85_Sesto's Skyline Seen From Cavalcavia Vulcano

NATIONAL SCALE



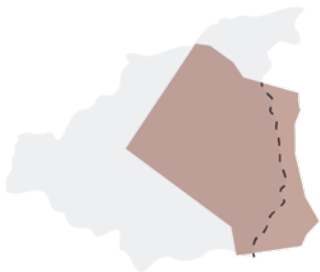
ITALY
MILAN METROPOLITAN CITY

METROPOLITAN SCALE



MILAN METROPOLITAN CITY
SESTO SAN GIOVANNI

CITY SCALE



SESTO SAN GIOVANNI
ZONE 3
COLOGNO MONZESE BORDER

LOCAL SCALE



ZONE # 3
MELZI QUARRY



IMAGE_86_Diagram Of Analysis Area



finalizing in contemporary “residential urban block” built in 2015 (Univillage)

A big part of the urban area located on the north side is occupied by industrial brownfields, characterized by having a contaminated soil and several abandoned industrial buildings. Within the Falck Village, we can find examples of abandoned industrial structures, such as: T3 and T5 electric furnaces, the OMEC (Officine Meccaniche e Costruzioni) and the Rod Cooling structure (Reparto Raffreddamento Tondini). These massive structures are left in a state of decomposition, bringing down the urban image of the area and therefore lowering its quality value.

Some other examples of industrial zones can be found on the east side of the site, across the Lambro river. An industrial park belonging to the municipality of Cologno Monzese, these industrial complexes have a small | medium dimensions. However, they occupy a big surface bordering the river boundary, this land occupation has led to a gradual contamination and decomposition state of the natural environment of the Lambro river, affecting heavily the flora and fauna of the Lambro environment.

Today, we see how the urban tissue of Sesto San Giovanni is fractured, occasioned by the several different land uses that are not compatible with one another and the big circulation infrastructures that divide the area (main roads, highways, railroads). On the other hand, Melzi Quarry acts as a “barrier” to avoid connection between the city and the green environment, accentuating the fracture of the built up tissue with the natural tissue.

Within the future, Falck masterplan development will try to improve this situation, considering on of the main objectives of the project the

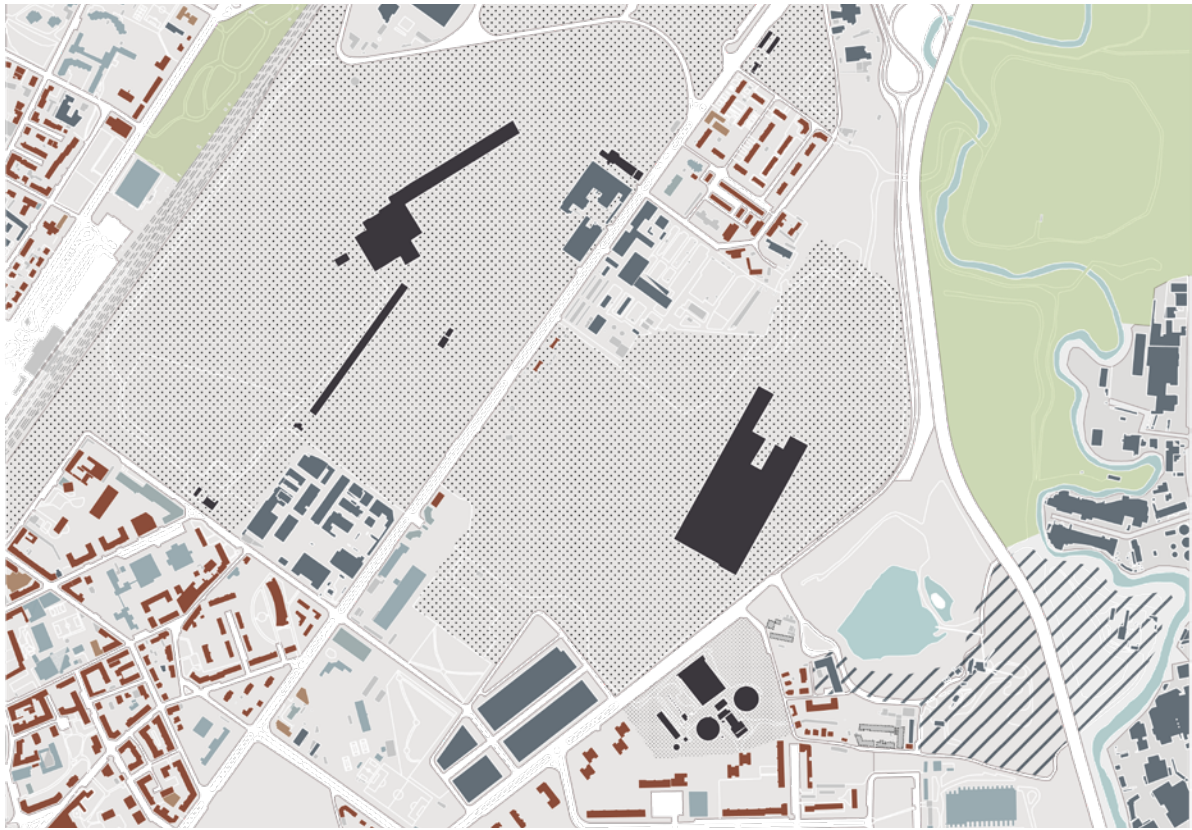
connection of both existant tissues in Sesto, the area of Rondinella on the west and the Falck Area on the west. This connection will allow at the final stage of the project a connection between Sesto's close green environments, the Parco Media Valle del Lambro and the Parco Nord Milano.

It wouldn't be strange to consider the opportunity to use the Melzi Quarry as a urban tissue healer, using it as a hinge to connect the new Falck development with the Parco Media Valle del Lambro, an approach that can easily be developed through a proposal that satisfies the necessities that the city planners have identified and the necessities for its current citizens and incorporating an extension of the Lambro environment into Sesto, improving the amount of green spaces and urban equipments.

SESTO SAN GIOVANNI ANALYSIS AREA | LAND USE



IMAGE_87_Land Use Legend



IMAGE_88_Curren Land Use Of Melzi Quarry Surrounding



IMAGE_89_Future Land Use Of Melzi Quarry Surrounding

4.2







ACTIVITIES WITHIN PUBLIC SPACES

Activities within public spaces define how dynamic an area can be. When these spaces are used for outdoors activities, the concentration of citizens within the urban tissue go up and with it new personal relationships are built and a sense of community is forged.

Sesto San Giovanni is a dynamic city that receives thousands of commuters during working hours. However, not all the areas of the city have the same movement or dynamism, the concentration of activities is held in the main road of "Viale A. Gramsci" that cross the areas of Rondò and Rondinella, while the less dynamic areas are the northwestern areas of Falck and Cascina de Gatti.

Within the analysis site, it is possible to appreciate the lack of quantity and quality of public interventions within its spaces and how outdoors activities are almost nonexistent, leading to a complete lack of street life in the

SESTO SAN GIOVANNI ANALYSIS AREA | SPATIAL CONCENTRATION OF POPULATION

-  Green Areas (Open Spaces)
-  Sport Facilities
-  Public Services
-  Concentration of Children
-  Concentration of Adults
-  Concentration of Elderly

IMAGE_90_ Public Gatherings Legend



IMAGE_91_Jogging At The Parco Della Media Valle Del Lambro



IMAGE_92_Diagram Of Spatial Concentration Of The Population

area. Even though the analysis area is composed mainly by residential quarters, it seems that the inhabitants hesitate to use the available spaces for them, this only could be read as a rejection towards the quality of the public spaces available to them.

The main gathering points for citizens surrounding the quarry site are outside of urban equipments (elementary schools, high schools, post offices, churches and supermarkets) or are held within the ground floor of the residential towers, this is due to the presence of commercial units.

The only area where public activities are being held in an proper way is within the Parco Media Valle del Lambro, which have a big amount of open areas, recreational trails and playground equipments ideal for all kind of citizens. However, this area still far away from many residential areas within the analysis site.

SESTO SAN GIOVANNI ANALYSIS AREA | AREAS THAT GENERATE PUBLIC ACTIVITIES

-  Green Areas (Open Spaces)
-  Generator of Activities within Main Road
-  Generator of Activities within Secondary Roads
-  Generator of Activities within Public Spaces
-  Generator of Activities within Private Spaces

IMAGE_93_Activities Generato Legend



IMAGE_94_Stretching On The Public Areas Of Sesto



IMAGE_95_Spaces Capable Of Generating Public Activities



IMAGE_96_Main Plaza On Sesto San Giovanni's Center

5

LANDSCAPE AND NATURAL SYSTEMS

Landscape is a fundamental feature of any built up environment. The creation of natural systems within cities are becoming a more popular design tendency over the years and Sesto has not being the exception.

For this sub-chapter an analysis will be developed, one that contains the different areas that make up the landscape and natural systems around the Melzi Quarry.

First, searching the different locations of the natural systems around the analysis area and comprehend how common is to have this kind of "Green Infrastructures" around the city of the Milan Metropolitan Area. Then, we shall look towards the Lambro River, learning about its size and the flow trajectory until arriving into Sesto San Giovanni and perceive how different urban areas respond to this natural landscape through its spaces.

A deep analysis of the environment of the Lambro river will be effective in order to recreate new scenarios of natural systems within the re-qualification of the Melzi Quarry.

Finally, pin pointing the different green areas and public spaces available in our analysis site and understand how they are planned, designed and maintained.

The analysis of the public spaces in Sesto is it of vital importance in order to determine the quality of space given by the public administration to its citizens. As well the numbers that indicate the ratio of square meters of public land for each inhabitant, in this way we can understand how much of the city surface is public or private and discover if the city is actually apt to host a variety of activities within its public spaces.



IMAGE_97 Interior View Of The Parco Della Media Valle Del Lambro

5.1

NATURAL SYSTEMS

The Milan Metropolitan Area is settled within the Po Valley, therefore its topography is characterized mainly by flatlands with a Mediterranean climate. The Po valley has been used since the Roman times as an important territory for agricultural development and as such, large spreads of natural landscapes were available. Today, little of the original natural environment still remains.

As Milan grew up into the industrial core of Italy, a big amount of natural landscapes were absorbed and transformed into urbanized territory, leading to an indiscriminate consumption of natural territory, as a consequence there was a scarcity of natural systems around the city areas. Since the 1930's, the city of Milan has embarked into a highly ambitious program to create and recuperate large spans of its natural environment, transforming former industrial lands

into their former natural state. This process resulted in the creation of a big amount of urban parks around the city, such as: Parco Lambro (77.3ha), Parco Forlanini (75ha), Parco Agricolo del Ticinello (88ha), Parco delle Cave (135ha), Parco Nord Milano (640ha), Parco Media Valle del Lambro (660ha) **(Comune di Milano)**.

Within the neighboring area of Sesto San Giovanni, there are only two natural systems to observe: The Parco Nord Milano on the south - west and the Parco Media Valle del Lambro on the north - east. This shows that Sesto has a good amount of natural systems near its borders. Nearby the Melzi Quarry the only natural system available is the Parco Media Valle del Lambro, considered a green backbone at a metropolitan level, connecting several municipalities within the course of the Lambro river. This particular infrastructure creates a



IMAGE_98_ Natural Systems Around Melzi Quarry



IMAGE_99_Top Hill View On The Parco Della Media Valle Del Lambro



IMAGE_100_Karl Marx Park In Sesto San Giovanni

5.2

LAMBRO RIVER ANALYSIS

The Lambro river is a natural watercourse located in the northern Italian region of Lombardy. Together with the rivers Seveso and the Olona conforms the orography of Milan.

The Lambro is born from Monte San Primo (1682m) in the province of Como, it flows downstream into the Po river between the border of Lombardy and Emilia Romagna. The river forms part of the Lambro - Olona hydro-graphic area, characterized by having its main development on a higher altitude in the Lake Pusiano and then flowing down towards the Po basin.

The Lambro basin can be substantially divided into four parts:

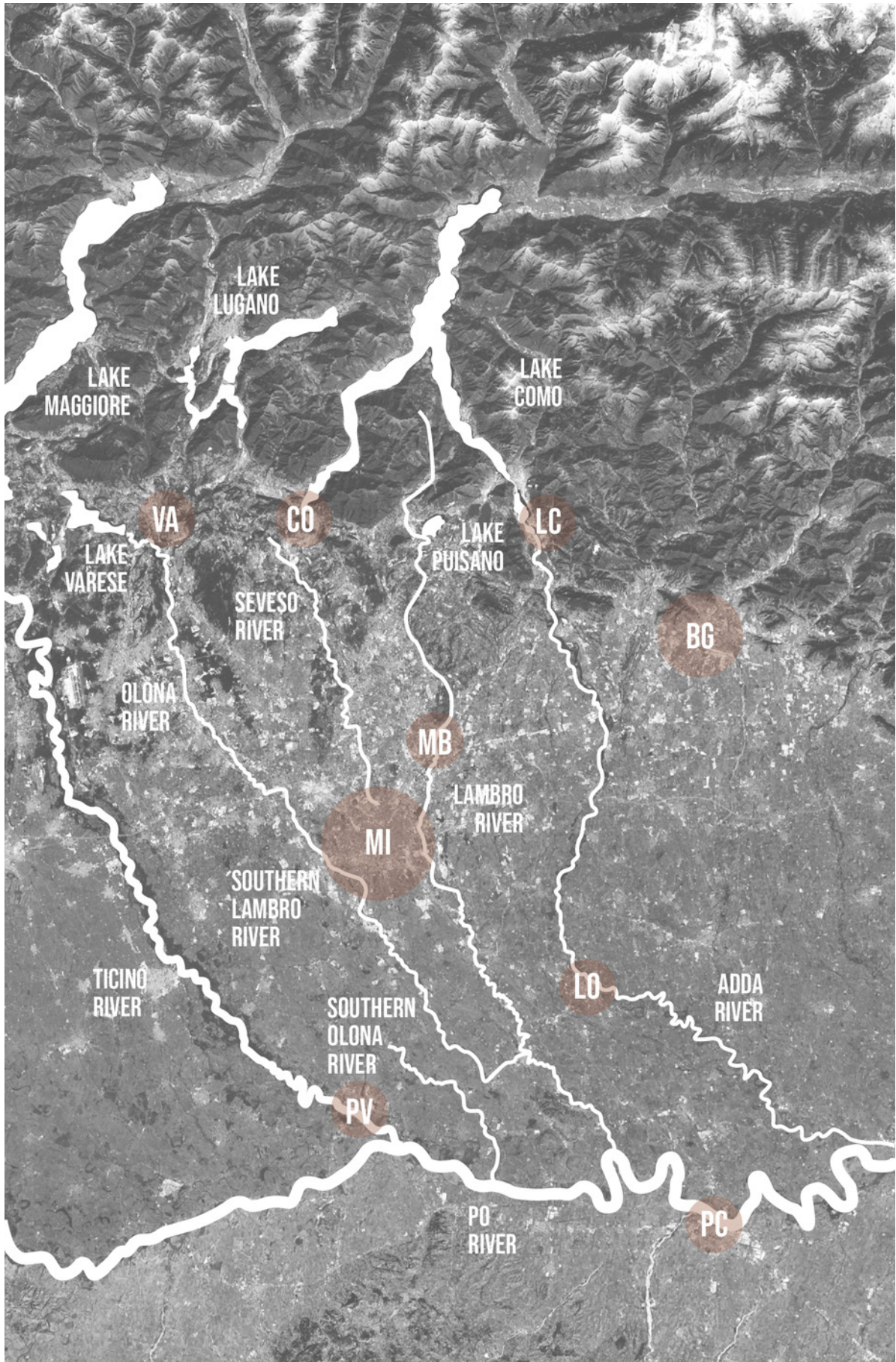
- **Lake**, upstream of Lake Pusiano, with numerous small torrential water courses, with generally high slopes. At the end of this part, the river decreases its slope and flows into

the lake of Pusiano, where it deposits considerable quantities of debris that brought from the slopy mountain terrain.

- **Natural Lambro**, between Lake Pusiano and the municipality of Villasanta, with steep or moderately steep slopes and characterized by reduced urbanization and rural landscapes.

- **Urban Lambro**, between the municipality of Monza and the south-eastern outskirts of Milan, up to the confluence of the Redefossi deviator, with almost flat slopes and high urbanization. The flow of this portion of the basin is characterized by heavy pollution from the municipal and consortium sewer networks

- **Irrigated Lambro**, between the confluence with the Redefossi deviator and the Po river, consisting of flat land in which there is a vast



IMAGE_102_Orography Of The Lambro River



IMAGE_103_Lambro Flooding In Sesto In 1963

irrigation network mixed with large spans of rural territory. Within this basin, there is the confluence between the Lambro and the Lambro Meridionale.

Downstream of the river flow stretch, the Lambro crosses a vast flat area, mostly densely urbanized. In particular, the Lambro crosses the historic center of Monza, then flows between the municipalities of Sesto San Giovanni and Cologno Monzese, until it crosses the eastern outskirts of the municipality of Milan. As it crosses the municipalities of Monza and Milan, the Lambro has a very limited hydraulic capacity, so much so that in the last 50 years' significant floods have occurred almost every twenty-five years. This situation still is unacceptable if compared to the damage induced to the urban fabric and built up territory concerned **(Regione Lombardia)**.

In November 2002, during a particular prolonged period of rains of variable nature and intensity, the municipalities of the Lambro valley in particular those downstream of Lake Pusiano, suffered the flooding of the Lambro in highly urbanized areas with consequent considerable damage to both buildings and infrastructures. This episode has clearly shown that the entire Lambro basin is vulnerable to flooding and lacking in rolling areas to accommodate flood waves that are anything but exceptional.

Because of the flood, new interventions were merged into the Variant of the PAI (Extract Plan for the Hydro-geological Structure) in 2004. The interventions envisaged in the Lambro Variant to achieve the final design of the watercourse fall into seven types: regulation works; formation of lamination areas; maintenance of natural flooding areas affecting

floodplain areas; reduction of flows discharged from urban drainage networks; adaptation of the crossing structures that hinder the flow of floods and induce flooding in incompatible areas; construction of local protection works (embankments); increase in the hydraulic capacity of the riverbed through local works (recalibration of the riverbed, diversions, etc.).

Besides flooding, pollution is the other serious issue among the river. The Lambro, was one of the Italian rivers that was most affected by the pollution and the industrialization that took place on its banks: in particular, in the so considered "Urban Lambro", between Merone and Monza. In addition to the use of water as a driving force, from the nineteenth century it was used in various industrial processes, in particular by the textile industry, the Lambro became a convenient outlet for industrial wastewater of the most


















varied nature. The phenomenon of pollution was especially accentuated in the second half of the last century with the widespread construction of sewer networks in the newly urbanized areas of the upper and middle course, whose sewage waters were conveyed into the river, so that only biologically death water reached Monza and Milan. On the other hand, Milan used the river as a basin to discharge the sewage its eastern districts, adding another layer of pollution (**Regione Lombardia**).

There is a need for reduction in flood risk and pollution, as well habitat restoration. Awareness is raising among the local population in order to stop the degradation of the river ecosystem. The government has been working on the recovery of the natural system of River Lambro for several years. It is due to this awareness that the Lambro represents a vital





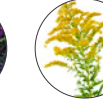







IMAGE_104_Lambro River In Cologno Monzese






CANOPY

 ACER NEGUNDO
 PRUNUS AVIUM
 POPULUS ALBA
 PRUNUS SEROTINA
 SALIX ALBA
 SAMBUCUS NIGRA
 TILIA CORDATA
 TILIA PLATYPHYLLOS
 ULMUS MINOR
 AILANTHUS ALTISSIMA
 QUERCUS ROBUR
 ACERO CAMPESTRE
 BROUSSONETIA PAPYRIFERA
 CARPINUS BETULUS
 EUONYMUS EUROPAEUS
 POPULUS NIGRA
 FRAXINUS EXCELSIOR




























UNDERSTORY

 POLYGONATUM MULTIFLORUM
 BUDDLEJA DAVIDII
 SOLIDAGO GIGANTEA
 ARTEMISIA ABSINTHIUM
 HEDERA HELIX
 PARIETARIA OFFICINALIS
 URTICA DIOICA
 STELLARIA MEDIA
 CHELIDONIUM MAJUS L.
 VINCA MINOR

GROUND COVER

 NINFEA ALBA
 RANUNCULION FLUITANS
 STELLARIA MEDIA
 CHELIDONIUM MAJUS L.
 VINCA MINOR

FAUNA

 FALCO TINNUNCULUS
 PASSER DOMESTICUS ITALIAE
 HYLA ARBOREA
 LACERTA VIRIDIS
 PODARCIS MURALIS
 COLUBER VIRIDIFLAVUS
 APODEMUS SYLVATICUS
 TALPA EUROPAEA
 ERINACEUS EUROPAEUS
 CARDUELIS
 FRINGILLA COELEBS
 STURNUS VULGARIS
 CORVUS CORONE CORNIX
 PARUS MAJOR
 REGULUS
 TURDUS PILARIS
 TROGLODYTES
 ALAUDA ARVENENSIS
 COLUMBA LIVIA
 LARUS RIDIBUNDUS
 TURDUS MERULA
 CARDUELIS CHLORIS
 PHOENICURUS OCHRURUS
 ERTHACUS RUBECULA
 MOTACILLA ALBA
 ARDEA CINEREA
 PASSER MONTANUS

IMAGE_105_Flora And Fauna of The Lambro's Ecosystem



IMAGE_106_Current Situation Of The Lambro Banks Within PMVL



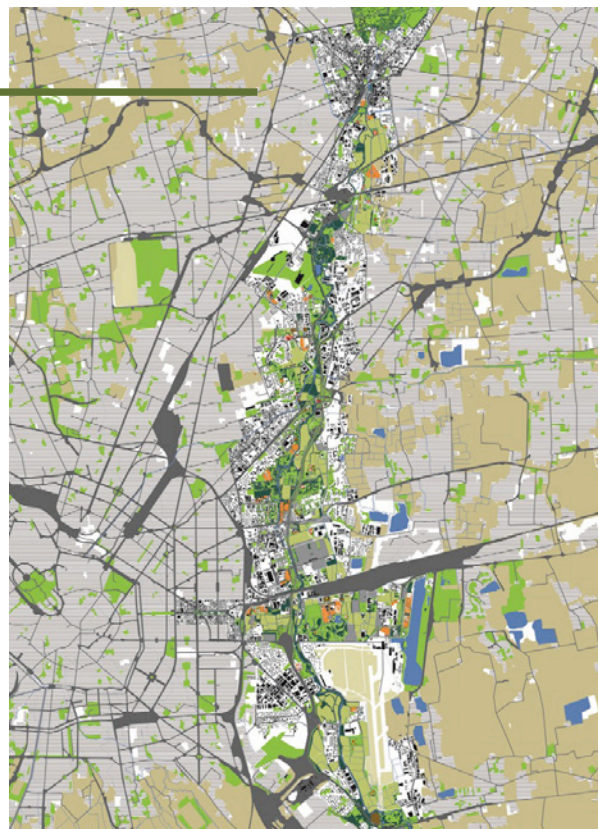
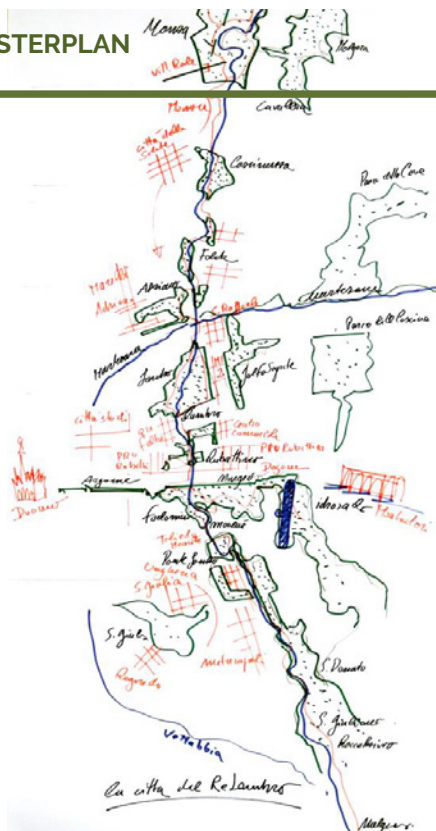
IMAGE_107_Lambro River Natural Environment Close To Melegnano

IL LAMBRO FUTURO



IMAGE_108_Re Lambro Park Project

IL MASTERPLAN



IMAGE_109_Masterplan Proposal For Relambro Project

essence for the urban territories and that pollution and flood risks are permanent, the municipality of Milan decided to launch one ambitious program, The Re Lambro project

THE RE LAMBRO PROJECT

(Ecological Lambro Metropolitan Network) represents the continuation of two projects co-financed by the Cariplo Foundation: ReLambro, launched in 2013 with a study and continued with the first actions put in place at Ponte Lambro in 2014 and at the Grande Parco Forlanini in 2016; VOLARE (Enhancing the Lambro River in the Regional Ecological Network), launched in 2015 and dedicated to the Lambro Valley from the Milan border to Melegnano, which also included the water network of the Vettabbia and the Attaché **(Comune di Milano)**

The redevelopment projected by ReLambro project were concentrated in 2018 in the north-eastern part of the city of Milan with the aim of improving the Lambro Park and the coastal areas between via Rizzoli and via Feltre, interventions are currently undergoing will allow the restoration of large floodplain areas to natural areas, strengthening part of the minor irrigation system that consists of hedges and rows, reorganization of public areas currently inclined to flooding, and the environmental regeneration of degraded areas. The project ReLambro has allowed the realization of interventions to mend the urban ecological network for the redevelopment of the Lambro. This is only the beginning of a challenging process of redevelopment of the eastern area of the city, which today expands its boundaries to include the territories of the municipalities of Segrate and Peschiera Borromeo, San Donato Milanese and Melegnano, already involved in the project. **(Comune di Milano)**

The parts involved into project are the Cariplo Foundation, the municipalities involved (Milan, Segrate, Peschiera Borromeo, San Donato Milanese, Melegnano), Parco Nord, research institutes from Università degli Studi di Milano, the National Institute of Urban Planning, and the Architecture and Urban Studies department of the Politecnico di Milano.

ReLambro sets up an ecological connection projects, expanding the ecological 'design' from the metropolitan river corridor developed on the north-south axis towards the east, in that Peri-urban area that meets large agricultural areas and which are currently divided by important infrastructural elements. Through the strategy outlined by ReLambro SE, the naturalistic areas of high value still present today will be able to regain a true ecological role for the extended city. Secondly, in ReLambro SE the objectives are growing: to connect, but above all to improve natural capital. Through six interventions in strategic points, the project will achieve tangible improvements on ecosystem assets and, continuing as a 'process', will involve numerous stakeholders to act on future transformations of the territory and concretely integrate the ecological dimension by recognizing natural capital as a real value of society.

The ReLambro SE project represents an important piece in the strategy of improving the environmental endowment of the metropolitan area and its ecosystem performance, through the construction of a shared strategic vision, capable of holding together the naturalistic, agricultural and urban component in a single enhancement strategy for an area already strongly marked by the construction of infrastructural works of great impact and, at the same time, affected by important forecasts of transformation. **(Comune di Milano)**

5.3

GREEN AREAS AND PUBLIC SPACES

Public areas are the physical spaces where citizens develop their social life, bringing vitality and major improvements of the life quality of any urban area. Sesto San Giovanni is a city in which the amount of green and public spaces is small in comparison to its built up area. This is specially true in the former industrial areas, where the big presence of brownfields contrast with the small amount and dimension of the public areas available. During the site visit of our area we found only 4 small | medium sized public parks (Giardino Forli, Giardino Pisa, Parco Karl Marx and Giardino Falck), and 1 big metropolitan park (Parco Media Valle del Lambro). These public spaces are surrounded by tall residential towers, suggesting that the ratio between inhabitants vs green | public spaces square meters falls clearly into deficit.

Available public spaces falls into a lack of continuity, where several small

public spaces are surrounded by residential units that are not connected between each other, making them isolated patches of land with little or no activities at all. This is reinforced by the fact that the biggest park in the area, (Parco Media Valle del Lambro) is not even connected directly to the city, but rather through an elevated bridge accessible only to a small portion of inhabitants. The quality of the public space is deficient, finding many traces of indiscriminated use of greenery, with footpaths leading mostly nowhere or to some small areas of children games, sports facilities are widely missing, only having one basketball and tennis court on the Karl Marx Park.

With the future construction of the Falck area, large spans of greenery are going to be developed, transforming the area in the city's green lung.



IMAGE_110_Falck Hill In Parco Media Valle Del Lambro



IMAGE_111_Environment Inside The Neighboring Falck Park



IMAGE_112_Environment Inside The Neighboring Karl Marx Park

6

MOBILITY SYSTEMS

Mobility is a key issue when building cities. Roads within urban environments are compared as the blood vessels on the human body. The ones that allow the circulation of all activities and therefore allowing growth.

Sesto is a city with a strong mobility infrastructure, one that encompasses an array of mobility systems such as: Train, Tramway, Metro, Highways, Main Roads. However, these infrastructures are not completely distributed along the territory, instead, they are focused around two or three different access points of the city.

In this sub-chapter the focal point will be the analysis of the mobility system of Sesto San Giovanni and its transport infrastructure. This process is going to be done by identifying first the types of public transportation systems available within Sesto and locate the network accessibility towards its citizens.

Then, tracing the different network system of roads surrounding Sesto, as well as peeking into the future with the possible new road network that is planned for the Falck intervention. Finally, focusing on the topic of slow mobility, tracing into the amount of walkable surfaces around the surrounding site. This is done in order to understand how accessible the site of Melzi Quarry can be to citizens that are willing to move on slow mobility systems in a coming future.

It is of vital importance to develop a proper observation of the mobility alternatives in the area, in a way because it could lead to some conclusions of the actual system and solutions on how to improve it, in order to connect the project to the overall city context. A project that is not easily accessible or connected to the rest of the city is doomed to fail and in the case of Sesto, that is not an option.



IMAGE_113 Sesto Rondo Metro Station

6.1

PUBLIC TRANSPORT AND SYSTEM NETWORK

Being the most populous city of the country, Milan is also an strategic node in northern Italy where many transportation networks converge.

The circular shape of Milan has obliged transport network to follow its shape and develop its main roads on concentric rings surrounding the city. On the northern - eastern part of the city we can find part of the ring highway system, named as A51 "Tangenziale Est Milano" and A52 "Tangenziale Nord - Milano", this two highways connect the northern east suburbs of the conurbation of Milan, Sesto San Giovanni and Cologno Monzese, being one of the busiest highways of the city hosting an approximately of 80,000 vehicles daily.

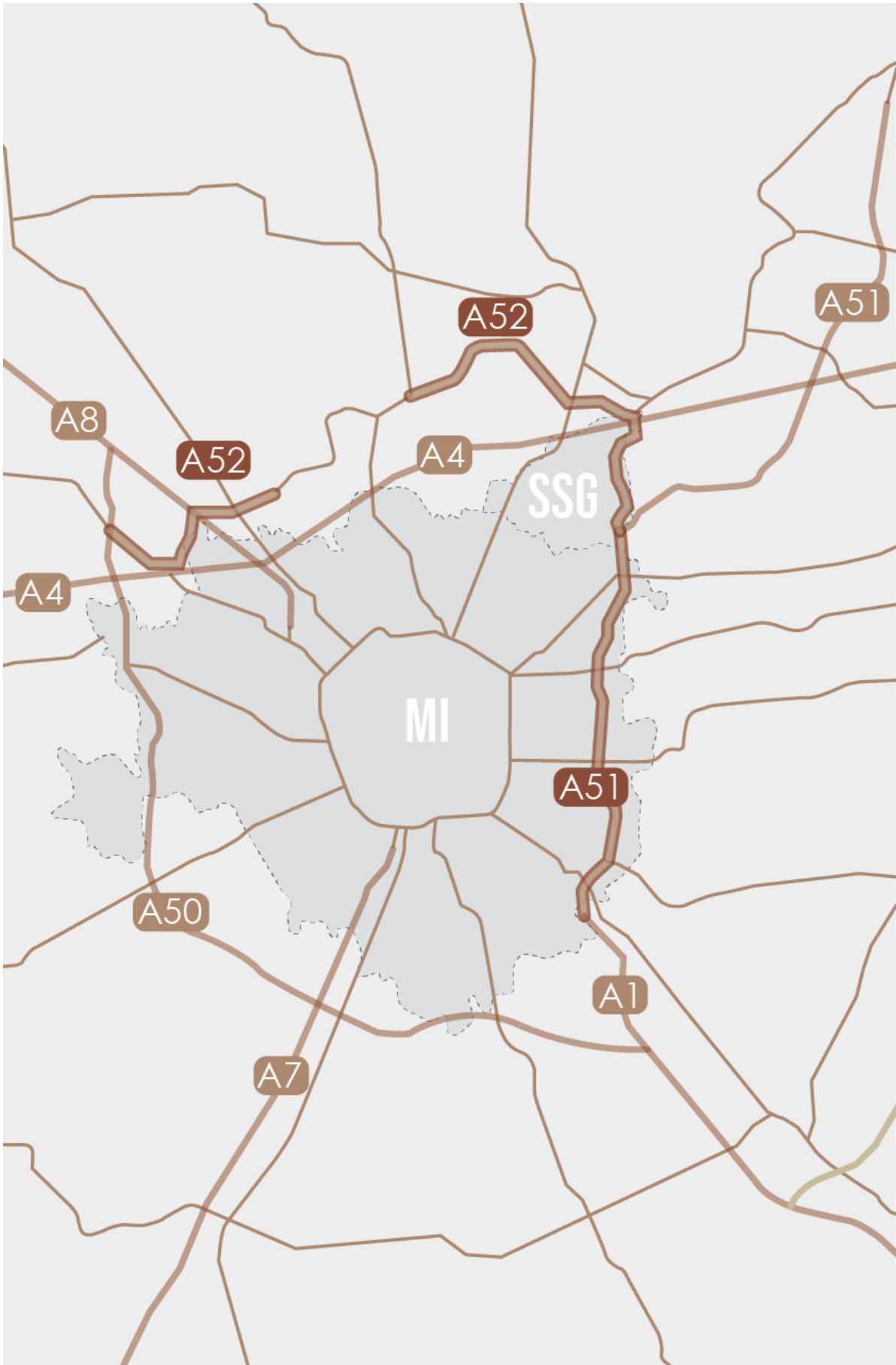
The A52 highway travels through the eastern part of Sesto and cuts through the Melzi quarry area, reaching for an exit point 1km away. This highway

connection is from vital importance for the access of the northern industrial area of Sesto San Giovanni.

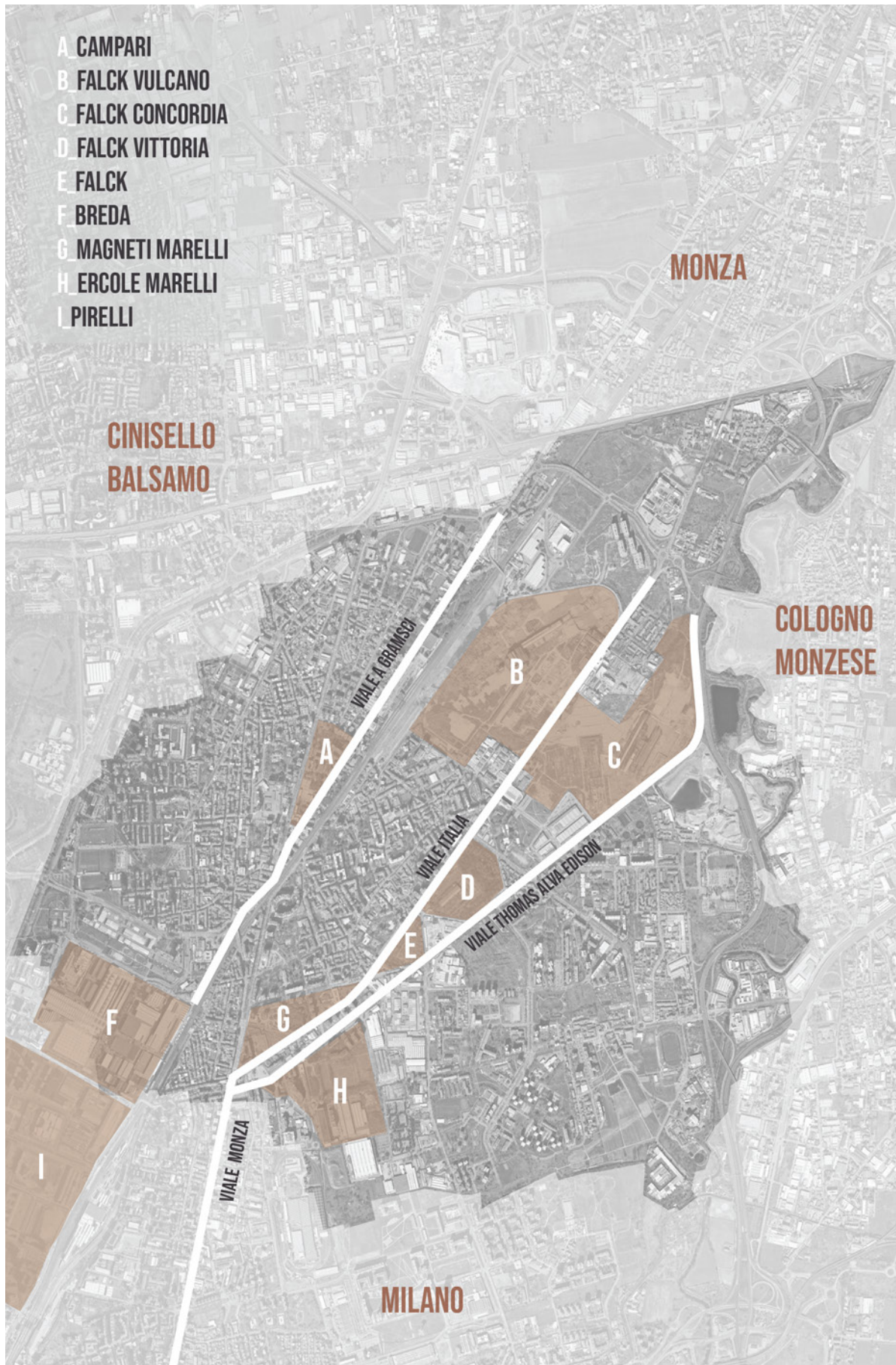
As seen in previously sections, Sesto's growth has not followed an organized development plan, instead it just developed around its industrial areas. This phenomenon can be appreciated in the layout of its main roads, Viale Antonio Gramsci, Viale Italia and Viale Monza.

Viale Gramsci was developed paralelly to the Milano - Monza railway, it follows a S.W - N.E direction cutting through Zone #1 (Comune - Marelli) and Zone #2 (Rondò - Rondinella Stazione). This historic road appeared around the 1900's and was used to connect the former industrial establishments of Breda and Pirelli to the central Rondò area and towards the A4 Highway (Torino - Trieste).

Viale Italia was developed following



IMAGE_114_Road Network Surrounding Milan And Sesto San Giovanni



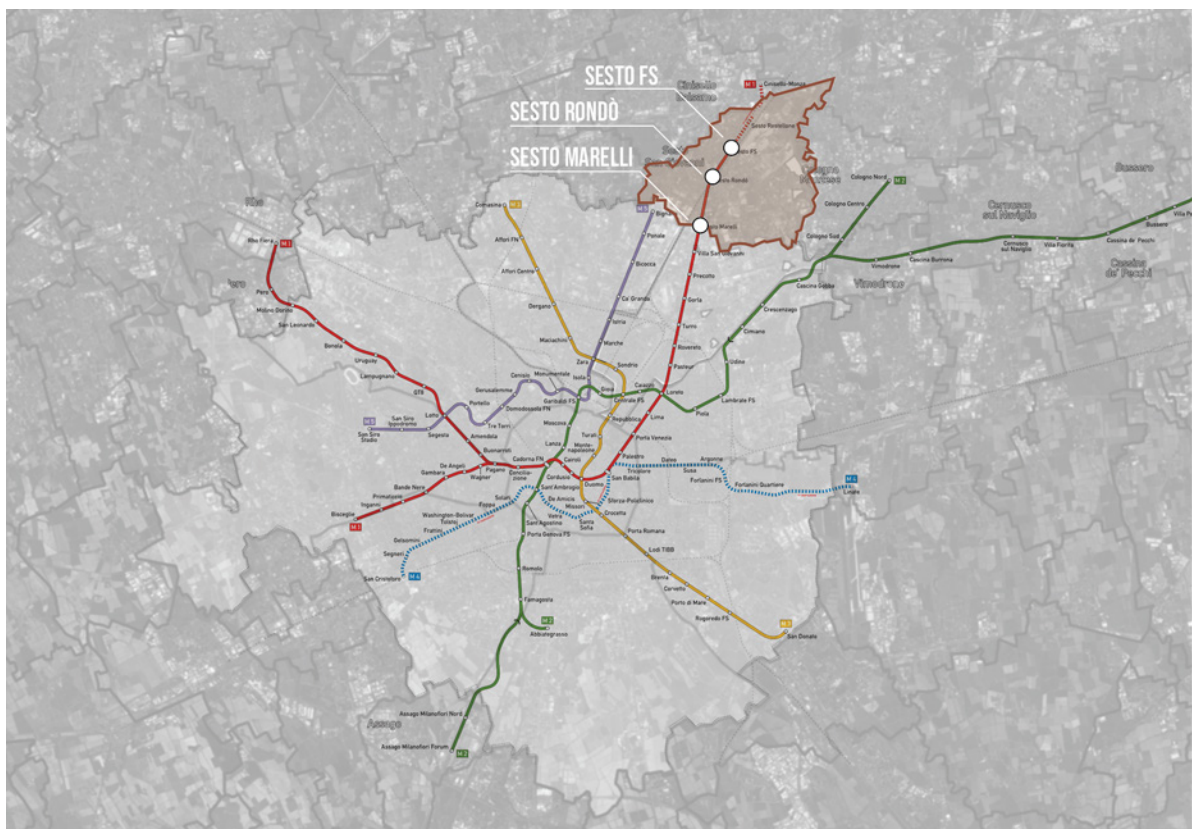
IMAGE_115_Road Layout In Sesto Connecting Industrial Areas

the direction of Viale Gramsci, and therefore it runs parallelly to the Milano - Monza railway, cutting through Zone #1 (Comune - Marelli) and Zone #3 (Pelucca - Cascina Gatti|Parpaglionia). This main road appeared as well around the 1900's and was used to connect the central area of Sesto in Viale Monza towards the former industrial establishments of Marelli (Ercole and Magneti) and towards the northern Falck area, finishing in the A4 highway.

Viale Monza is perhaps one of the most oldest roads in Sesto, traced back to the 1800's when a connection was needed between Milan and Monza, its importance relies on the connection between these two cities. Viale Monza starts its course from Piazzale Loreto in Milan and travels north all the way to Sesto, arriving into Viale Italia and the former Marelli industrial complexes, from this point

onwards it changes its name to "Viale Ercole Marelli" and keeps going north until reaching the outskirts of Monza.

Railway services in Sesto are rather limited in comparison with its road system, Sesto's main station was opened since 1840 and its connected to the Milan - Chiasso railway. However attached to a main railway line, its train services are dependent of Milan train stations, suburban train services are common in Sesto, hosting the "Passante" lines S7 and S8 towards Lecco, S9 towards Saronno and S11 towards Chiasso. As a complement of these railway system, Sesto San Giovanni is part of the Metro System of Milan, hosting 3 stations (Sesto Marelli, Sesto Rondò and Sesto 1 Maggio) inside the Metro M1 Line. Currently there is an development for a 1,9 km line extension towards the city of Monza, completing a project waited for many years.














IMAGE_116_Milan Metro System

Several bus lines serve inside the urban area of Sesto, but there are several areas in which bus services are scarce. Former industrial areas like Falck are the ones that have limited bus connectivity, within our site area we have only 1 bus line available, the bus line 700 with services from Nagasaki Square - Piazza 1 Maggio can be found 300m from the quarry site area.

In the future development of Falck area shown in Figure 90, we can see that along the main axis boulevard, several mix-use urban blocks will be built and with it a certain connection towards Sesto's railway station. What is more, the new railway station will be transformed into a multi - nodal station connecting in one single place the services of rail, metro and buses, as well of connecting the neighborhoods of Rondinella with the new Falck area.

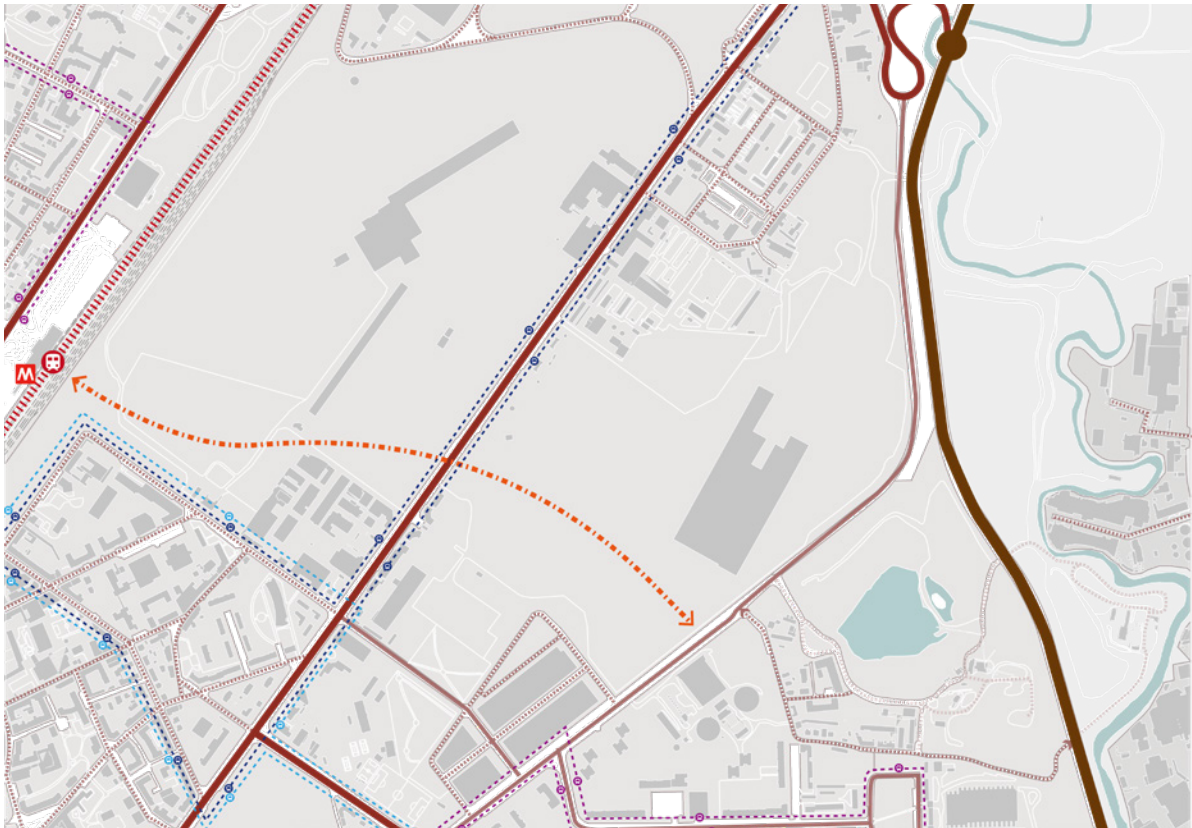
SESTO SAN GIOVANNI ANALYSIS AREA | TRANSPORT

-  Highway
-  Main Road
-  Secondary Road
-  Tertiary Road
-  Private Road
-  Planned Main Road
-  Bus Line 700
-  Bus Line 701
-  Bus Line 702
-  Passante S7 - S8- S9 - S11
-  Metro Station L1

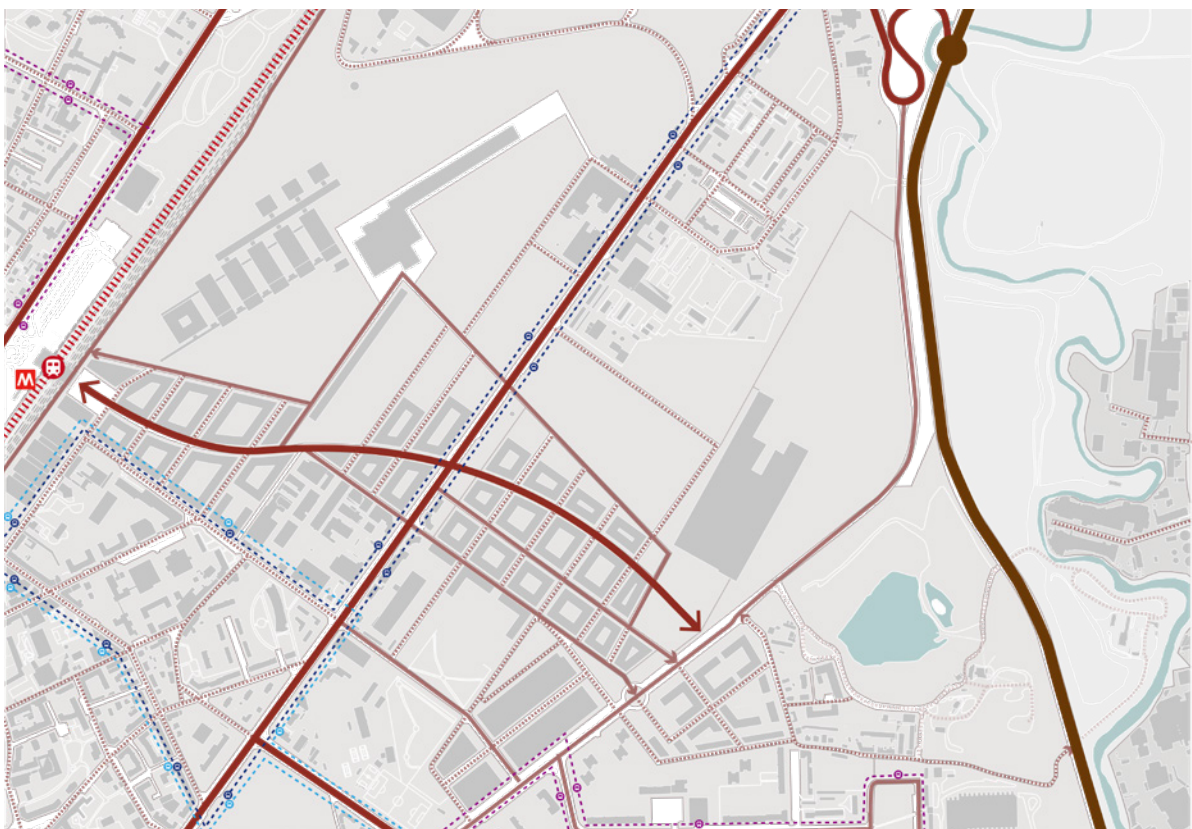
IMAGE_117_Transport Map Legend



IMAGE_118_Current View Of Viale Italia In Sesto San Giovanni



IMAGE_119_Transport Network In The Melzi Site Surroundings



IMAGE_120_Future Transport Network In The Melzi Site Surroundings

6.2

WALKABILITY AND PEDESTRIAN ROUTES

Slow mobility systems are an important asset to any area within cities, it gives the opportunity for inhabitants to move by their own means without using the public transport system network.

Sesto is not a city that is propense for walking, the amount of pedestrian only streets is limited to non - existent, some of Sesto's sidewalks are narrow and does not allow a proper space between pedestrian and vehicles. Cycle-paths as well are not found within the urban tissue, reducing the mobility options for its citizens.

Within the site area walkability is limited, only possible around the main street within its sidewalk, while on the sideways roads the lack of sideways makes pedestrian circulation more complicated. Residential areas on the southern side of the quarry are the most suitable areas for walking, providing much space for sidewalks

and pedestrian circulation around its built environment, public spaces as well gives some small traces of pedestrian routes to wander within its boundaries.

Around Melzi quarry the situation is quite different from the rest of the area, being an active extraction site, there are no current visible walking paths towards the site, in fact, being a private property the access is controlled by gates and there is no possibility of walking around its surroundings, which makes sense for security reasons that come with the activities being held inside the site.

Another important consideration, is not possible to walk from the site area towards the Lambro border since it is still considered a high risk extraction zone, the process of land reclamation to become a park is nowhere to be



IMAGE_121_Sidewalk On Viale Edison



IMAGE_122_Slow Mobility Infrastructure Near The Site



IMAGE_123 Current Situation With No Sidewalks On Via Parpagliona

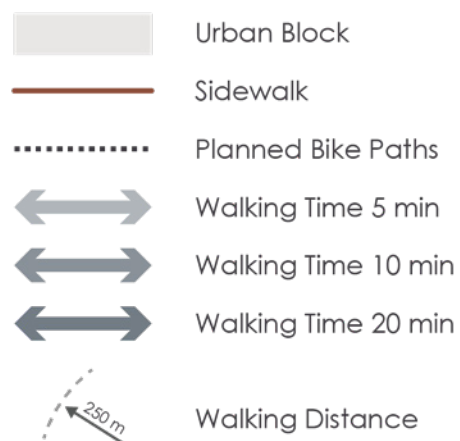
seen.

The particular location of the quarry area makes the slow mobility situation extremely important, because many important services, transport infrastructure are located far away from our the site. Tracing circular diagrams to calculate distances in a straight line projects that most services are located in a radius of 1 km or even more.

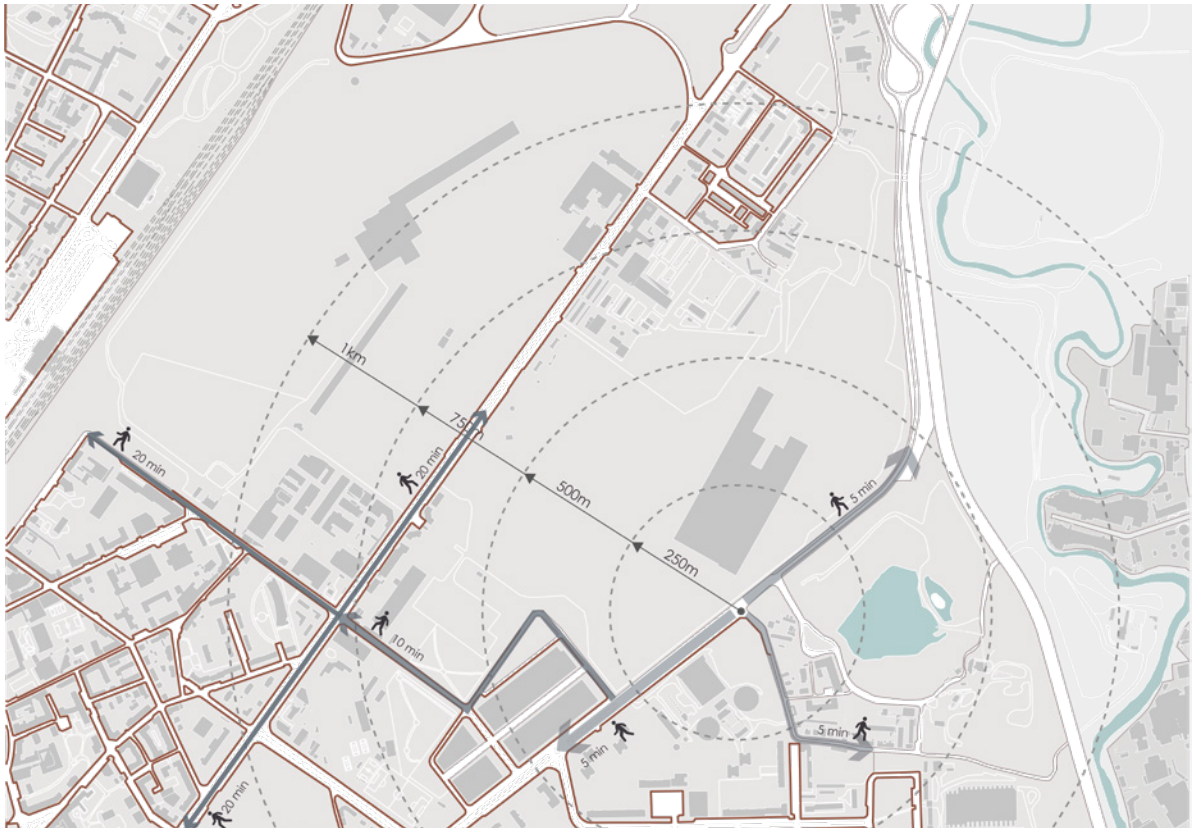
Walking distances can variate depending on the type of route pedestrians need to take. Within the current situation we can observe that pedestrian pathways towards the center of Sesto makes you go through former industrial areas, which become dangerous at nighttime, giving a bad sensation for the pedestrian.

With the development proposal of Falck area this might completely change. The creation of a big

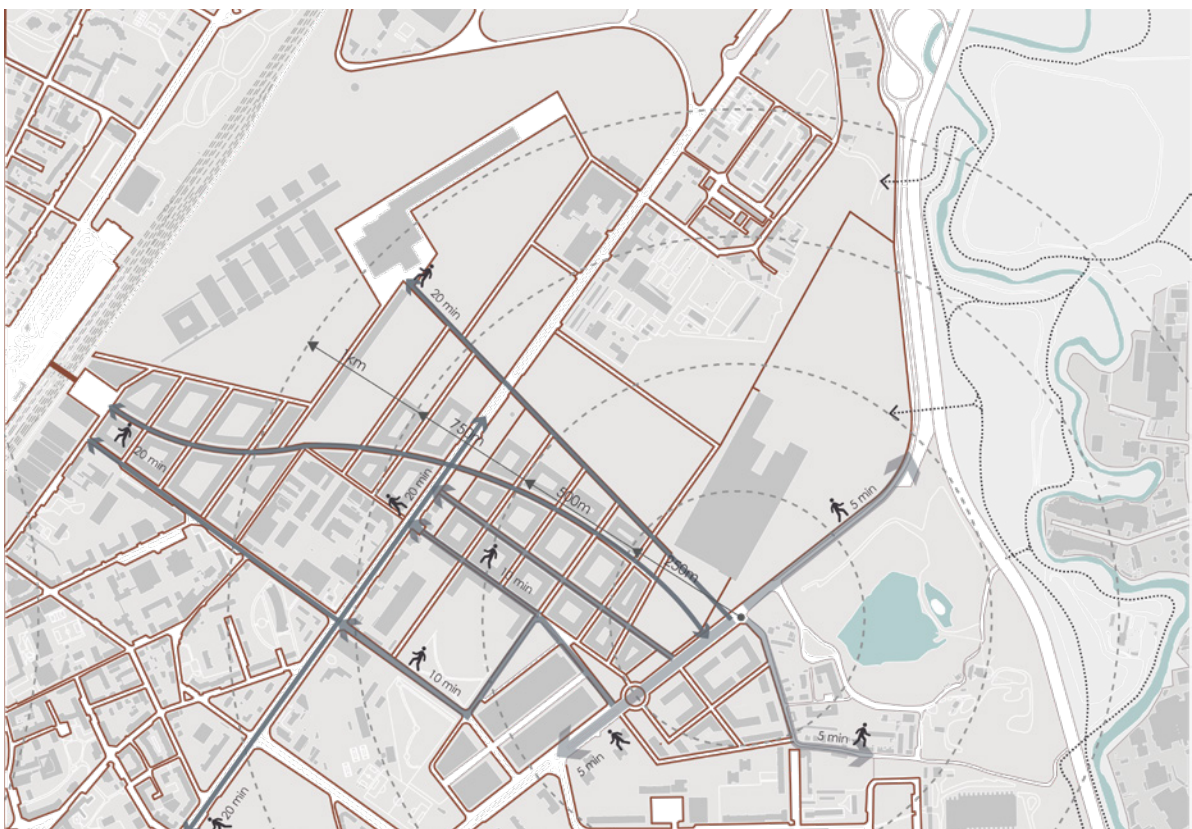
SESTO SAN GIOVANNI ANALYSIS AREA | BIKE PATHS & PEDESTRIAN INFRASTRUCTURE



IMAGE_124 Pedestrian System Legend



IMAGE_125_Situation Of Pedestrian Infrastructure Within The Site



IMAGE_126_Proposed Pedestrian Infrastructure For The Site



IMAGE_127_Current Situation Of Pedestrian Infrastructure Within The Site



IMAGE_128_Current Situation With No Sidewalks On Via Parpagliona

boulevard connecting Sesto' main station with our site will improve greatly the pedestrian quality of the area. Within this new created pedestrian corridor, the project proposes a series of internal pedestrian areas within residential areas that support the main circulation backbone of the project, this is finished with a big green park project surrounding the new Hospital and the former Falck T5 electric furnace, this will add many different pedestrian paths within green areas, supporting a newly created system of public spaces and pedestrian areas with cycle paths for the northern area of Sesto San Giovanni.

Milan through a great stretch of cycle - pedestrian mobility through natural spaces, using this big green area as a slow mobility infrastructure at a metropolitan scale.

Finally, the management of the Parco Media Valle del Lambro has compromised its decision of building a big cycle path along the park extension and the Lambro's shores, this will connect the city of Monza to



IMAGE_129_cycle areas in the northern part of sesto san giovanni

C

**ANALYSIS OF
THE MELZI
QUARRY SITE**

7

LECTURE OF THE MELZI QUARRY

After reviewing the historical past that led Sesto into an industrial city and grasping the complexity of territories of extractions, its time to focus on the development site, Melzi Quarry.

The Melzi Quarry is located in the north - east side of the Sesto San Giovanni area, in the inner political division denominated "Zone 3: Pelucca – Cascina Gatti | Parpagliona"; stretched between the brownfields of the Falck Area and the green belt of the Parco Media Valle del Lambro. It is vital to place and project the surrounding environment of the quarry in order to employ a correct intervention proposal.

Following this statement, Chapter B have been developed as the analytical part of this thesis project. Therefore, focusing the attention into the urban analysis of the Melzi Quarry and its surroundings, revealing its past, present and future situation.

First, contemplating at the area where the quarry is settled, discovering the urban surrounding of the area and its main available features. Then, jump into the spatial planning legislation of Italian cities, this shall help to understand the different levels of actions and public stakeholders that could be involved into a future re-qualification process of the area.

Finally, glaze into the future of the Melzi Quarry. Observing the urban planning documentation provided by the different city planning entities and discovering what have the city of Sesto San Giovanni has planned for the this area and its surroundings.

It is vital for the project to comprehend the current situation of the quarry, grasp the transformation opportunity through the plans for its future in order to execute correct urban planning policies and interventions for the area.



IMAGE_130 View Of Via Parpagliona Overlooking The Falck Area

7.1

GENERAL OVERVIEW OF THE MELZI QUARRY

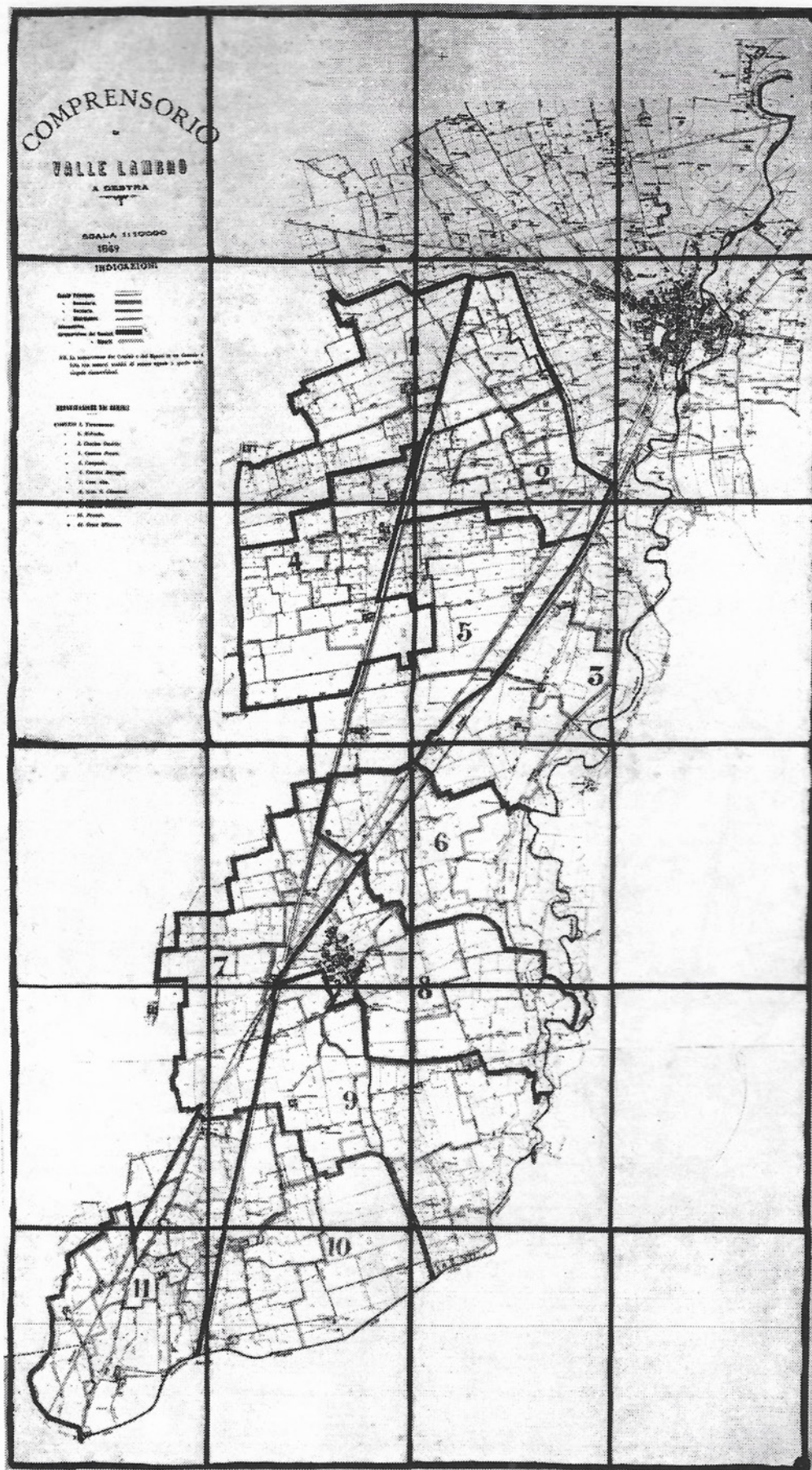
The history of the Melzi quarry began in May 1966 when Giuseppe Melzi took over the mining activity of Sesto San Giovanni. This quarry was already started by the Cabassi family, a well-known dynasty of Milan enriched thanks to the Ticino sand quarries. From managing the transport of the Sesto quarry, Giuseppe Melzi goes as far to acquire the property. Today the third generation of Melzi works in the family business and as such many family members have worked from the bottom to the way up (**Melzi e Figli**).

The Melzi quarry has been modified over the course of the years, bringing different layers through the years, concluding in the situation we find today. The quarry is spread over a total area of 160,000 m², although since the 1990s, following the expropriation of 40,000 m² for the construction of the North Milan bypass (Tangenziale

Nord), it has been divided into two parts, forcing a different management of logistics and the internal viability, subordinated to inevitable ramps and underpasses.

Adjacent to the former Falk area, today one of the future largest urban redevelopment of former industrial areas in Europe. Also, adjacent from densely inhabited residential areas, so close that numerous balconies overlook the quarry, this situation has prompted the management to adopt certain countermeasures, intended both as actions to cover borders with green hedges and plant vegetation barriers on its perimeter.

The Melzi quarry is therefore atypical from what can be a regular quarry site, not only for its location in the city but above all because the deposit has been exhausted for thirty-six years, since 1982. The operation authorization has ceased, as Giordano Melzi



IMAGE_131_District Of The Lambro Valley In 1869

explains: " our activity has focused on the production of quality aggregates for construction, deriving from the processing of natural mix, coming from carefully selected excavations. If until a few years ago we were directly involved in excavations, demolitions and reclamation, today we continue to do so but to a lesser extent, both to avoid competing with those who supply us with material, and because we wanted to focus more on the production of aggregates and on the service we can offer to our customers.

In the quarry site across the highway there is a production plant, where the natural mixture is processed, washed, screened and crushed, until aggregates of different sizes are obtained, suitable for use in different environments of construction, starting with the production of concrete, so much so that the quarry permanently supplies three concrete plants within

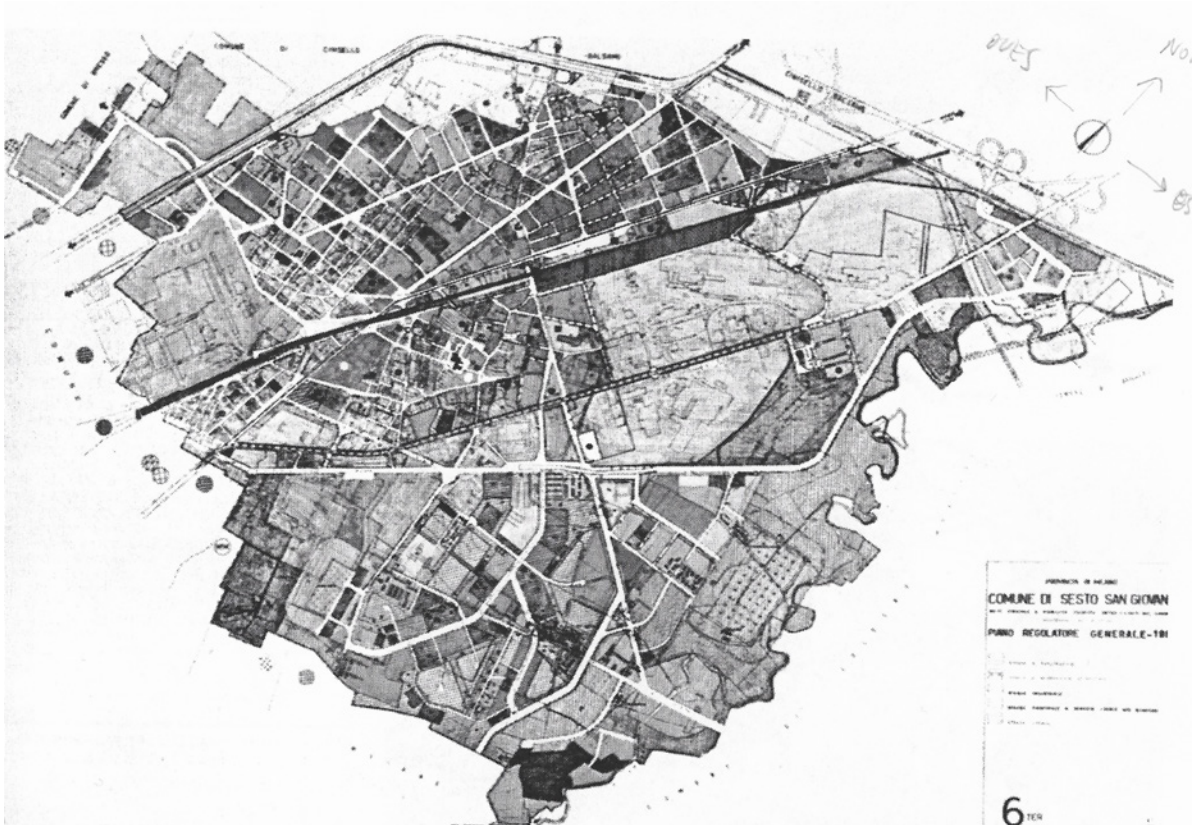
a few kilometers, and continues with the production of bituminous conglomerates, mortars, plasters, and road substrates.

Since 1998, the Melzi quarry have been authorized to recover secondary raw materials, in this case rubble and cement from demolitions, this activity has grown so much that the family have applied to obtain the change of authorization and thus go from simplified mix to ordinary rubble.

The family have also planned future expansions of the square and of the water recycling tanks, because they strongly believe that the recycling of rubble from C&D will be the driving sector of a future and which is far more sustainable, so the direction to take is certainly that of the recovery and reuse of waste, in perfect harmony with the European directives in terms of circular economy (**Melzi e Figli**).



IMAGE_132_Falck Quarry Used As A Swimming Lagoon In The 1950'S



IMAGE_133_Pietro Bottoni's 1963 PGT For Sesto San Giovanni



IMAGE_134_Aerial View Of The Melzi Quarry



IMAGE_135 Satellite Image Of The Melzi Quarry And Its Surroundings



7.2 PROCESSES INSIDE THE MELZI QUARRY

The Melzi Quarry is a particular example of a location for a territory of extraction, since its located within an urban area and adjacent to a former industrial complex. Most importantly, the presence of rural heritage found in the area, these traces are represented in a physical form by the Cascina Parpagliona and the Cascina Rubina. These settlements are reminiscent of the rural past of the area when it belonged to the rural parish of Cascina de Gatti.

The distribution within the quarry has changed in the course of its operational years, this phenomenon is natural within landscapes of extraction, where they shift their inner spaces to accommodate their extraction needs.

The entire surface of Melzi Quarry is divided in two separate areas, one to the west, bordering the historical Cascinas and the residential

developments, and one to the east, squeezed between the North Ring Highway (Tangenziale Nord) and the Lambro river.

The first one is occupied by the former quarry pits of the company "Melzi e Figli", the quarry area is no longer active but still characterized by the presence of large heaps of aggregates and a large water basin of the outcropping groundwater, nowadays with a very reduced surface compared to the periods of greater excavation when it reached the size of about 6 hectares.

The second area, is divided into two portions: the southern and the northern one. The southern area is composed by a concrete packing business and its partly occupied by three artificial hills of material aggregates needed for concrete production. This area overlooks the Lambro river, which separates the quarry from the limits of



IMAGE_136_Diagram Of The Inner Zones Within Melzi Quarry



IMAGE_137_Processes Diagram Of Activities Within Melzi Quarry

the Municipality of Cologno Monzese; The northern area, is separated from the southern area by the aggregate hill "B" and by the Lambro riverbed. This area it is also a ceased quarry area but, unlike the southern part, wasn't subject of waste accumulation. It has a considerable size (about 8 hectares of which 6 where the former quarried area), is equipped with a discreet arboreal-shrubby equipment especially on the banks of the river and on the perimeter of the former quarry and is configured as a low ground area, with the river banks partially grassed, and an outcrop of water on the bottom close to the Peduncle escarpment and with the remaining areas of uncultivated grass, except for some small ones cultivated plots.

These areas (the ones to the east), together with those described in the previous paragraph, are without

doubt, among the areas of the park, that have suffered the most over the last decades, being affected the most by profound tampering; morphological and hydro-geological alterations which are derived from its former industrial and extractive past, currently a minimal area has been metabolized and they represent a big challenge (but also a resource) for the future restoration project (**Melzi e Figli**).

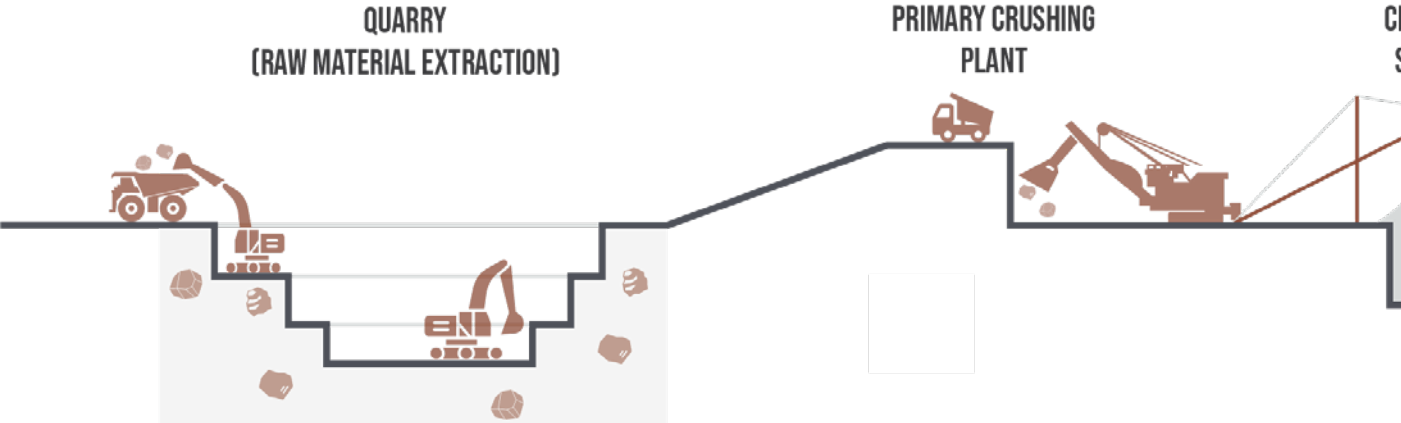
It is important that this territory should be included into the Parco Media Valle del Lambro, reconnecting the natural tissue of the Lambro shores with its former natural environment. The restoration process for this area should be bold and decisive, since it has to consider subjects relating to flooding and to land contamination. It is possible for this area to heal, but it can take time and a strong project of landscape recuperation.



IMAGE_138_View Of The Sand Embankment Area



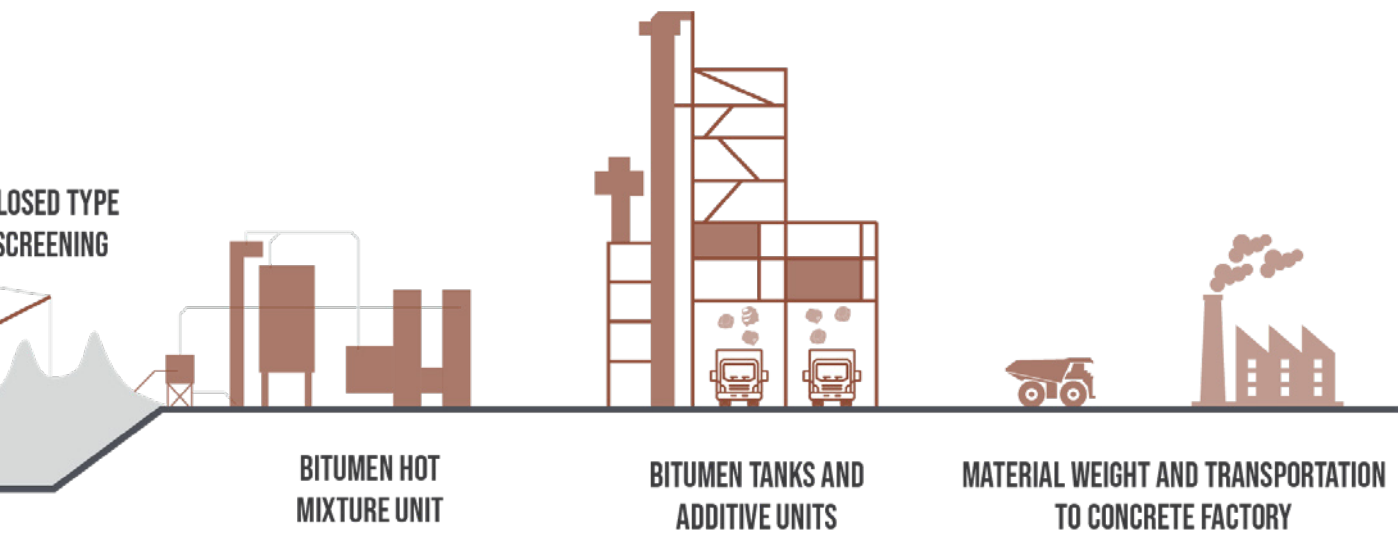
IMAGE_139_Aggregate Processing On The Melzi Quarry



IMAGE_140_General Process Of Activities Done Within Melzi Quarry



IMAGE_141_ View Of The Concrete Packaging Area



7.3

FUTURE PLANS FOR THE MELZI QUARRY SITE

Sesto San Giovanni have clear positions when it comes to the future development of its former industrial sites, however for the particular case of the Melzi Quarry the framework for its future development is still unclear.

However, from the 2009 PGT, Sesto San Giovanni's municipality has decided in transforming its former industrial areas by assigning them a different competence levels (National, Regional and Municipal). The bigger industrial sites of Falck (Vittoria, Vulcano & Concordia), Marelli (Ercole) and Breda have fallen under the national competence; Falck (Southern tip of Concordia), Vetrobalsamo have been included under the regional competence; Melzi Quarry, Cascina de' Gatti, Campari and other small former industrial areas have fallen under the municipal competence. **(Comune di Sesto San Giovanni)**

Big former industrial sites such as Falck Area are currently in the process of being developed through the investment of private enterprises, following the accords between private real estate developers, the municipality of Sesto San Giovanni and the Lombardy Region, this accords have forced the municipal level of governance to re draft a modification of its planning tools (PGT) in order to accommodate the necessities for the big project to take in place. While the situation for the smaller Melzi Quarry area still complicated due to the overlapping views of this land development. **(Comune di Sesto San Giovanni)**

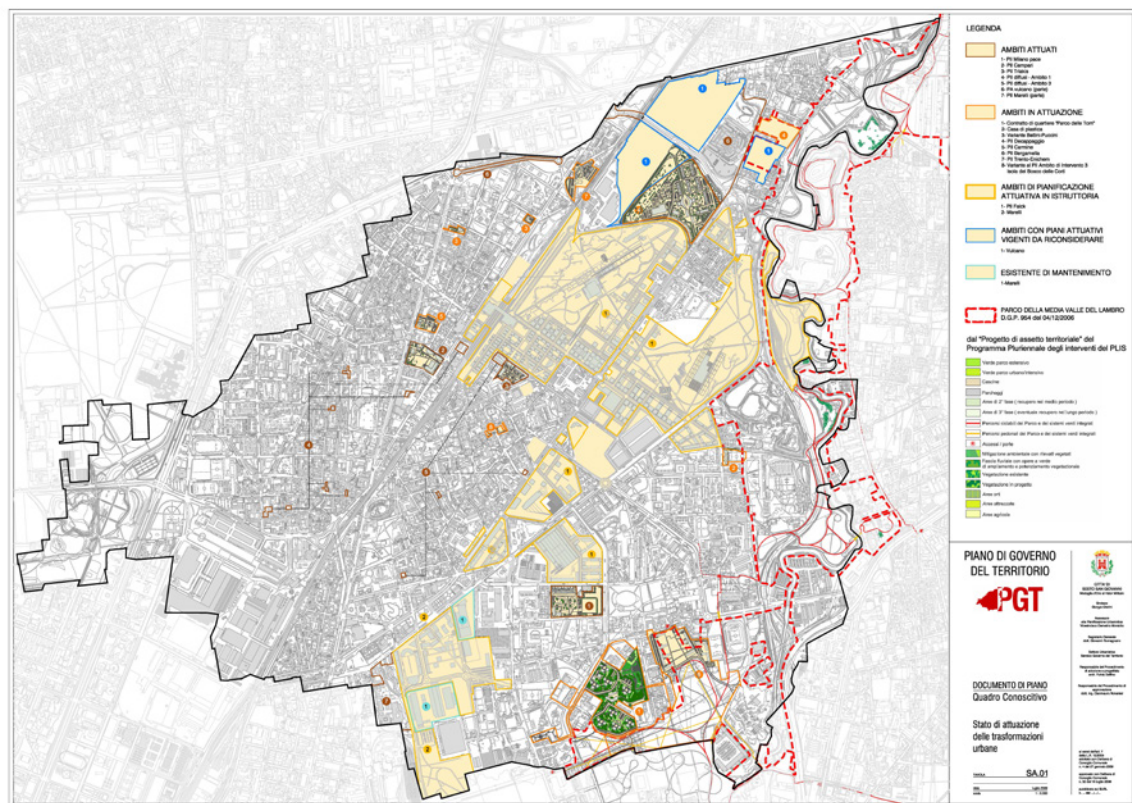
According to the current PGT Land Use (2009) the Melzi Quarry land use is divided in two classifications: "Uncultivated or Degraded Area", which comprises the north, west and eastern area (across the highway)

of the site, while the southern area is considered an “Outdoor Production Area” (**Image 142**). At the same time, the southern area of the site is considered an “Storage Area” by the PGT’s Productive Table (**Image 143**). Both considerations show that the site is currently Included between a duality of active production and dismissed or degraded area.

This particular situation of the Melzi Quarry have led different opinions with its development, according to the PGT’s Status of Urban Transformations document, the Melzi area is included within the boundaries of Sesto’s side of the PMVL (Parco della Media Valle del Lambro), while at the same time is considered in a “3rd Phase Eventual Re – Qualification on a Long Period”. (**Image 144**). This vague classification of time development and transformation of the area have led protest from citizens leaving next to

the areas, which they feel it has taken already 15 years for the Municipality to follow the plans of the PGT, even reaching an investigation by the prosecutor of Sesto San Giovanni on this matter (**Il Giorno, 2013**).

The Melzi site has been considered as a really important area for the extension of the PMVL into city of Sesto, pushing the Municipality to consider it “Supra – Municipal Interest Area” and being included in the PLIS (Local park of supra – municipal interest) by the Milan Province on 2006. This area is vital for the park since it represent a node for the connections of the areas located on the south of the park, (the area of Via Pisa and the future agricultural park of Cascina de’ Gatti), with the northern areas of the hills of Cologno Monzese and the west areas of the future urban park of the Falck development. The park administration foresees the acquisition of the land



IMAGE_142_Sesto’s PGT “Acting Plan”

with the modality of "Perequazione" to be negotiated with the actual land owners in a long – medium time range.

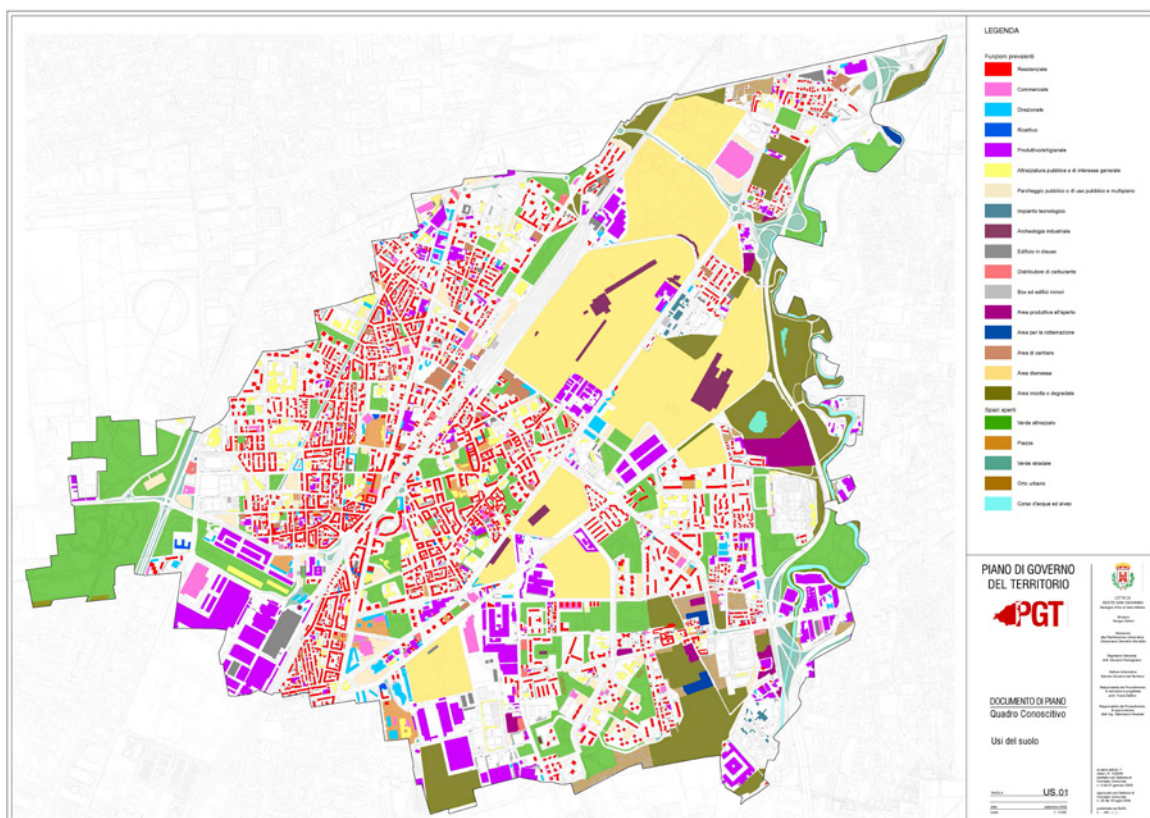
After the land acquisition, the park will have to follow the planning tools imposed by the Milano Province (now Metropolitan City of Milan) which comes in the legal form of the PPI (Pluriannual Program of Interventions) and with it following its strategic objectives:

- *Re – naturalization of the fluvial system*
- *Mitigation of future environmental impacts*
- *Recovering the ecological quality of the area*
- *Contentment of hydrological risks*

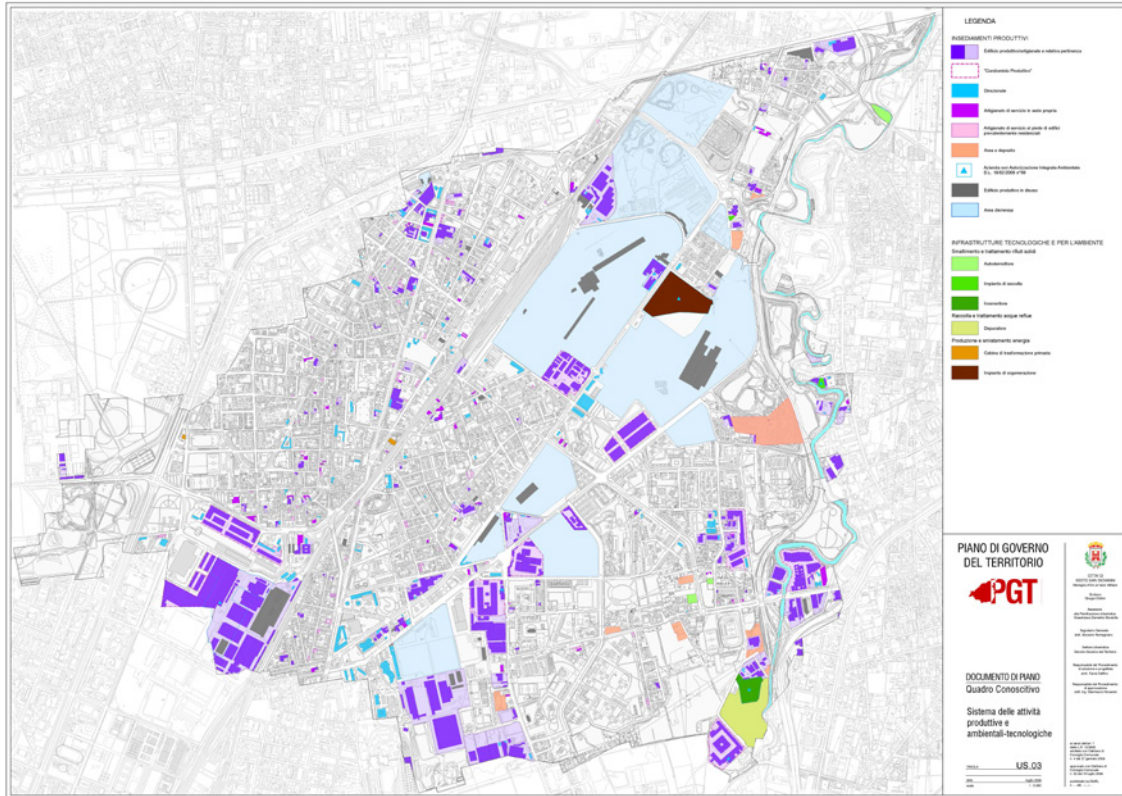
The PLIS of the PMVL is able to guarantee elements of intermunicipal

continuity between urban fabrics along the river Lambro, is able to extend the continuity of green infrastructures through the connection with large central urban parks of Sesto (Parco Cascina de' Gatti), Milan (Parco Nord Milano, through the recovery plan of the Falck Area and to the Parco Lambro), Cologno Monzese (Parco delle Cave) and joining a large system of cycle pedestrian networks that range from the southern edge of Milan all the way to Monza. **(PMVL)**

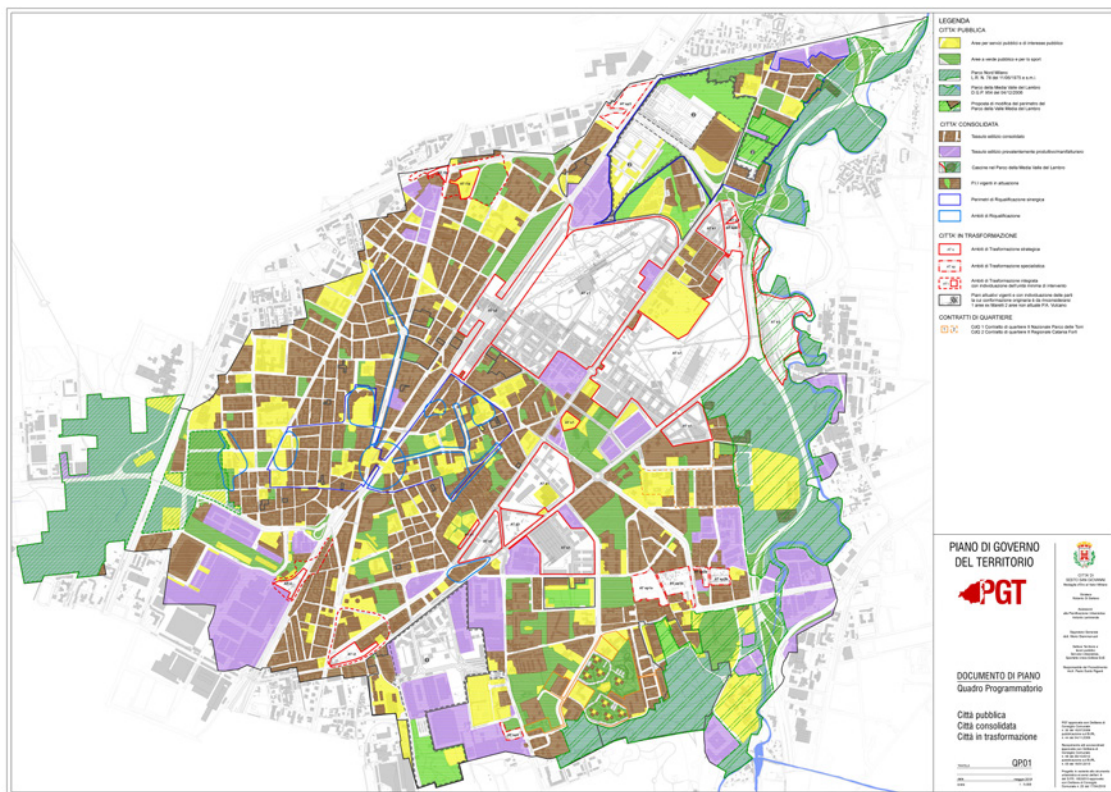
Understanding the current situation of the site is essential in order to establish a framework in order to push for the development of the site. Since the urban legislations confusing, it would be useful to know which is the plan has the hierarchy and what types of rules does the terrain have, with this is possible to identify the legislation and the procedures to follow in order to present any development.



IMAGE_143_Sesto's PGT "Land Use"



IMAGE_144_Sesto's PGT "Productive System"



IMAGE_145_Sesto's PGT "Public and Consolidated City"

PLANNING LEGISLATION FOR THE DEVELOPMENT OF THE MELZI QUARRY SITE

7.4

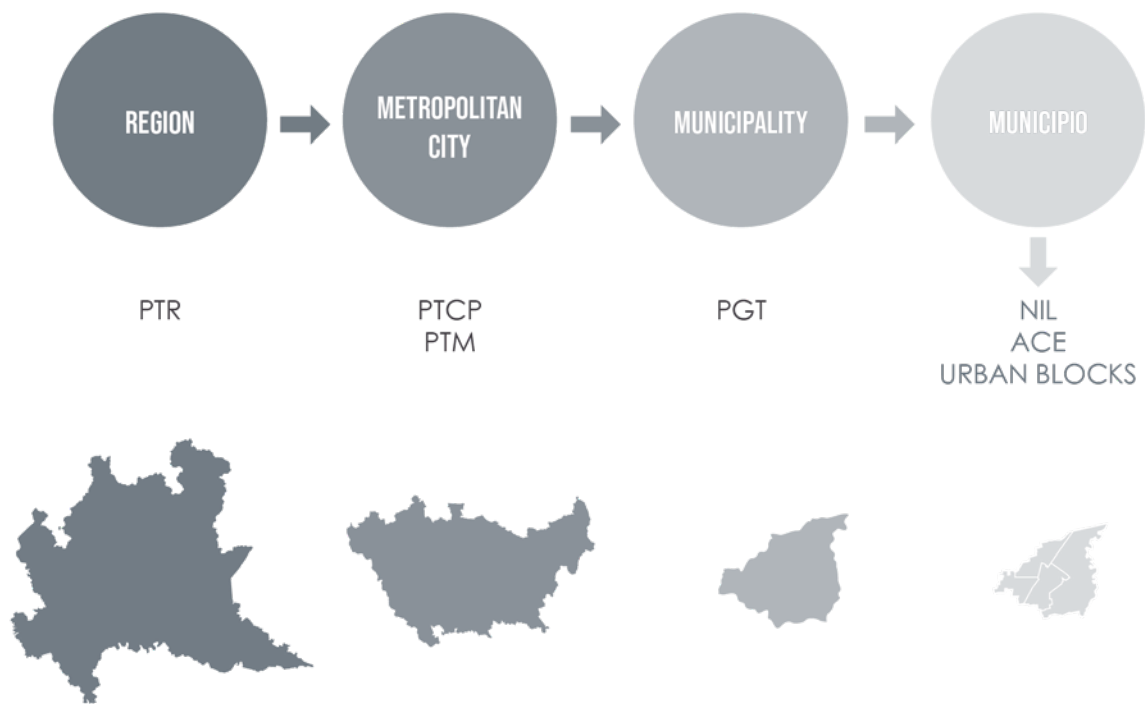
Spatial planning documentation includes different set of plans according to the hierarchy level. The highest level and the broadest one is the European legislation set by the European Commission, followed by the spatial plan of the individual member state, then passing to the regional level, PTR (in this case the region of Lombardy). In the smaller scale domain, each city and municipality have their own set of rules and regulations. As the scale changes, on the city level, town planning prevails in a form of a general urban plan, a zoning plan, a general regulation plan, and a detailed regulation plan. The regulation plan is followed by the urban project commission and technical requirements of a specific site or location.

Achieving the quantitative objective relating to “zero” land consumption by 2050 set by the European Commission,

the regional law 31/2014 identifies a strategy for the government of the Lombardy region consisting in reducing the use of free land stock, through the adaptation of existing urban planning, while activating the regeneration of the land currently occupied by buildings.

This regional law entrusts the Regional Territorial Plan (PTR) with the task of establishing the criteria for reducing consumption (identified as the main objective of the Plan) and providing provinces, Metropolitan City and the municipalities with the parameters, guidelines and technical guidelines to adapt planning when setting up the new PTCP / PTM / PGT (**Image 145**).

It is therefore a complex instrument that will guide the forthcoming policies for territorial governance. And following the guide of PTR, general objectives and strategies are developed and explored by the PTM of



IMAGE_146_Diagram Of Hierarchy Of Governance And Levels Of Planning

Milan(The metropolitan Plan).

After that, the Territorial Government Plan, P.G.T is an urban planning instrument currently in force, following the rules of PTM. The latest PGT of Sesto San Giovanni was approved in 2009, and since 2019, the government of Sesto San Giovanni has begun the procedure for drawing up the new Territory Governance Plan **(Image 145)**.

PGT is divided into three basic components: Plan document; Service Plan and the set Plan of the Rules. The Plan Document (DdP) is the tool that identifies the objectives and strategies needed for economic and social development, with a view of enhancing environmental, landscape and cultural resources. The Service Plan (PdS) is the tool to harmonize the settlements with the system of services, to ensure the livability and quality of the local community,

according to a design for the rationalization of services for quality, usability and accessibility. The Plan of the Rules (PdR) is the instrument of control of the urban and territorial quality that regulates the territorial area, to the exclusion of the areas of transformation a coherent design of the duration under the settlement, typological and morphological aspect as well as an improvement of the landscape quality whole.

The structure of PGT file can be divided into four phases. The first phase is orientation and formulation, next is elaboration and drafting, consultation, and adoption approval, the last one is implementation and management. Two process, planning process and evaluation process work together from the initial planning to the final corrective actions.

The Plan Document identifies the transformation areas - abandoned

or undergoing disposal areas to be redeveloped (such as railway stations, barracks) whose redesign is of interest for the entire territory of Milan. Through these transformation projects, a large number of brownfields will be re-used. The strengthening of greening, commercial and residential functions will make the city more closely connected.

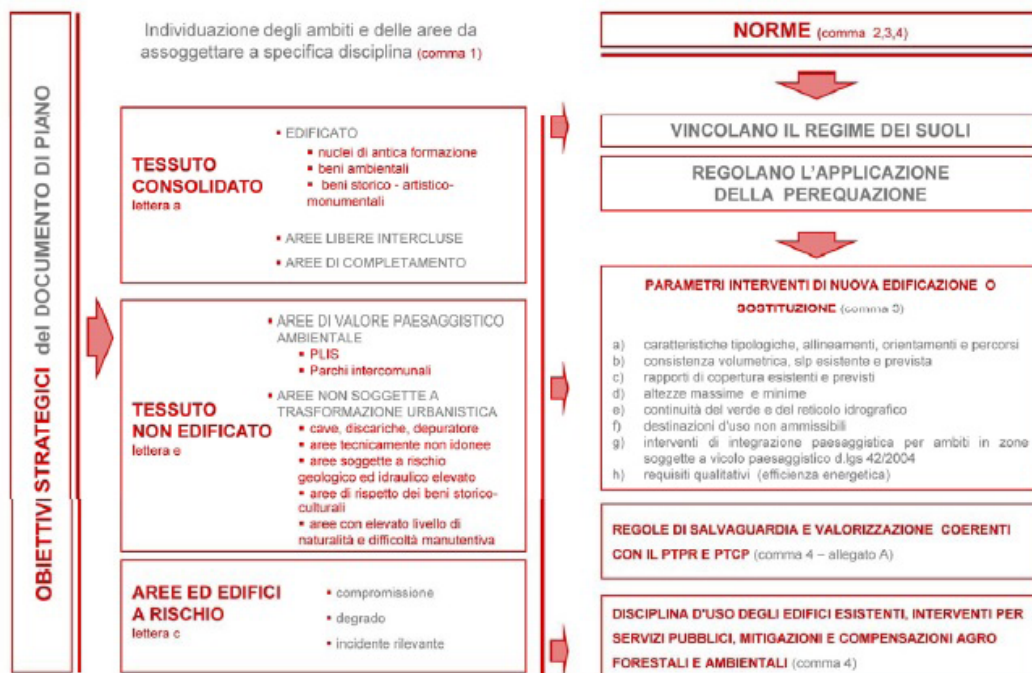
According to the 2019 PGT, Sesto will be accompanied and guided in a process of renewal and transformation of the existing and underutilized building heritage, supported by a flexible regulatory system capable of responding more effectively and efficiently to the changing and needs of the territory, allowing for more sustainable development, lower land consumption and greater urban attractiveness towards residents, employees, and economic activities

The PGT proposes several macro

targets:

- Simplify the rules governing the destinations of use, reducing the current ones to three categories: residence, economic activities, and services.
- Promote the development of mixed-use settlements through the identification of fabrics that propose a new concept of functional indifference, capable of ensuring vitality and coverage of neighborhoods throughout the day.
- Introduce an equalization index extended to the municipal area associated with an incentive mechanism for the volumetric transfer between the different areas of the territory, also in order to intervene on the design of the city, for example favoring the establishment of unitary fronts on the main urban axes, and reducing the volume to be created in

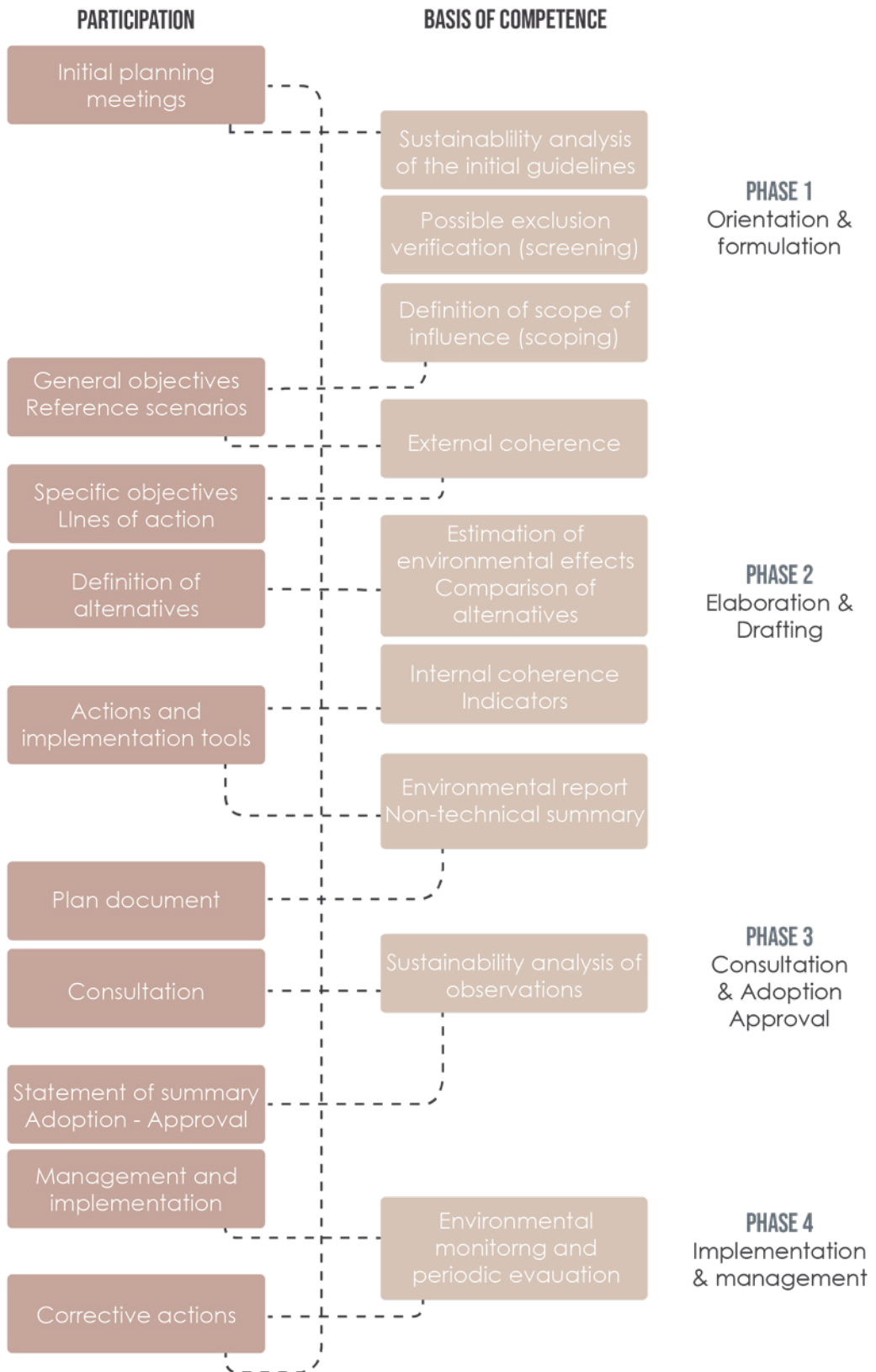
Il PIANO DELLE REGOLE è lo strumento di controllo della qualità urbana e territoriale (art. 9)



IMAGE_147_Diagram Of The Plan Rules In Sesto San Giovanni's PGT

PLANNING PROCESS

EVALUATION PROCESS



IMAGE_148_Planning And Evaluation Processes For Urban Developments In Italy

already dense areas.

- *Limit new land consumption in line with the provisions introduced by Regional Law no. 31/2014 and subsequent amendments.*
- *Encourage interventions for building replacement and for the recovery and refurbishment of disused properties.*
- *Redevelop, enhance and rationalize, including through the use of alienation, the properties owned by the Public Administration so as to allow them to be reintegrated and integrated into the economic and social process of the City.*
- *Encourage the energy re-qualification processes of buildings and sources of energy supply.*
-

As mentioned in the previous sub-chapter, the Melzi Quarry site falls under the Municipal Competence and being denominated an area of "Local Park of Supra – Municipal Interest" (PLIS).

Within the framework of the urban planning, the city administration can value the proposal of new norm modifications, demanding the rules strategy for new developments and the specific changes that would incur in the urban fabric and heritage objects. The implementation tools for planning and integrating proposals have been divided into sub – themes, in relation to the law of the areas in question. Inside this normative there is a norm that links towards the PGT of 2004 in which provides some clarification "The areas considered from industrial and artisan activities/backgrounds, can be intended for urban planning standards and services of public and private interest". Following this norm, it would be possible to modify the current urban normative for development on the current PGT in order to satisfy the demand of private developers that

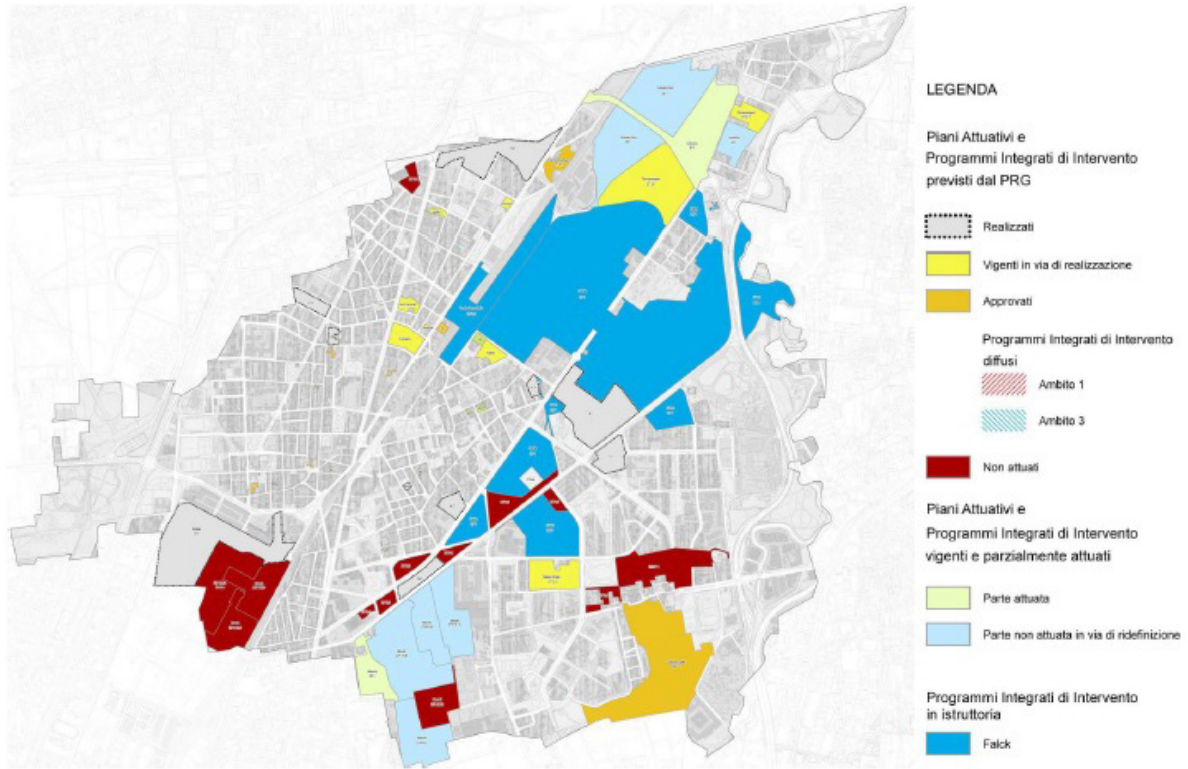
would be interested in participating into a public – private partnership for the development of the western side of the Melzi area.

Public administration has waited more than 15 years into the transformation of both areas, creating a big discontent among its citizens, one of the reasons for this delay is the big amount of monetary value to acquire the lands of Falck Area and Melzi Quarry in order to trespass it to the investors and the other one being the exploitation concession given to the Melzi Family that has to expire in order to cease its extraction activities.

Proposing a public - private partnership is a feasible way to develop both of these projects. Since the Melzi Quarry is a private property, it can be maintained as such, instead of selling the land, it can look for investors willing to take the chance to build and sell new building stock in the area, since the Falck Area redevelopment is creating huge speculation on the area, the demand for housing stock around the site will rise considerably, leading to a win situation to interventionists.

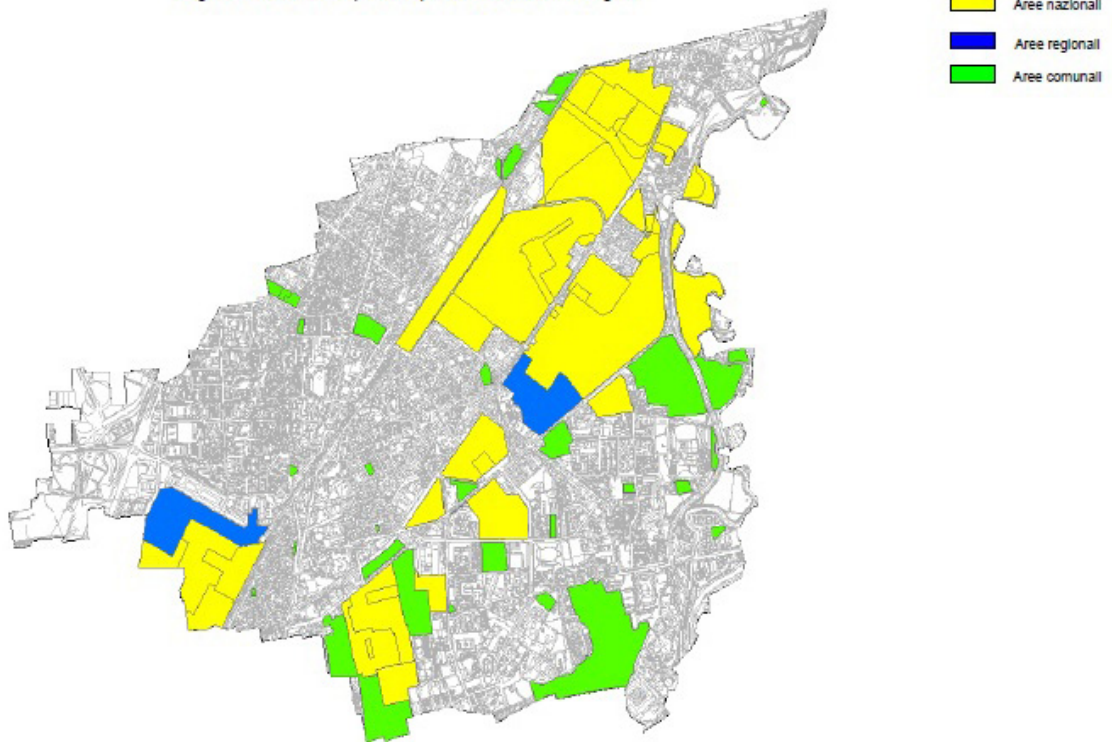
On the other hand, public administration wouldn't have to take monetary weight for the development of this area. By setting development rules for this area, they could make sure that developers follow the city's vision for this new area and speed up its development process, transforming it in a faster and more efficient way than by doing it only through public investment.

By proposing this framework, the quarry could become an important project on the use of former extraction sites within urban areas. Allowing private enterprises to sell building stock much needed by the city while incorporating a big green infrastructure that will connect the site into a metropolitan green system.



IMAGE_149_State Of Implementation Of The 2004 Pgt Projects

Figura 1: Suddivisione per Competenza delle Aree Indagate



IMAGE_150_Sesto's Transformation Areas By Competence

7.5

REFLECTIONS ON MELZI QUARRY

Melzi Quarry is a medium extraction area within Sesto San Giovanni's industrial area. Currently the area has transformed into brownfields and has a decomposed urban image. The proposal of re - development of the Falck Area will push a new wave of developments that will likely make the area be more and more relevant.

Without a doubt the site of the Melzi Quarry is a particular case study of a territory of extraction, since it is surrounded by peculiar urban traces that should oppose each other. This is the result of several morphological |economical| social changes through time. From historical agricultural buildings (Cascina Rubina and Parpagliona), abandoned brownfields (Falck area), natural park, (Parco Media Valle del Lambro), river areas (Lambro river) and residential areas (Quartiere Cascina de Gatti).

Melzi quarry can have an important development, one that considers the necessities of the city and its inhabitants, considering the importance of a project in different scales and most importantly, that carries on with the former heritage legacy.

The vision for the future of Melzi Quarry is one that reconnects with its former heritage, both industrial and rural. One that uses its territory as a patch to heal and repair the broken tissue of Sesto San Giovanni. One that could create a dialogue between the city with its past. One that can integrate the built up environment with the natural environment. One that could help with pollution and flooding issues. One that can be tough in different scales, from the Lambro River extension, to the Metropolitan City of Milan and to the local scale with Sesto San Giovanni's industrial brownfields.



IMAGE_151_Sesto's Industrial Skyline From The Pmvl



IMAGE_152_View Of The Melzi Quarry From The Pmvl

D

CASE
INSPIRATIONS
AND
SUGGESTIONS

8

LEARNING FROM THE PAST

For chapter D, it's decided to follow an study approach towards learning from past perspectives. These perspectives come from a long tradition in which Sesto found itself many years ago. These were the ones who forged Sesto's identity before becoming the Italian industrial powerhouse.

The past is a powerful tool to look towards inspiration, because it allows us to understand how people used to take advantage to a particular environment with so little but with such cleverness in mind.

For this sub - chapter the content focus is learning from the past, and trying to rescue the best ideas from it. First, by looking over the former rural past of Sesto San Giovanni and discovering how its inhabitants used the landscape we now know, even better than ourselves. Then, open a small context and ask the value and the meaning of the area of Melzi

Quarry for the city of Sesto.

The area analyzed is called "Cascina de Gatti" and once was an agricultural parish within the borders of Sesto. Discovering the characteristics of this former rural parish and of its territory , how has it evolved into our times.

Finally, researching into productive landscapes, and how rural landscapes can bring back a former rural memory within urban environments. This will lead a sustained appreciation of rural heritage for the project, letting the project gain a meaningful connection with a former past that is long forgotten.

By looking into the past and use part of the wisdom developed, can make sure that the present and the upcoming future stays bright and develops with a clear view of respect and understanding of the territory we inhabit.



QUARTIERE CASCINA DE' GATTI

Antico villaggio rurale

sec. XIII - XIV

8.1

MEMORY OF A RURAL PAST

Rural settlements represent an important example of Italian cultural heritage, they possess precious architectural, historical and environmental values that reflect unique local conditions. Rural landscape is strongly characterized by the presence of rural buildings, which, over the time, designed and influenced its conformation to create a typical “culture of paysage” (**Ottoni, Borghi, 2016**). Italian legislation recognizes the cultural value of these structures, however, most of them are in an abandonment and decay status. The rapid decay of rural heritage seems unavoidable because financial resources, which can prompt conservation and reconstruction, are currently lacking.

In order to understand the importance of rural heritage we must grasp its definition. “Rural Heritage” involves a deep interaction between social

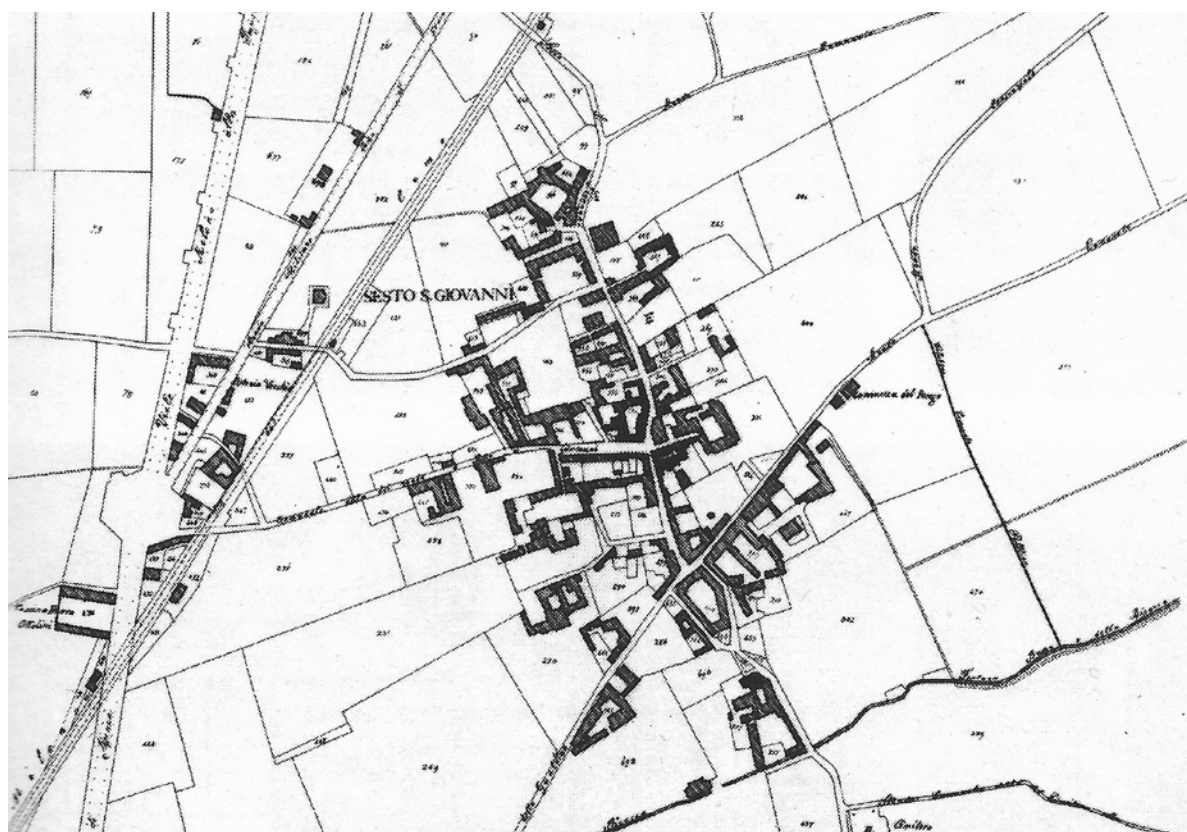
and formal aspects, these two determine the structural organization of the buildings, gathering local and vernacular characteristics that derive from functional and economic territory management (**Ottoni, Borghi, 2016**). Farm buildings contribute to define and enhance the rural landscape context, and therefore, the work of constructors is to combine agro production needs and functional requirements with various constraints on the basis of available knowledge, pursuing a fragile and dynamic trade – off balance. Farm buildings aesthetics represent a conscious interpretation of cultural landscape contexts, besides socioeconomic and technological issues.

Rural buildings have undergone deep changes with the transition of “classic” agriculture to an industrial society. This evolution answers to major changes in agriculture and in

rural landscapes. Before World War 2, landscapes have already undergone deep but gradual changes, but after the war, landscapes started experiencing the first signs of what we may define as a break, a discontinuous trend in agricultural techniques and management systems and more generally in landscape. Decline of traditional agriculture society and the growth of a new industrial society, paved the way for the evolution of the Italian agriculture and the changes into their current landscape mosaic.

Industrial configurations have been erasing the former layouts of the rural way of living, leaving our territories with a mosaic of abandoned tissues, similar to the one we now face with current industrial brownfields. Before industrialization, rural settlements were aimed at meeting dwelling needs of those families which worked the farm, as well functions related to

agricultural production, which were related. According to Torreggiani and Tassinari (**Torreggiani; Tassinari, 2011**) Italian rural settlements consisted in a whole built complex in which the farm was reflected and embodied. These settlements, assumed the form of small villages, cluster or farmhouses, isolated farmsteads or scattered houses. Each rural settlement, at least until the 20th century, had to fulfill autonomously all those functions which in industrialized countries and cities were articulated in separate units, even geographically distant. The size of the farm was strictly related to the number of members of the peasant family which cultivated the farm, and therefore, the configuration and size of the built system of the rural settlement. Rarely land was owned by peasant families, most widespread farm management forms were colony and sharecropping. In small, medium and large farms, rural settlements were the operations



IMAGE_154_Farming Parcels Around Sesto's Main Core In 1855



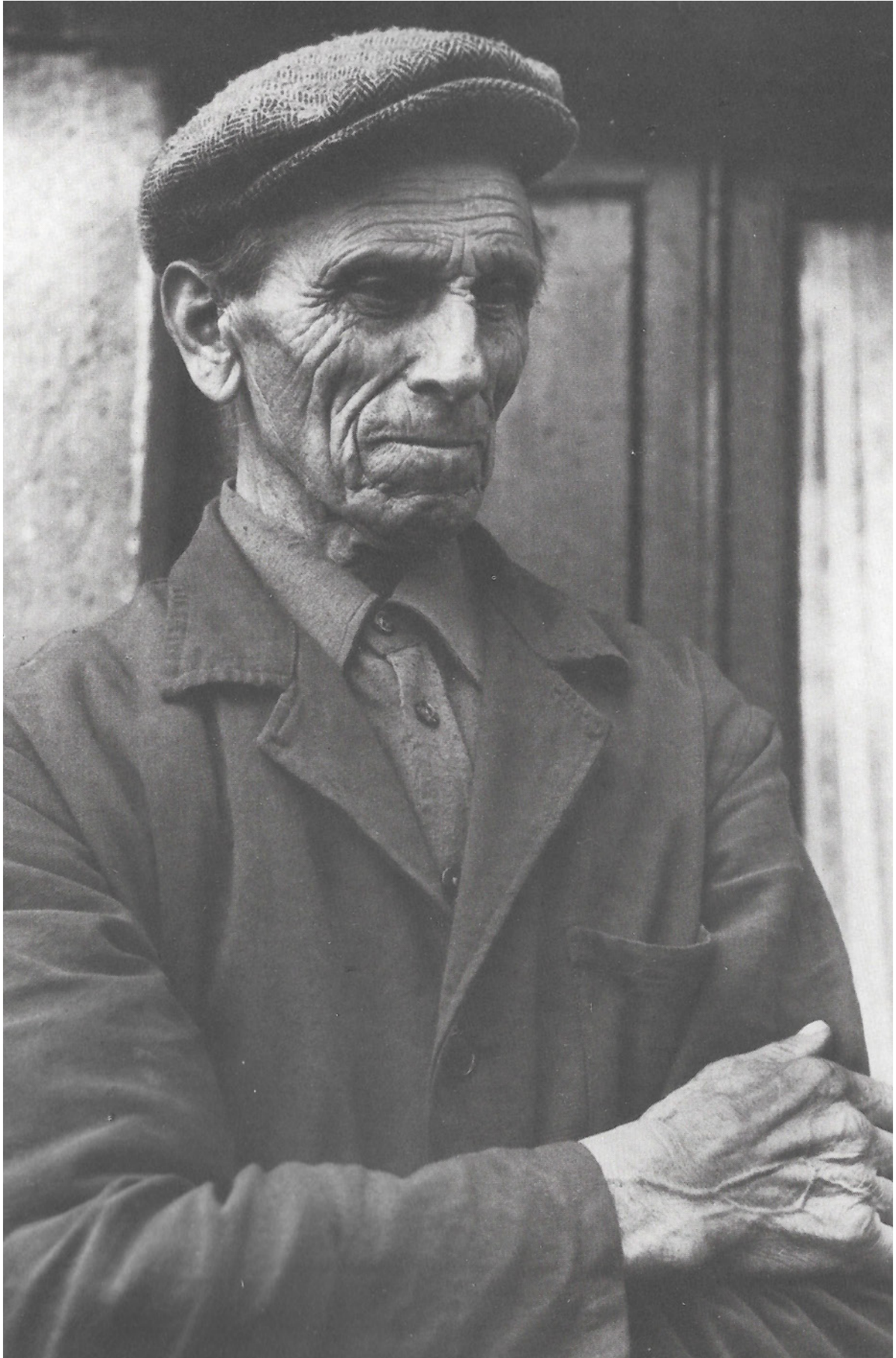
IMAGE_155_Farming In The Premises Of Casa Colonica De Ponti In Sesto

center of the farm. Its building or group of buildings were organized in various parts addressed to different functions: dwelling, breeding cattle, storing forage, bedding straw, crops and farm tools, raising animals and crops processing. With the following distribution it is clear to see that rural settlements where more than just a simple build up construction, they were a translation of production and economic organization in form of a settlement.

In the early 1950's, rural settlements located within urban areas started to experience a process of hybridization with urban identity **(Torreggiani; Tassinari, 2011)**. Driven by socioeconomic forces, abandoned farmsteads start to lose their rural identity in addition to their original functions, farm buildings where converted into residential and a combination of residence and non –

agricultural economic activity. Many farmhouses were modified from its original state, new building volumes have been constructed or added to the historical tissue, degrading the aesthetic and heritage value of the former building. The trend of agricultural heritage destruction have become a serious problem within Italy, changing many rural landmarks forever and even destroying it.

Recent trends in agricultural landscape and land – use policies have highlighted the importance of the historical rural settlement system and the importance of enhancing it. In the 1980's, Italy started a building rehabilitation process that was first applied to cities, and then was extended to the rural areas, with this, new specific regulations on reuse of historical rural buildings appeared, developing new policies to protect architectural heritage in towns, which



IMAGE_156_Faces Of A Former Rural Past Of Sesto San Giovanni



IMAGE_157_Villa Torretta As Sesto's Rural Heritage



IMAGE_158_Former Main Courtyard Of The Rural Sesto

have become a common practice in town planning schemes.

In the beginning of this rehabilitation process, rural buildings where new uses such as: offices, tourist or cultural centers, creating an attractive context for these new buildings based on evocative traditional images of the countryside. However, it is important to recall that the quality of the rural built environment and its impact on overall landscape do not depend only on the correct physical conservation and recovery of the historical heritage, but also on the suitable design of new surrounding buildings and maintaining social, economic and territorial links of the buildings, even if they are addressed to new uses.

Within Melzi Quarry, the situation mentioned its really important due to the presence of two historical rural landmarks (Cascina Rubina and Cascina Parpagliona). Today, these

two landmarks have been physically altered and given new uses, stripping their former rural identity and transforming them into something they are not. For any urban development, should always be mandatory to discover its heritage layers within the built up environment. By acting in that way would be possible to formulate new policies and strategies to protect this fragile buildings and most importantly, preserve them in the way the Italian Legislation expects.

It is vital for the future development of the Melzi Quarry project to understand the value of these former rural structures and recover them. The re-introduction of heritage value within any area becomes intermediately into an asset, one that can help inhabitants to grasp a small glimpse of the past and improve their will and commitment on maintaining and investing in former historical structures.



IMAGE_159_Italian Rural Landscapes

8.2

WHAT CASCINA DEI GATTI MEANS FOR SESTO SAN GIOVANNI

One of the oldest settlements inside Sesto San Giovanni is the area of Cascina de Gatti. Its historical core is located in the south – east of the municipal area, was once an isolated parish in the middle of the countryside. Today, it has transformed into a populous neighborhood practically attached to the town.

The origins of Cascina de Gatti go way back to the ancient Monastery of Santa Maria de Sundro, situated in an area denominated “Sundro” which comes from the Lombard denomination “Sundrium” meaning “Land worked by masters with the help of servants” (**Pasqualini, 1999**). A document found by writer Antonio Sartori presents a testimony from an 842 document making reference to the origins of Cascina dei Gatti, making reference to a Roman bridge that connected “Via Sundro” to the other side of the River Lambro,

explaining the main reasons for the settlement of the homonymous village in the area. The origin of this area was never set by a group of individuals who lived in the same place, but rather an aggregation of rural units separated from each other and dependent on the surrounding land.

The territorial administration of the area has been disputed many times, discussions whether if it should belong in an independent municipality or be included to the one of Sesto San Giovanni. On August 13 of 1720 the mayor of Sesto established officially the limits of the municipality, quoting “On Levante with the municipality of Cologno, at Midday with the municipality of Balsamo, at Ponente with the municipality of Torreta, and at Tramontana with the municipality of Precotto” deducing from that day forward the limits of Sesto San Giovanni, in which, by the description

mentioned above, Cascina dei Gatti was included (**Pasqualini, 1999**).

After this delimitation, the municipality of Sesto decided to introduce a land registry survey to measure the lands in its possession, resulting in an inventory of vast territories without any population. The introduction of the land registry produced an important change in the way of administrating the territory, the edict of June 10 of 1757 from Queen Maria Theresa of Austria (when Milan was part of the Austrian Empire), established that Cascina de Gatti and Pelucca must be stripped from Sesto San Giovanni and become an independent municipality, as a consequence the territory of Sesto was divided in four autonomous municipalities: Sesto, Torretta, Pelucca and Cascina de Gatti.

This independent division lasted until the Italian unification, in which the

autonomous municipality of Cascina de Gatti becomes suppressed with the Royal Decree of February 14th of 1869 and joined definitely Sesto San Giovanni, even in the moment of unification Cascina de Gatti was still a small rural municipality with its seat in "Cascina Rocchi" and a population of 554 inhabitants.

As expected from the agricultural past of the area, the land surrounding the area was a vast expanse of marshes that were reclaimed by the monks of Saint Nicolao monastery, this reclamation was possible with a technique consisting of "water meadows (Marcita)", used in the Lombard plains by Cistercian monks from Chiaravalle Abbey in the 12th century and widely diffused through the Po lands (**Pasqualini, 1999**). The peasants of the area exploited these lands and harvested wheat, maize, oat, rape, potatoes, etc. Meadows



IMAGE_160_Rural Parcels Surrounding Cascina De' Gatti In 1855



IMAGE_161_Current Overview Of Cascina De' Gatti



IMAGE_162_View Of Cascina De' Gatti Under The Snow In 1900'S

and fields were marked with their limits and adorned with rows of mulberry trees that were cultivated by the owners and farmers both for firewood and for the use of leaves, the only food for silkworms, producing a circular agricultural economy.

Until 1930's, all the territories of the village were rich in irrigation water, fed by three natural springs, located: the first one near Cascina Parpagliona, the second behind the sanctuary of the "Madonna del Bosco" and the third, the source Berra in the zone where today the incinerator is found. These springs, called "heads" gave birth to small lakes whose clear waters were also used for the breeding of trout. The richness of the soil in Cascina de Gatti allowed the development of agricultural activities and the formation of the first traces of industrial production.

At the end of the 19th century three furnaces for brick production were built, two of them named "Mariani" located in Viale Rimembranze are still visible today, the other one named "Donati" now demolished was at the end of Via Livorno. This brick producing industry was favored by the quality of the rich soil of the area, formed by a clay layer that constitutes the ideal raw material for brick construction. In more than half a century, all the land involved in the excavation works underwent a structural modification that did not always have a positive effects on the territory **(Pasqualini, 1999)**.

The territorial extension of Cascina de Gatti was very large and with numerous farmhouses built around the main agglomeration. Some of these "satellites" are still visible today, such as the Bergamina, Colombo and Parpagliona Cascinas. With these farmhouses and the Mulino del Tuono, Cascina de Gatti formed a single rural organism. Even though each farmhouse lived in its own individual reality,

the various farms were connected to each other for all agricultural activities. Following this rural tradition, the development of the village did not follow a predetermined plan: the nucleus gradually expanded on the basis of production needs. The plan of Borgo Cascina Gatti in fact shows a very complex nucleus, with numerous buildings of different types, and a succession of courtyards, different in size and shape, connected to each other by entrance halls and covered passages. Inside the farmhouse, each courtyards bore the name of the family tenant and was entrusted to a patron saint, who was painted on the walls of the court. **(Pasqualini, 1999)**.

Main construction elements included bricks, wood and stones, all raw materials came from the surrounding area. The entrance of the halls and part of the courtyards were built in cobblestone, the external stairs were built with stone and wooden parapets, as well as the galleries that run along the courtyards. The ceiling are in wood, others in roof tiles. Tall solid brick pillars support the roofs. **(Pasqualini, 1999)**.

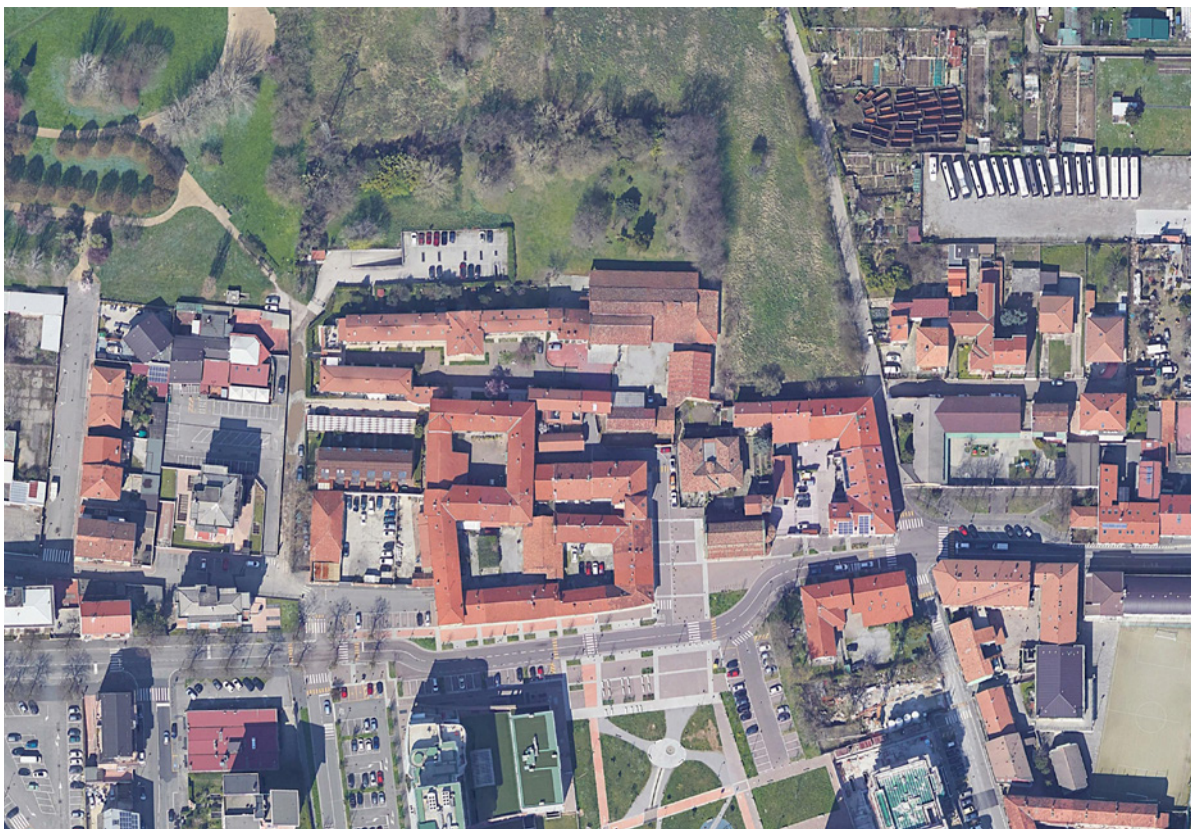
Today, the area has become a modern residential neighborhood, populated with working class individuals and widely extended, arriving to a population of almost 15,000 inhabitants. This was due to the cultural transformation that begun at the beginning of the 20th century, when the first industrial complexes halted the peasant civilization (way of living). Newer generations ditched the agricultural labor and chose to work in the massive factories, leaving the agro sector in abandonment.

This pursue of industrialization led a massive expansion in the 50s, when private and public building enterprises took the lands by storm and start competing in the construction of massive residential settlements: the first batch of houses built according

to a legislative provision, producing a housing “boom” in 1962.

Cascina de Gatti means the background origins for the area of Sesto San Giovanni, the past always forgotten. This rural past of Sesto shows us how inhabitants before the industrialization process adapted the landscape for their benefit without hindering it completely, the respect for the land they had and how to manipulate it resulted in a clear correlation in the architectural representation of their built environment, one that today is missing and even forgotten.

It vital for urban planners and designers to trace back the first elements of a particular area in order to propose a redevelopment of an area. Territories evolve, and with it its inhabitants, so it is essential to discover the layers of behind and grasp the importance of its connection with its territory.



IMAGE_163 Satellite Image Of Cascina De' Gatti



IMAGE_164_View Of Cascina De Gatti's Internal Courtyard

8.3

HERITAGE OF THE CASCINAS OF SESTO SAN GIOVANNI

Before the Italian industrialization process, Sesto San Giovanni had a long rural history. One of the examples inherited from this time are the famous “Cascinas” which are a type of agricultural settlement in northern Italy, consisting of buildings gathered around a large courtyard, including farmhouses, stables and milk processing rooms (**Geminiani, 1999**). This built up heritage is the only one available in the area linking to a former rural past and therefore its protection and inclusion to a future development is necessary.

Around the Melzi quarry area, there are two historical farmhouses, Cascina Parpagliona and Rubina. Today these structures have been stripped from their former agricultural use and changed into residential units, and with it transforming some of its physical features. It is necessary for us to know their former characteristics

CASCINA PARPAGLIONA

The chronicles of the late 16th century “li nobili della terra propria” speak of a certain “Dominicus Parpallionus”, cited for paying homage to the Cardinal Borromeo during a pastoral visit (**Geminiani, 1999**). The construction of the Parpagliona farmhouse is linked to this nobleman. But not much more information is known about this.

The Cascina complex consists of an organic compound of buildings, settled north - east side of Sesto near the Lambro river and far away from the urban cores of Sesto San Giovanni and Cascina de Gatti. The main core has remained practically unchanged in the Teresian cadastre papers it appeared a shape that corresponds to the current one.

Instead, the surrounding agricultural landscape is now unrecognizable: the area of the farmhouse is wedged into



IMAGE_165_Cascinas Location Within Sesto San Giovanni



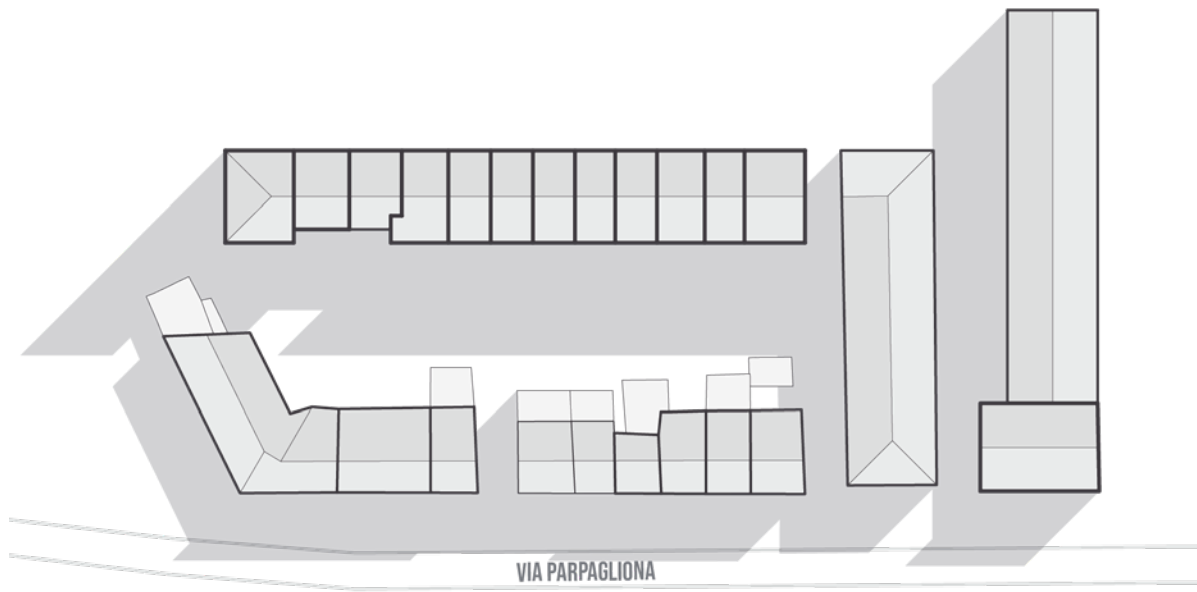
IMAGE_166_Cascina Parpagliona In 1930



IMAGE_167_ Cascina Parpagliona In 1970



IMAGE_168_Current Situation Of Cascina Parpagliona



IMAGE_169_General Plan Of Cascina Parpagliona



IMAGE_170_Main Facade Of Cascina Parpagliona

the urban fabric, between industrial brownfields, residential areas and the Melzi quarry. The cultivated land surrounding the property was upset by the progressive expansion of the extraction and industrial sites.

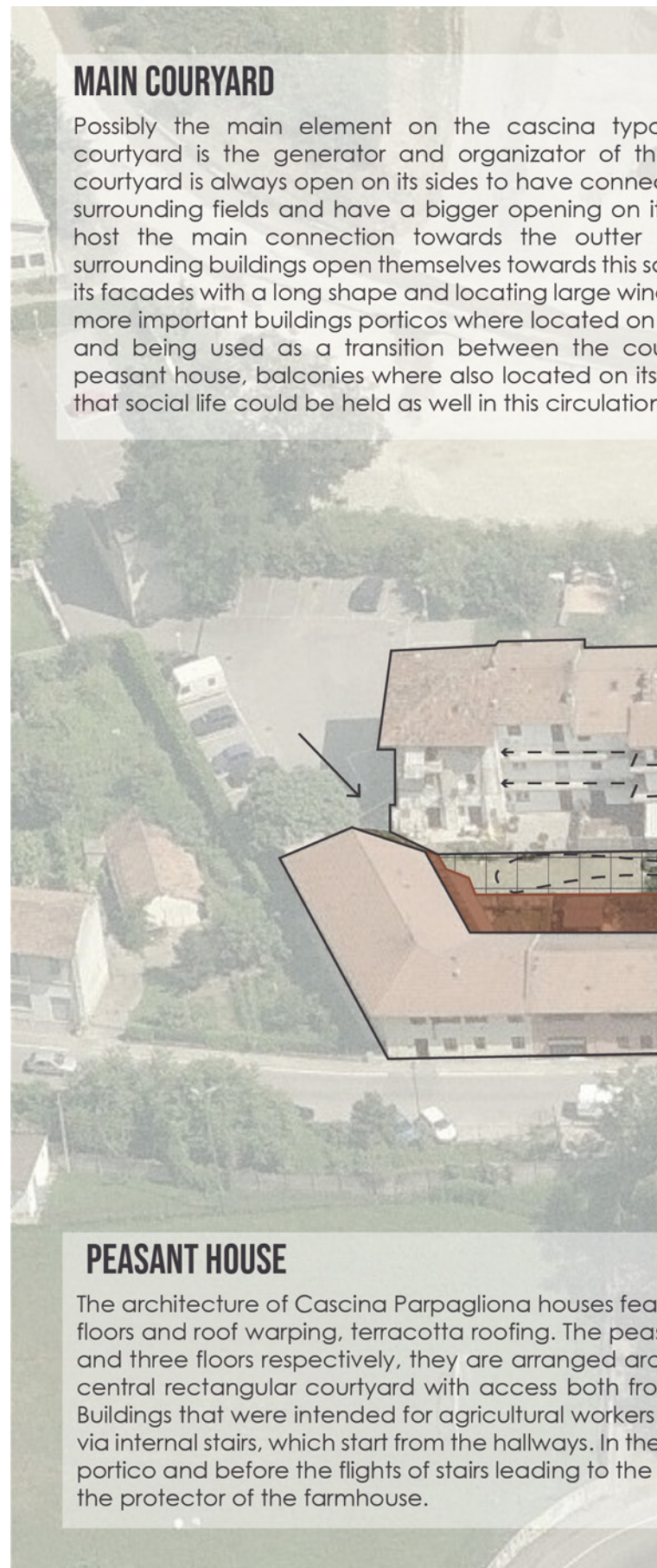
Originally the farmhouse was linked to agricultural production, now it is limited to the housing function only. The changes to the wall structures, made without an order to meet the needs of the owners to whom the farmhouse was sold in a fractional way, did not in fact alter the original layout.

The architectural features are typical of the farmhouses in this area: vertical masonry structures, wooden floors and roof warping, terracotta roofing. The buildings, with two and three floors, are arranged around an elongated closed courtyard: the central rectangular courtyard with access both from the street and directly from the fields. Buildings that were intended for agricultural workers have balconies. Access to the galleries is via internal stairs, which start from the hallways. In the central courtyard, at the entrance to the portico and before the flights of stairs leading to the two upper floors, there is a sacred image, the protector of the farmhouse **(Geminiani ,1999)**.

Together with the Rubina and Colombo farms, the Parpagliona farm was part of the agricultural complex linked to the village of Cascina Gatti, a reference point for the entire area.

MAIN COURTYARD

Possibly the main element on the cascina type courtyard is the generator and organizer of the courtyard is always open on its sides to have connection with surrounding fields and have a bigger opening on its long side to host the main connection towards the outer courtyard. The surrounding buildings open themselves towards this courtyard with their facades with a long shape and locating large windows and balconies. The more important buildings porticos where located on the long side and being used as a transition between the courtyard and the peasant house, balconies where also located on its long side that social life could be held as well in this circulation



PEASANT HOUSE

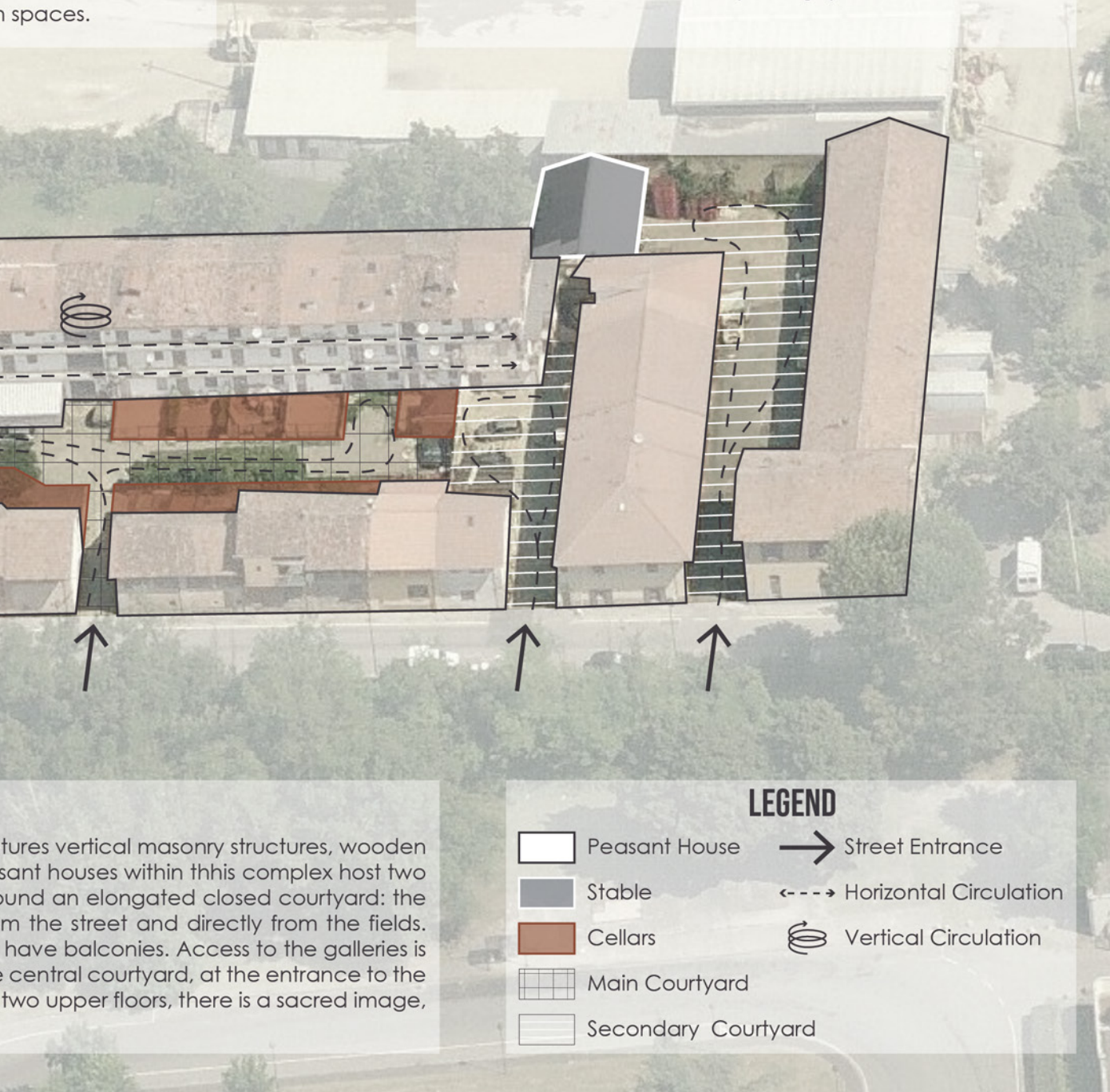
The architecture of Cascina Parpagliona houses features two floors and roof warping, terracotta roofing. The peasant houses, with two and three floors respectively, they are arranged around a central rectangular courtyard with access both from the street and directly from the fields. Buildings that were intended for agricultural workers have balconies. Access to the galleries is via internal stairs, which start from the hallways. In the central courtyard, at the entrance to the portico and before the flights of stairs leading to the two upper floors, there is a sacred image, the protector of the farmhouse.

ology, the inner
 e complex. The
 ction toward the
 ts central axis to
 city street. The
 ace by providing
 dows facing it, in
 the ground floor
 urtyard and the
 imediances so
 n spaces.

STABLES

Ligher structures build by masonry structures and terracotta roofings, smaller in height but longer in shape with respect of the housing areas. These buildings were formally used to keep the livestock, especially horses and cows are, while its interior is commonly divided into separate stalls for individual animals and livestock.

Today these stables are still used to host livestock as well as being the place to park tractors and other agro equipment, it has evolved into a covered parking spot.



ures vertical masonry structures, wooden
 sant houses within thhis complex host two
 ound an elongated closed courtyard: the
 m the street and directly from the fields.
 have balconies. Access to the galleries is
 e central courtyard, at the entrance to the
 two upper floors, there is a sacred image,

LEGEND

- Peasant House
- Stable
- Cellars
- Main Courtyard
- Secondary Courtyard
- Street Entrance
- Horizontal Circulation
- Vertical Circulation

IMAGE_171_Areas Of Cascina Parpagliona

LAND OWNER HOUSE

Constructed with the same materials as the peasant house, but hosting a double rectangular plan joined in the corner. Facing the inner courtyard, the home opens itself to the inner space through the use of exterior corridors and large windows, access to the superior floors is done through a set of stairs located at the end of the house facade.

This particular typology is hard to see, since land owners usually didn't leave in the same compound as the farmers. The importance of the house is remarked by the direct access towards the outer street and the sacred image of the farmhouse protector.

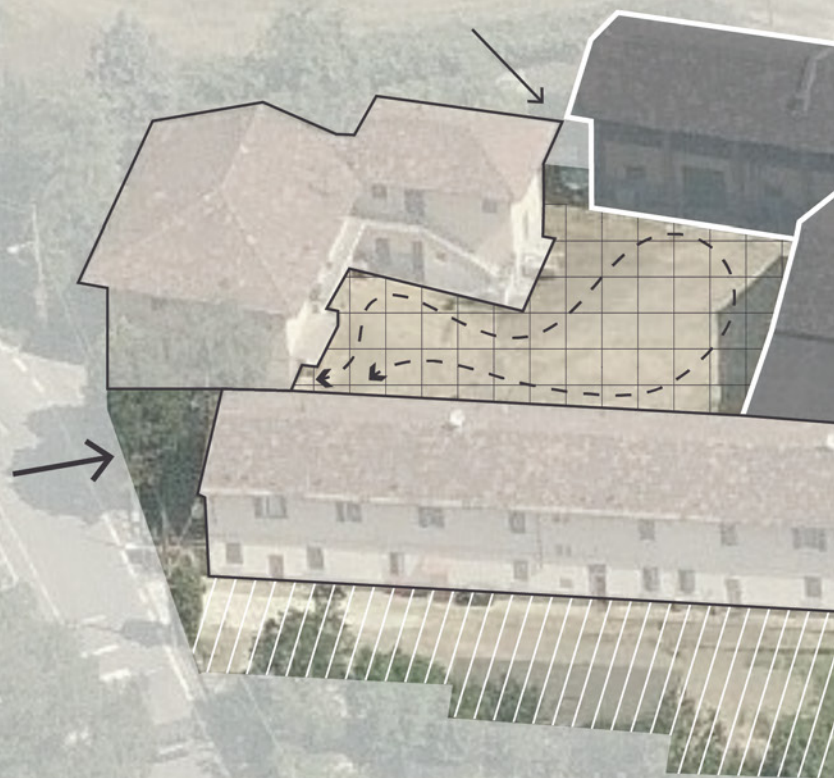
STABLES

Ligher structures build by masonry structures and terracotta roofings, smaller in height but longer in shape with respect of the housing areas. These buildings were formally used to keep the livestock, especially horses and cows are, while its interior is commonly divided into separate stalls for individual animals and livestock.

Today these stables are still used to host livestock as well as being the place to park tractors and other agro equipment, it has evolved into a covered parking spot.

PEASANT HOUSE

Constructed mainly by masonry structures, wooden floors and terracotta roofing tiles. The building has a long linear shape with a height of two floors, arranged facing the main courtyard. The principal access is located from within the main courtyard, leading to an internal set of stairs, joining the circulation system in a single core.



IMAGE_172_Areas Of Cascina Rubina









CASCINA RUBINA

The Cascina is settled a couple meters away from Cascina Parpagliona, on the north - east of Sesto's core and near the Lambro river.

Once this area was used intensively for cultivation uses, today the landscape is practically unrecognizable: the area of the farmhouse is imprisoned in the urban fabric, between the Falck brownfields, an abandoned treatment plant and the Melzi quarry.

Its original function, linked to agricultural production has been lost. The farmhouse has been transformed into a residential property. The Cascina's typology belongs to the L - shaped farmhouse with elongated buildings side by side, arranged so as to outline a square-shaped courtyard. The core has the typical architectural features of agricultural buildings in this area: vertical masonry structures, floors, wooden roofs and terracotta roofing. The buildings, of one and two floors, are organized around the central courtyard. They were intended for agricultural work, some used as a stable and barn. There are still the large arcades, supported by pillars, used for outdoor work (**Geminiani ,1999**).

LEGEND

	Peasant House		Street Entrance
	Stable		Horizontal Circulation
	Cellars		Vertical Circulation
	Main Courtyard		
	Secondary Courtyard		

MAIN COURTYARD

Possibly the main element on the cascina typology, the inner courtyard is the generator and organizer of the complex. The courtyard is always open on its sides to have connection toward the surrounding fields and have a bigger opening on its central axis to host the main connection towards the outer city street. The surrounding buildings open themselves towards this space by providing its facades with a long shape and locating large windows facing it, in more important buildings porticos where located on the ground floor and being used as a transition between the courtyard and the peasant house, balconies where also located on its immediacies so that social life could be held as well in this circulation spaces.



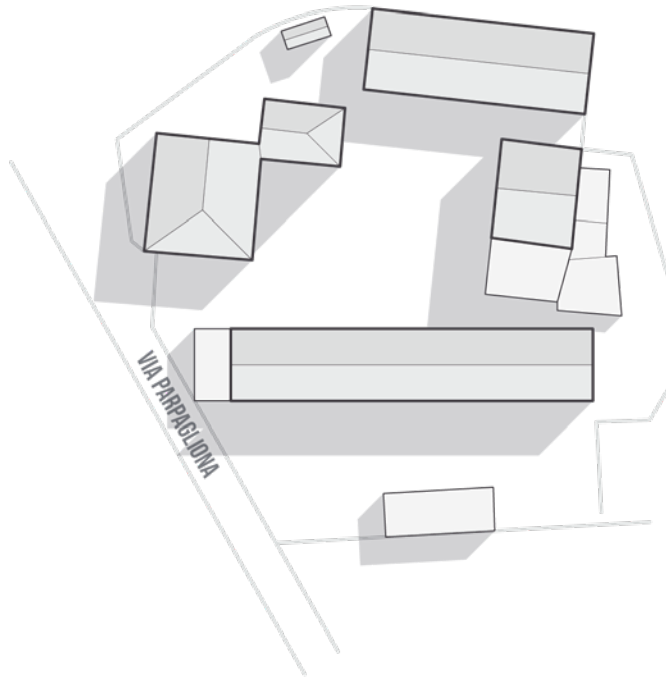
IMAGE_173_Cascina Rubina In 1950



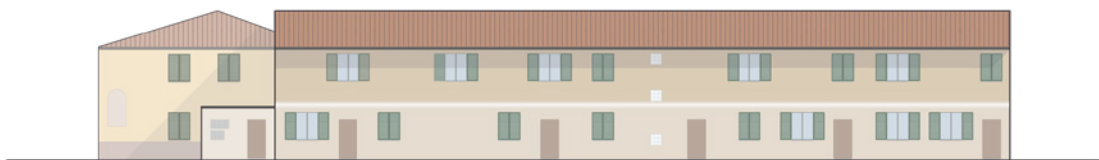
IMAGE_174_Main Facade Of Cascina Rubina In 1950



IMAGE_175_Current Situation Of Cascina Rubina



IMAGE_176_General Plan Of Cascina Rubina



IMAGE_177_Southern Facade Of Cascina Rubina



IMAGE_178 Tuscan Rural Landscapes Currently Protected By Rural Heritage Laws

8.4

BRINGING BACK RURAL MEMORY THROUGH LANDSCAPES

As understood in the previous chapters, rural landscapes have been an important feature of the area where Melzi Quarry stands today. These landscapes were the physical testimony of local knowledge on its surroundings and how to transform them into their own benefit. Nowadays the revival of these landscapes is seen as one of the most beneficial options for urban environments.

Today, cities are the single most important man made organism on the planet, their importance falls into the ability of taking importance decisions in behalf of other regions (**Sordi, 2017**). Metropolitan cities can decide the fate of productive regions regarding resource availability, exploitation and development, therefore, in order to shift into a green perspective, it is vital that cities start to take action first. "Green Economy" is a term that has been lingering for a

while in the past years, playing a key role in determining the quality of life in contemporary cities and the path towards a sustainable development.

In Europe, green economy is advancing in big steps with the clear view of improving European life standards in metropolitan areas, in order to do this, they have developed a concept called "green city" which is an integrated and multisectorial approach to urban development, based on key aspects of environmental quality, resource efficiency, mobility, mitigation and adaptation to climate change. Italian urban centers have great potential for transformation, but in general they lag behind and have a hard time positioning themselves next to the leading group composed by the most advanced European and world cities.

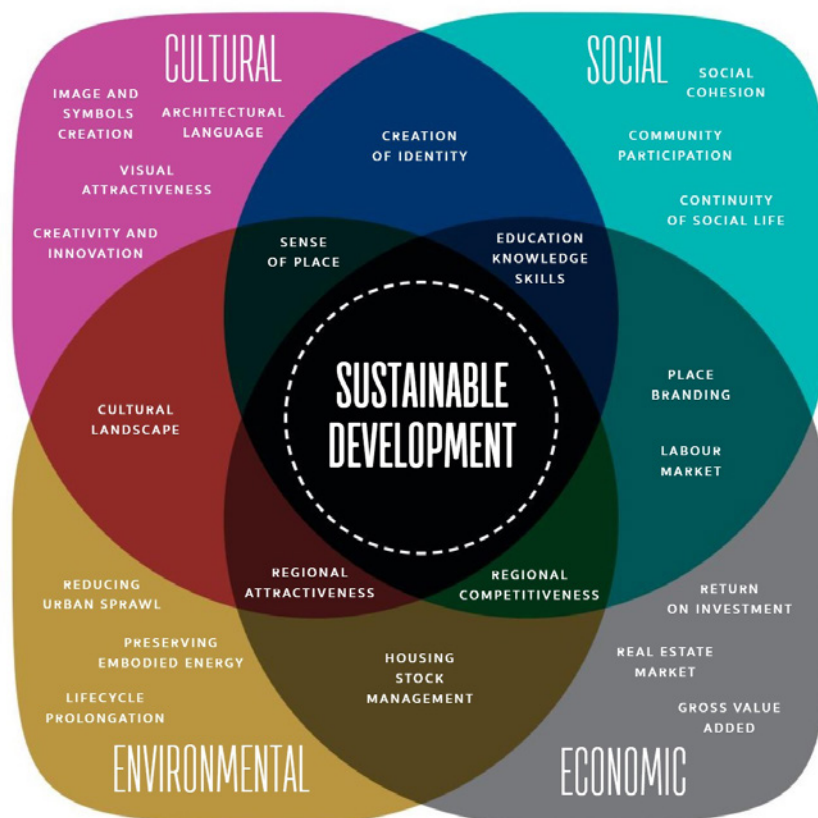
Cities in Italy have shown urban renewal processes following a

“green city” model, which aims at improving, recovering, and reusing the existing public and private patrimony, protecting land, improving resilience, adaptation and mitigation to climate effects, energy efficiency and bioclimatic systems and resource circularity to enhance the quality of the urban landscape. Cities urban renewal requires suitable attention towards the construction of public spaces, both equal in central areas and peripheral ones, as they represent the factors of the urban quality. Public squares, boulevards, streets, arcades, urban parks, gardens, lagoons, pedestrian areas, bike paths, agricultural fields and forestall areas influence greatly in the city’s environmental quality and how it is perceived by its citizens.

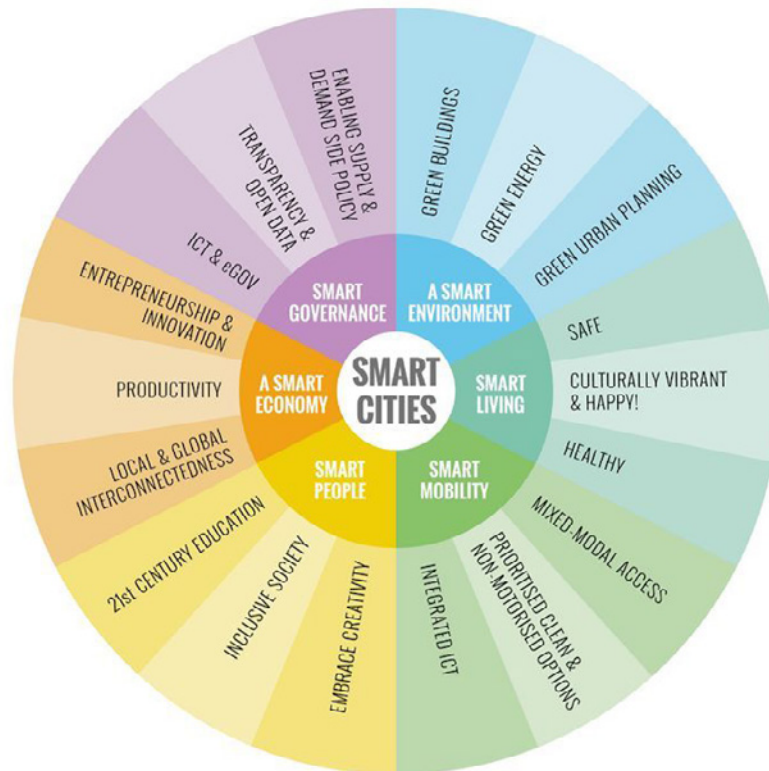
Public administration has to define annual programs through urban management experts and planning tools to increase the amount of

protected urban green, paying attention to its future potential in terms of urban and Peri – urban space renewal, always aiming at the creation of ecological corridors and green belts around cities. A green city project has to be supported by its citizens, and therefore, shared and known by them. Also, involving the private sector is quite useful, through public/private agreements aimed at promoting social responsibility and improvement of cities and territories, making the private sector a big contribution to make cities sustainable.

The European Union has become convinced that an approach that can more strenuously relaunch priorities of urban ecological quality, sustainability and resilience is necessary (**European Commission, 2016**) – given the most recent developments in the green economy, understood as sustainable development, and in the circular



IMAGE_179_Diagram Of Sustainable Development Components



IMAGE_180_Diagram Of What Makes A Smart City

economy as its fundamental basis – in the era of climate crisis (**Circle Economy, 2019**) While focusing on increasing the ecological quality of cities is a decisive factor if we want to ensure the well – being of its residents, interactions between the green economy and architecture, urban planning and technological design culture offer a major opportunity to fundamentally enrich our knowledge and improve our approach to renovation and urban development if we want to improve social inclusion and promote local development and new forms of employment. The “Green City Approach” as an integrated, multi sectorial approach to the planning and implementation of improvements that aim to increase levels of well – being, social inclusion and long – lasting development in cities, based on the now decisive aspects of the high environmental quality, efficiency and circularity of

resources and on climate change mitigation and adaptation.

Thanks to the positive perception of the “landscape and its interest” the concept of enhancement and protection no longer concerns only landscapes with particular beauty, protected by measures focused on laws belonging to the past, but to the whole landscape of everyday life (**Council of Europe, 2000**).

Basically, the protection regimes are calling into question the artificial separation which often divides them even into operational practices by referring to different subjects and practices but applied to the same territories. Basically, the protection and exploitation regimes are calling into question the artificial separation which very often divides them even into operational practices by referring to different subjects and practices but applied to the same territories. Defining



IMAGE_181_Rural Landscapes On The Lomellina Area

in an innovative way the landscape, in fact despite a strong change is taking place, a predominantly monumental conception that tends to extrapolate from the landscape context the cultural heritage to which public protection measures apply remains fixed in the collective imagination. In this sense, landscape can no longer be considered the result of the sum of the various cultural goods existing in the territory, but a cultural heritage, in the broad sense, that involves in a relational way the whole territory and that needs intervention strategies articulated and integrated, able to support and value the differences recognizable in the local contexts.

Landscape defined under this new light make up differences and reduces diversity, before that of unitary figures. Local landscapes, through the specificities of their relational patterns between culture and society, acquire character and quality of meaning that make them recognizable by difference with other landscapes, rural landscapes are perfectly suited, which is a complex system with production aspects being put in place, cultural and environmental issues and thus constitute the cornerstone between human activity and the environmental system.

Rural heritage is the ideal tool to be used inside projects with exploitation processes, whose main objective is to maintain the efficiency of ecosystems and the preservation of a representative image of the landscape. This representation is based on the correct return of historical values where possible, or on the sustainability of transformations, when necessary and finally on the creation of new landscapes, where the original values have been completely lost. Projects are required to maintain the characteristics of the constructive values, morphologies, architectural typologies and provide development lines that are

compatible with the different levels of values recognized as such and not to diminish the landscape of the territory, therefore with particular attention to the protection of agricultural areas.

One of the newest and most interest examples of inclusion of identity and memory within the urban areas are the "Eco museums". An Eco museum is a museum that is focused on the identity of a place, largely based on local participation and aiming to enhance the welfare and development of local communities and to offer a holistic interpretation of cultural heritage, in opposition to the focus on specific items and objects, performed by traditional museums.

Eco museums are defined by what they do, rather than by what they are, this is understandable since the characteristics of an Eco museum are diverse one from the other, there is not a single model but rather an entire philosophy that has been adapted and molded for use in a variety of situations. They are an important medium through which a community can take control of its heritage and enable new approaches to make meaning out of conserving its local distinctiveness (**Ecomusei**)

The first declaration of Eco museums was signed in 2004 in Trento, Italy, in which establishes general guidelines for its development. An Eco museum is presented as a dynamic way in which communities preserve, interpret, and manage their heritage for a sustainable development. An Eco museum should be based always on community agreement.

Dynamic aspects of this museum means to go beyond the formal aspect of an Eco museum, beyond a simple set course, designed on paper; it is about designing real actions, able to impact our society and improve our landscape. In an Eco museum community plays a fundamental role

with: general involvement; shared responsibilities; interchangeable roles from each member of the staff, in a way that volunteers and local actors are all playing a vital role in an Eco museum. The community involvement doesn't mean that local administrations are irrelevant. On the contrary, their role to be effective must include the community, going beyond the narrow circle of "authorized personnel". Preservation, interpretation and management means that reading and communicating heritage values, providing new interpretations of it and raising its profile, are part of the daily activity within the museum. Heritage is fundamental to the place as a notion of its characteristic, this includes history of inhabitants and things, what is visible and what it is not, tangible and intangibles, memories and future. Sustainability is a key issue for eco museums and it implies the increase of value of a place

instead of diminishing it. Evidence from best practices identifies in this process two key elements: place – based development, as previously described, and the improvement of local networks, where Eco museums have to play a key role as catalysts of social capital and development. **(Ecomusei)**

Inside the Metropolitan City of Milan, it is possible to find several Eco museums, however there is one that stands out for enhancing its landscape features and the history of its rural landscape. The "Ecomuseo del Paesaggio" located in the town of Parabiago at just 27kms from the Milan city center, recognized as a cultural institution by the Lombardy region on 2008 has the objective of showing the beauty of the landscape making it fully and clearly legible to its visitors, creating a dialogue between landscape and citizen in order to learn and understand



IMAGE_182_Lomellina Landscapes In Winter



IMAGE_183_Rural Heritage Within The Ecomuseo Del Paesaggio Lomellino

and improve them. The Eco museum of Parabiago, thanks to a path of permanent community participation, has become an essential part of the community who work together for the care of the territory. The museum has identified a common heritage of about 50 monuments, places of culture, sports, nature and intangible heritage such as traditions that are connected to each place (**Ecomuseo del Paesaggio**)

These types of interventions within the urban fabric can enhance greatly the value of the landscape in a way never seen before, incorporating the community through volunteering works and showing the importance of the preservation of the landscape and culture of every place and thus, showing the beauty of past history and its landscape.

9

LOOKING AT DIFFERENT CASE STUDIES

Learning from other previous examples is a good way to develop a new project. The thought put into new ideas for a project can start by looking for inspirations in cases that can be similar to our own.

This sub - chapter presents 3 study cases that work on re-qualification projects on dismissed quarries areas. Each case varies in scale and in the type of intervention.

The first, shows how a former quarry is transformed into a "Green Infrastructure" developing a resiliency park with water as the central element, hosting a water treatment lagoon. The second one, shows a former quarry being transformed into a big metropolitan park with different industrial scenarios, creating a big system of small thematic public spaces converging into a big unique environment. Finally, the third case study develops a new neighborhood

in the former area of a quarry site, constructing several residential solutions with different typologies and hierarchies overlooking a central lake where the scar of the former quarry used to be located.

After the analysis of these case studies, is important to develop questions. What can we apply from them into the Melzi Quarry re-qualification project? Here is when the designer personal criteria comes in handy, understanding the potential of some of the ideas previously seen and taking them into future consideration by overlapping them with the context we have of the study area.

At the end, a pretty interesting range of ideas that could be applied are collected. Its execution will depend on the employed characteristics of the project's objective and strategies. And most importantly, that respects the territory of Sesto San Giovanni.



IMAGE_184_Main Lake At Nanjing Gardens

9.1

LAGUNAGES DE HARNES

Harnes lagoon is a resilience park redeveloped from an abandoned coal mining site, born from the spontaneous and avant-garde action of the mayor of Harnes, Yvan Druon, and a landscape architect, François-Xavier Mousquet.

Located in the town of Harnes, in the region of Nord Pas-de-Calais, famous for being France's coal industrial and mining core. The site of the former mining site, Fosse 9 (**Image 187**) was converted into a 10-hectare "water garden". Half garden, half swamp, this wasteland was redeveloped in 2005. (**Recycled Landscapes**)

The project was conceived between 1999 and 2000 by Agence Paysages, as part of a redevelopment program for former abandoned industrial site, a natural wastewater purification plant was built at the lower end of a 25 square kilometer drainage area, into which they convey the sewage of an



IMAGE_185_Location Of The Case Study

area with about 80,000 inhabitants.

In a square pit at the foot of a slag heap, the project consisted of creating a system of several lagoons for purifying wastewater through phytol - remediation. The challenge was to respond to the technical requirement (to continue the purification of wastewater that was still impure after leaving the purification plant) while integrating the ecology at the bottom of the valley, the residents' use of the site, the visibility of the project, and the project's connection to other natural areas along the canal.

In order to understand the project, its recommended to follow the progress of wastewater from a kitchen sink, washing machine or toilet, heavy with organic pollution. In the purification plant, bacteria nourished by the organic matter in the active sludge reduce the water's mineral content. Leaving the plant, the water is still full of

minerals, the notorious nitrates which nobody needs but which are so good for vegetation. Willows perform the first treatment. Planted in a gravel bed with the mineral-rich water running through it, the roots of these most voracious plants absorb a maximum amount of fertilizer. This pool is called the short rotation thicket, because the willows grow very quickly and need to be "harvested" every three years. By now the water is considerably lighter but still carries some nitrates and phosphates.

Bulrushes await the water in the second pool, where it is treated by the roots of aquatic plants. These absorb the minerals that feed the plants, which are later harvested for composting. This lagoon has intensely active periods during the growth and flowering of *Typha angustifolia*, *Butomus umbellatus*, *Iris pseudacorus* and *Epilobium hirsutum*,



IMAGE_186_Satellite Image Of The Case Study

species with beautiful flowers and fruits, as attractive for ecology as for the landscape. In these pools, the water is sucked up by wind turbines. They pump and eject it two meters higher, thus oxygenating the water and making it run down large, slightly sloping, concrete steps in a very thin layer exposed to ultraviolet rays. This method has historically been used in Arab countries, where it is called “chador” or “veil” of water.

Two bunkers dating back to the First World War form as many islets, inaccessible to the public, which host colonies of bats inside and bird nests outside (**Image 189**).

Once back in another pool, the oxygenated and disinfected water continues its trip among the roots of aquatic plants. It moves very slowly, taking over two weeks to travel from the beginning to the end of the pools. Finally, the water crosses the former

wastewater ditch of the plant via a “bridge-canal” and slowly continues to its destination in the bathing pool.

The Harnes lagoon today reconciles technical efficiency with high-quality water ultimately for use in a bathing pool as well as landscape and ecological qualities (significant bird, bat, frog, toad and insect communities).

Besides, the area also can be used as a shortcut for kids who go to school and where they can play sports or leisure activities such as cycling or walking. The information panels draw the attention of visitors to the wastewater purification process and plant species.



IMAGE_187_Zones Of The Harnes Project



IMAGE_188_Former Mining Past Of Harnes



IMAGE_189_Aerial View Of The Purification Lake



IMAGE_190_Runners Around The Lakes Shores

9.2

THE NANNING QUARRY GARDENS

As a part of the international garden Expo, these seven quarries are expected to be transformed into distinctive gardens displaying in the event.

To cope with this complex project, UAV aerial scanning is adopted to acquire 3D terrain data of the site, also continually observation and record are executed for hydrological data of stone-pits' water variations. Distinguishing restoration methods and intervention approaches are adopted according to various scale, space structure, and characteristics of these quarries. The towering cliffs, fragmented rocks, bottomless pools, stacked soil, slag stones, and rusty quarrying machinery are all regarded as landscape resources to be integrated into the design, and on the basis of which, space shaping, vegetation restoration, paths and viewpoints position are conceived.



IMAGE_191_Location Of The Case Study



IMAGE_192 Satellite Image Of The Site Before The Project Intervention

Eventually, the quarry gardens not only preserve the site's unique history and characteristics, incorporate the theme of horticulture and landscape art, also create a rich sensory experience for visitors, showcase inspiring ways for revitalize a derelict mining site, as well as a forward-looking demonstration of urban ecological restoration and a reference for sustainability practices. **(ASLA)**

The site covers an area of about 33 hectares. Mining at some of the quarries onsite ceased, yet two of the quarries persisted mining activities until the city won the expo bid. These quarries suffered blasting during the mining that caused fragmented surfaces and rugged landforms at pit bottom. The site was strewn with dilapidated hills, towering cliffs, deserted land surfaces, bottomless ponds, piles of abandoned soil and

gravel, rusty quarrying equipment, etc. The project unique situation proposed several different challenges for urban designers, such as:

- *The quarries presented extremely complex landforms that imposed design challenges in accordance to current mapping images.*
- *Water levels in the quarries were unstable. In fact, two of the quarries that stopped mining later showed sustained rising water levels. Very limited valid hydrological data were available.*
- *The geological conditions of the quarries were complex and the cliffs were dilapidated.*

The possibility of collapse and rock fall present unpredictable safety risks. The quarries' ecological environment was severely damaged and the

restoration of vegetation was faced with great challenges.

Although similar in appearance, the quarries vary from each other greatly in terms of scale, space structure, and characteristics. Landscape architects adopted various methods of intervention and vegetation restoration that complement each quarry's distinctive qualities **(ASLA)**.

- **Quarry No. 1** is a quiet pond walled within a rough rock hedge, in which China's traditional landscape aesthetics is attempted to be embodied. A wooden and irregularly-shaped pavilion is nestled within a rock gap at the edge of a pond, whose structural form is inspired by the local vernacular architecture. It provides visitors with a panorama of green pond and encircling cliff, and babble waterfall on the diagonal opposite. To adapt to the unstable water levels, the pavilion floor is designed floated. A waterfront path links four platforms with varying elevations, offering people with all-round perspectives to enjoy the scenery.

- **Quarry No. 2** is surrounded by cliffs on all sides. The quarry bottom is relatively flat and accumulates water perennially. The quarry is designed as an aquatic garden. The zigzag steel grating walkway winds through the planting zone and connects to a platform that further extends to a path above the cliff, accessed by several flights of steps. The section with the highest elevation features a closed wooden box, which is also an aerial viewing platform where people can appreciate a captivating view of the cliff and the entire garden expanse.

- **Quarry No. 3** is bordered by the cliff on three sides and was designed as a delicate rock garden. The abandoned soil and gravel on site were utilized as the base of the garden's subtle landforms, with planting soil wrapping its surface. A moderately-sized terrace garden is designed near the main road, creating a unique desert plant landscape. The gentle-sloping section in the center consists of a dry garden, while the southern concave section showcases hygrophilous rock plants with water cascading into the lowest pond. Two platforms with different elevations are constructed at the edge of the concave area, where people can enjoy a charming view of the garden.

- **Quarry No. 4** is a large pond embraced by cliffs, with green and clear water. Viewing platforms sit on both northern and southern sides of the quarry. The northern platform is a Corten steel corridor located at the quarry's edge, unraveling a long strip window towards the quarry, where visitors can feast their eyes on the steep cliff towering over 40 meters above the water surface. At the southern end of the corridor, people can enjoy an overlooking view of the charming pond situated beneath and the waterfront platform on the opposite side, offering a thrilling and exciting experience. On the southern side of the quarry, a wedge-shaped platform stretches out from a gap among the rocks. It hangs above the waters and connects to the lower waterfront platform through a curved bridge. Through an earthing-up process, vegetation was restored around the quarry as well as the gentle slope inside, which revives the quarry garden meanwhile highlights the steepness of cliffs



IMAGE_193_Situation Of The Former Quarries Of Nanning



IMAGE_194_Masterplan For The Nanning Gardens Development



IMAGE_195_View Of The Former Quarry Walls



IMAGE_196_Main Lagoon View Within Nanning Gardens



IMAGE_197_Recreation Zones Within The Park

- **Quarry No. 5** is the largest among the seven quarries, enclosed by dilapidated cliff with terraced rocks sitting at the bottom. The quarry has transformed into a lake, caused by the continuously-rising water level. Two areas with relatively shallow mining depths were earthed up above the water surface, and planted with trees such as pond cypress and Chinese cypress, creating an aquatic woods landscape. Bridges and walkways of varying heights crisscross above the water and through the woods, creating a connection with the hilltop view platform. A waterfall is designed on the opposite of the bridge, forming a scenery spot accordingly.

- **Quarry No. 6** was transformed into a romantic and gorgeous garden with post-industrial atmosphere, utilizing sand production machines left on-site. Along the southern cliff are several terraces with various thicknesses of earthing soil, meeting the needs of various plants, from herbs to trees. Most of the leftover equipment was set in the verdant greens that contrast with the rusty machinery. The paths twist among the terraces of different heights and under the overhead conveyor belt. Wooden benches along the paths and platforms provide comfortable venues for rest and relaxation.

- **Quarry No. 7** comprises of two small quarry pits located on two sides of a hill. Abandoned for years, a variety of native pioneer plants have grown out of cracks in the rocks, displaying a natural landscape. With only a few interventions, a ring-shaped walkway skirting the hillside between two pits and a small platform on the edge of the west pit are constructed. They affords visitors a wild view, which demonstrates natural forces and functions in the

restoration of quarries. Both walkway and platform adopt steel grating that transmit light and water, preserving the natural vegetation on site.

An existing aqueduct runs across the site, transporting water from nearby spring to surrounding villages and farms. As a witness of site's agricultural history, it is well-preserved for irrigation water supply of the area, retaining its original function. Above the aqueduct is a pedestrian bridge that connects to the paths toward the adjacent quarry gardens, creating a unique three-dimensional tour system in this area. A 600m² pavilion provides various tourist services such as sales, rest, shuttle bus ticketing, etc., And also showcases the history and Eco-restoration processes and methods of the quarry gardens.

With the design well-fitted with its original landforms and landscape features, seven dilapidated and desolate quarries have undergone a fascinating transformation into a series of unique gardens. They demonstrate the promising possibilities and showcase to the public the diversified methods of quarry Eco-restoration as well as the multiple dimensions of landscape art **(ASLA)**.

9.3

QUARRY LAKE AT GREENSPRING

Quarry Lake at Greenspring is a man made lake in the Pikesville area of Baltimore County, Maryland. Originally developed as a marble quarry, it is now one of the deepest lakes in the state.

Before the intervention, the lake area was surrounded with a series of terraces on spiral that lead to the extraction zones, these places created big amounts of noise and environmental pollution to the area, overshadowing the beauty of its environment. Today, with the lake intervention the environment is much different, surrounded by a mixed residential development and commercial development that includes single-family homes, condominiums, shops, and office buildings.

It offers a good example of former aggregate mines that have been successfully optimized to maximize their economic and community



IMAGE_198 Location Of The Case Study



IMAGE_199_Satellite Image Of The Greenspring Project

benefit by utilizing the Value Reclamation Planning approach of the Maryland state.

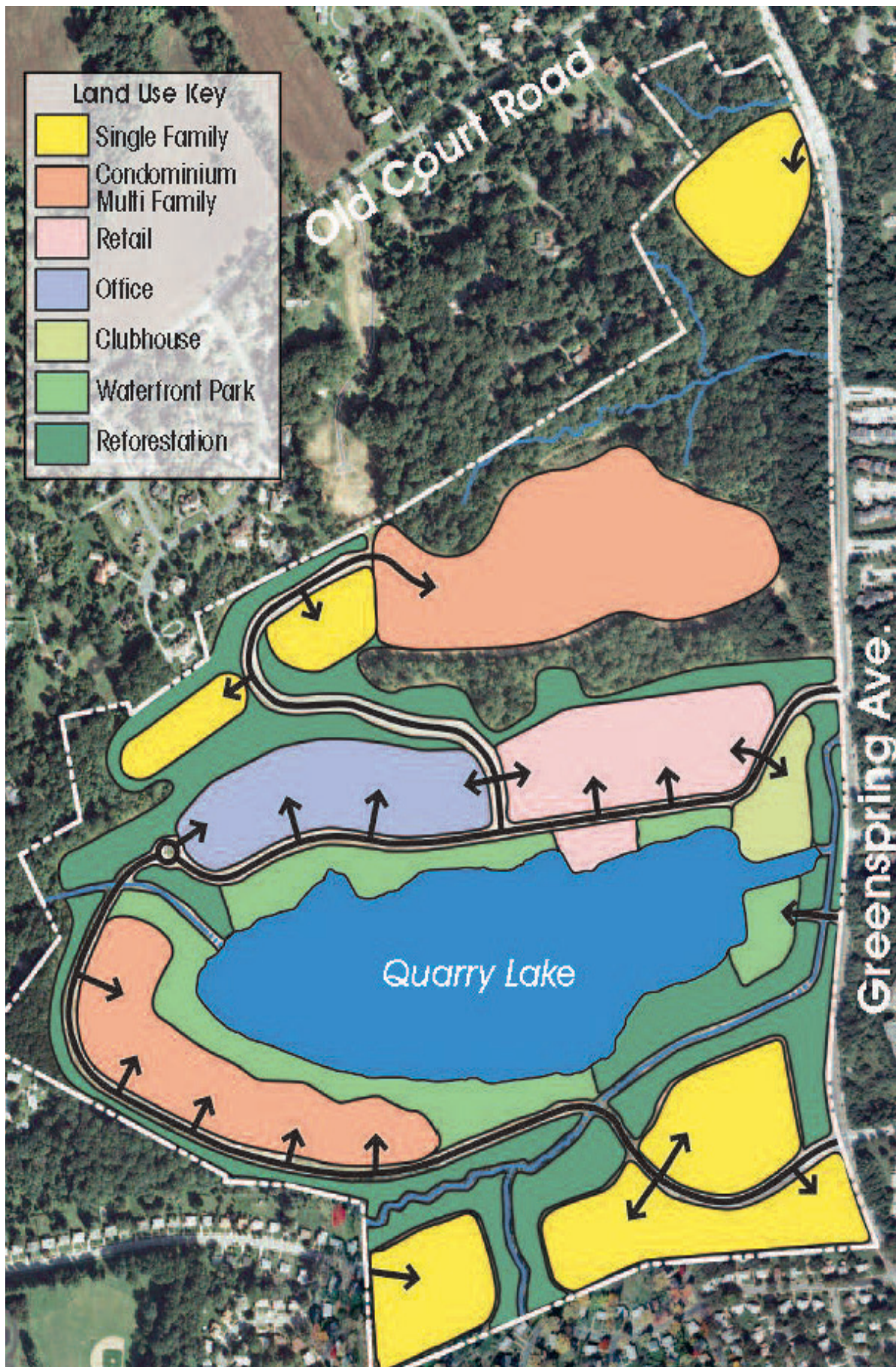
Mining operations at the Greenspring began in the mid-1800s, and the stone was used to build railroad beds for transportation of supplies during the Civil War. In later years, the mined materials were used for construction of the Baltimore Beltway and other local developments. When excavation ended in December of 1999, an estimated 35 million tons of rock had been removed, and the bottom of the Quarry extended to a depth of more than 153 meters.

After the production work which stopped at 1999, the quarry pit was slowly flooded to create a new natural environment. In the same year, an agreement was reached to allow a new mixed-use development to be constructed on the property. In 2005, private investors (Obrecht

Properties along with Beazer Homes) acquired the 93-hectares property. After many months of careful planning, the property was subdivided into residential and commercial components for development of the mixed-use project now known as Quarry Lake at Greenspring.

The development also features 83 single-family homes and 500 multi familiar units (apartments). While Beazer Homes implemented its residential development, Obrecht Properties constructed 226,000 s.f of office space and 115,000 s.f of retail and dining facilities.

Quarry Lake serves as the 16 hectares as centerpiece of this multi-purpose development. It is the deepest body of water in Maryland and fills by direct precipitation, natural ground water, and the flow of a diverted stream.



IMAGE_200_Zoning Diagram For The Development Of Greenspring



IMAGE_201_Aerial View Of The Quarry Lake With The Offices Buildings



IMAGE_202_View Of The Main Retail Zone In Greenspring



IMAGE_203_Greenspring Residential & Mixe Use Zones

9.4

MILAN'S EX - SCALI FERROVIARI

It is one of the issues that has been discussed in recent years in Milan: it is the fate of the disused railways (or to be decommissioned) that will be transformed into new neighborhoods of the city. The projects is the results of three years of urban planning work between FS Sistemi Urbani (Italy's national railway company real estate branch), Lombardy, FS Italiane Group (Italy's national railway company) and the Municipality of Milan (**Comune di Milano**)

The project consists in the redevelopment of the seven former disused railway yards (Farini, San Cristoforo, Porta Romana, Greco-Breda, Lambrate, Rogoredo, Porta Genova) began with the Agreement of program signed in 2017 by the Municipality of Milan, the Lombardy Region, FS Italiane, with Rete Ferroviaria Italiana and FS Sistemi Urbani, and Savills Investment Management Sgr.



IMAGE_204_Location Of The Case Study



IMAGE_205_Milan And Its Disused Railway Stations

The former disused railways occupy a free area of approximately one million square meters, 65% of which will be destined to green areas. This is the largest urban regeneration plan that it will concern Milan in the next 10 years, one of the largest mending and redevelopment projects in Italy and Europe.

THE PROJECT FOR SCALO FARINI AND SAN CRISTOFORO

In October 2018 the "Farini Competition" was launched, an international selection for the drafting of the urban transformation and regeneration masterplan of the former Farini and San Cristoforo railway stations.

The winning project of the competition is entitled "Climate agents" of OMA team and Permanent Laboratory. Green and environmental sustainability represent the heart of the winning project. A unitary and linear park of over 25 hectares will be created in the former Farini railway. While on San Cristoforo site, 14 hectares of the railway will be totally used as a public park.

According to the program agreement, it is estimated that 1,000 social housing apartments units will be developed at the Farini site, which later will increase towards 1,500 extra units with conventional housing. **(OMA)**

THE PROJECT FOR SCALO PORTA ROMANA

The guidelines for the masterplan and the call for competitors are being drawn up with the aim of arriving at the sale of the area within the first half of this year. The Porta Romana area will host the Milan-Cortina 2026 Olympic village: the development of the area, in view of the Olympics

winter, will include urbanization and infrastructure works, as well as transformation of public green areas. Once the Games are over, the athletes' residences will be converted into accommodation in social housing and housing for university students.

Rete Ferroviaria Italiana (FS Italiane Group) is developing the project for the new station of Porta Romana, in line with the current one, providing an integrated system of cycle and pedestrian accessibility with the Piazzale Lodi underground station (M3 line). It is also developing the study of the tracks displacement and their partial burial in the underground level.

This solution will allow the city to obtain a new pedestrian and green connection, and to mend the urban tissue between north and south through the construction of a land bridge **(Urbanfile)**

THE PROJECT FOR SCALO GRECO - PIRELLI

A new social housing district in Milan, the first in Italy with zero emissions, with houses mainly for rent and with lots of greenery, which will develop on the surface of the former railway (about 73,500 square meters). Of these, 72% (about 45 thousand square meters) will be used for green areas, public spaces, pedestrian areas and equipped paths for public use, far more than the 60% share set by the agreement program for the redevelopment of the railway yard.

In total it is expected that this new district will host 400 new social housing units (60% for rent and 40% for sale by arrangement facilitated through the Milan Municipality) and about 300 student beds, for a total of about 1,500 new residents, mainly aged between 24 and 44 years.

For the redevelopment of the former Greco - Pirelli area, a particular path



IMAGE_206_Overview Of The Scalo Farini Area



IMAGE_207_Oma's Winner Proposal For The Scalo Farini Railway



IMAGE_208_Aerial View Of Scalo San Cristoforo



IMAGE_209_Oma's Winning Proposal For The Scalo San Cristoforo



IMAGE_210_Aerial Overview Of Scalo Porta Romana



IMAGE_211_Rendering Image By Project Winners Outcomist

was devised through participation in "Reinventing Cities ", the international call promoted by C40 which provides for the re - qualification of brownfield sites in order to allocate new environmental and urban regeneration projects, in compliance with the principles of sustainability resilience. Several expressions of interest were presented, three of which were selected by the Commission of selection for the second phase of the competition which ended with the presentation of the proposals and I Award of the area in May 2019.

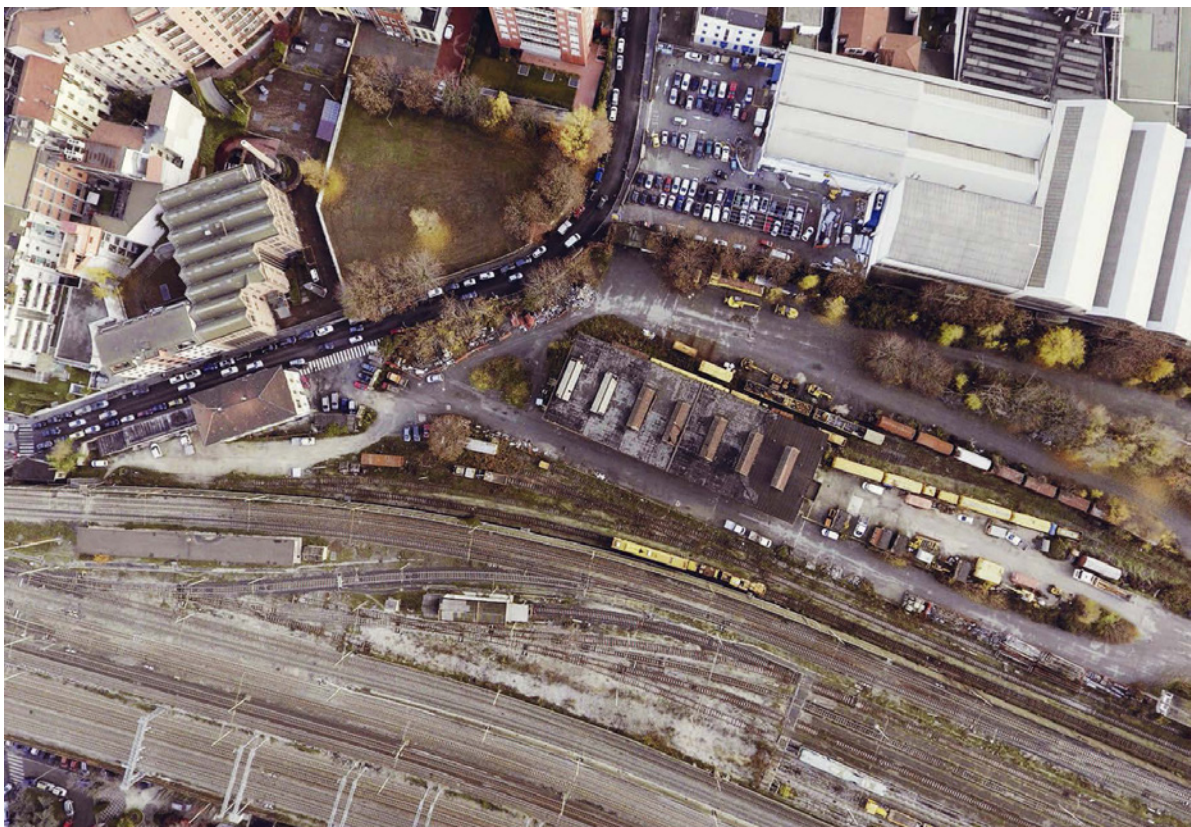
The winning project is entitled "L'Innesto", presented by the team led by Fondo Immobiliare Lombardia (FIL) and managed by Invest Sgr with the Social Housing Foundation (FHS) as a strategic partner, Barreca & La Varra for the architectural and landscape project and Arup Italia for the urban and environmental project (**Urbanfile**)

THE PROJECT FOR SCALO LAMBRATE

Following the structure used for the Greco - Pirelli project, the Scalo Lambrate is one of the seven projects with which the Municipality of Milan participates in the second edition of the international call "Reinventing Cities". The initiative was illustrated by FS Sistemi Urbani and the Municipality of Milan last December and will end in the first months of 2021 (**Comune di Milano**)

THE PROJECT FOR SCALO ROGOREDO

For the development of the Rogoredo railway, a competition of ideas "AAAarchitcercasi" was launched promoted by Confcooperative Habitat. The initiative was presented in October 2019 at the Feltrinelli Foundation from FS Sistemi Urbani



IMAGE_212_Aerial View Of The Scalo Lambrate



IMAGE_213_Aerial View Of The Scalo Greco - Pirelli



IMAGE_214_L'innesto Winner Proposal For Scalo Greco - Pirelli



IMAGE_215 Aerial View Of Scalo Porta Genova

with the patronage, among others, of the Lombardy Region and The municipality of Milan (**Comune di Milano**).

THE PROJECT FOR SCALO PORTA GENOVA

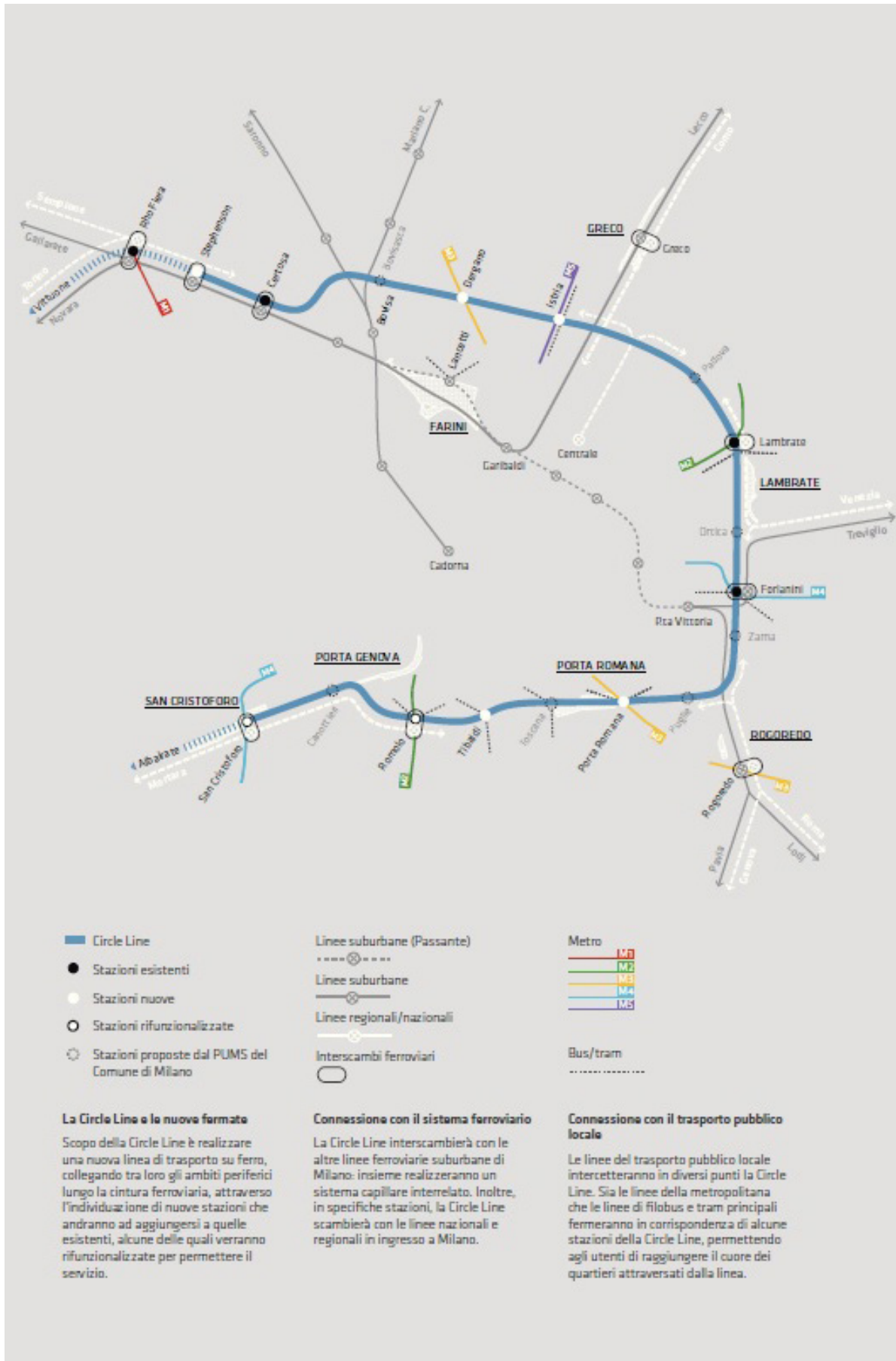
Bankruptcy procedures will also be developed for the Porta Genova railway for the drafting of the masterplan and participatory procedures to collect citizenship requests, as foreseen by the Program Agreement.

In this case, FS plans also provide for the disposal of the passenger station, which is the closest Rfi surface station to the famous Milan Duomo (however, currently used only by a small amount of trains incoming from Mortara and Alessandria) (**Comune di Milano**).

THE CIRCLE LINE PROJECT IN MILAN

For the construction of the Circle line, the railway Program Agreement provides for €97 million investments. The award of works for the construction of the new station is in the tender phase of Tibaldi, with the aim of launching them in April 2020.

The Supervisory Board approved the construction of an additional railway stop to that already provided for by the Program Agreement (Stephenson stop) at the footbridge connecting the former Expo areas (now MIND - Milano Innovation District) and Cascina Merlata. Design for the new one is underway (**Comune di Milano**).



IMAGE_216_Diagram Of The Circle Line Project

9.5

WHAT COULD BE LEARNED FROM THESE EXAMPLES?

After developing the case studies, we can see that there is more than one way to reclaim a post-industrial | extractive areas.

For the re-development of mining and quarry sites, ecological management, landscape shaping and economic utilization are the most common and important topics. The three cases show an important development within these three points, arriving to different design proposals all feasible with our scope of action.

The main design concepts are: the transformation of exploited areas into a pure landscape, the development of a single form of urban development within a passive natural environment, or a combination of the two previous mentioned. Having been completed, these construction projects shows the direction to follow, the design challenges to overcome and most importantly, they confirm

the feasibility of its realization. In the design phase, we must conceive how to combine the three propositions organically to design a combination of a natural landscape and an urban built environment, following the ideas of the three scales developments.

For our site, we must solve before a big ecological problem which deals specifically with flooding problems and environmental pollution. For this, we can look at the water purification process of Harnes lagoon and get ideas from it to help to our design. In addition, under the idea of developing ecological networks and heritage recuperation, we want to combine landscaping techniques by applying them in traces of former industrial interventions. Finally, While developing new residential areas an inspiration is taken from the design of mixed-function areas in the Quarry Lake at Greenspring.

CONNECTIVITY

LINKING

JOINING TISSUES

PRESERVATION
HERITAGE

APPROPRIATION

MIXED USES

ECOSYSTEMS

PARTNERSHIPS
DIVERSITY

PROTECTION
LANDSCAPE

IMAGE_217_Cloud Of Key Words Found Within The Case Studies

D

RE
MORHPHING
THE FUTURE

10

RE SHAPING PRINCIPLES & OBJECTIVES

Understanding the case studies and learning which are the principles behind their success, it is important to start thinking of the principles that will guide the new development for the Melzi Quarry.

This sub - chapter develops the framework for which the base parameters of the project will take, beginning with the its principles and passing then to the objectives and strategies to be applied to reach these objectives.

The principles of the project are the keywords that will imprint the project personality, the guidelines from which all its characteristics will depart. For the Melzi Quarry re - development it has been stated that these principles should be: Resilience Connection, Recollection and Preservation.

After the principles are being developed it is possible to develop

the project objectives, strategies and constitutive elements.

The project objectives are purposes that the designers want to imprint in to transform a particular area, objectives can be based on the overall principles and be classified by the similarity to them.

While strategies take the form of execution plans that are decided to fulfill the set of objectives, in particular, they come in a group of specific actions to be transformed into concrete physical elements. For the Melzi Quarry project, each strategy has been divided in categories belonging to the objective that is trying to solve.

Finally, the constituent elements appears as the physical elements which determine the content and the physicality of the future zones to be developed in the site.



IMAGE_218_Marelli's Workers During A Protest In Front Of The Factory

10.1

PRINCIPLES FOR THE PROJECT

The principles which drives the re – development process of the former Melzi Quarry are: Resilience, Connection, Recollection and Preservation. These principles were chosen as the suitable guidelines for transforming Melzi Quarry and develop a new vibrant district in Sesto San Giovanni, one which would bring a different approach of recovering former extractive areas and one that increase the quality of the urban tissue of Sesto, providing new functions desirable functions to its inhabitants

RESILIENCE

Resilience “The capacity to recover from difficulties”

During our research, we have seen how different the landscape of Sesto was before industrialization, one that

was conscious of its surroundings and used them for its advantage. Then industrialization came and changed everything, a big wave of changing processes morphed the area into something never seen, new factories that overtook the natural environment and massive construction sites, destroyed the natural environment that surrounded Sesto San Giovanni, it is more, it transformed Sesto into a big gray Machine. Today, the area is left with the scars from this transformations, scars that still wound the urban tissue of the city, that still contaminates its nearby resources and puts an invisible barrier for the connection of natural features to its inhabitants.

Resiliency is the ability to stand back from a hard past and its something that this area is desperately in need. Resilience involves a wide range of interventions in order to reclaim something that was left behind and

as well developing a strong proposal that it could stand any other physical alteration in the years to come, man made or even natural. Resiliency is a key concept that could help take advantage of the natural problems surrounding the site and converting them in assets for improving the overall quality of the newly proposed environment.

CONNECTION

Connection “The action of Linking one thing with another”

A part of being resilient comes with the acceptance of new ideas, and the best ideas comes when different places, actors and memories are connected. The current state of the industrial part of Sesto is of desolation, this particular area looks like a different piece of the city, seeming so far away when actually is really close. The former industrial area of Sesto needs urgently to be regained through the connection to the existing urban tissue, the surrounding natural environment and to a former past that was more connected with its surroundings. Currently there is in process a series of projects destined to bring this former brownfields into Sesto, connecting it through new urban developments like the Falck Area or the Parco Media Valle del Lambro expansion.

In order to connect this area of Sesto, it is vital to see the project in different scales, one that could reach further borders through some natural or man made features, the success of the re – development of Melzi Quarry will stand when there is a proper proposal for joining this area with the city Falck Area, The Metropolitan City of Milan and the Territorial Scale of the Lambro

RECOLLECTION

Recollection “The action of Remembering a former Past”

Connection and Recollection are two actions that comes together, when a site like this has a strong background history, it is common think of its former past and look a way to reconnect it to the actual situation.

The strong past of the area is currently visible today, in the traits of the Cascinas located within and the area and the big natural features that surround the area. This brings back a memory where the site was currently used for the growth of communities, where agriculture was its main product and where agro farms in form of Cascinas where developed in order to grow communities and use its surroundings for growth. Industrialization has left some physical scars as well, but it leave the printed featres of communities that stand strong together towards tyranny and hardships times, a strong reminiscent of community resiliency. In order to recollect former memories, it is important to highlight the type of memories left on site, tangible and intangible ones, this can be used as an inspiration font in order to develop new developments based in the examples of former past solutions, bringing an interesting example of heritage recollection into nowadays projects. By doing this a strong identity will be given back to the area, one that is not only biased in the industrial solution that only represents a small part of its time line.

PRESERVATION

Preservation “ The State of Being Preserved”

Memory collection stands as a powerful tool to enhance the value of the heritage, it allows inhabitants to recollect with a former past that perhaps they haven't lived in and with it appreciate greatly its former heritage and thus a big feeling of preservation is born.

Preservation is a process of protecting and maintaining the buildings in their current state or preventing them from further damage and deterioration. It involves a wide range of interventions from conservation actions through reconstruction or restoration, depending on the vision for the certain project.

The method of preservation will be useful not to only maintain some physical parts of the heritage found on site but to preserve the collective spirit and memory of a former industrial heritage. The importance of the intangible heritage of this area will be stressed more than the physical conditions. Since the vast majority of the landscape is currently modified by the man made interventions. A system of resilient structures will be created where the voids of the human made scars where developed and rising new landscape infrastructure from reminiscent of industrial activity from the extraction site. Current architectonic typologies will come based on the Cascinas type design and applying the same principles of creating a complex of buildings surrounding big open courtyards and interconnected between them.



IMAGE_219_Word Map Of The Principles Of The Project

10.2

OBJECTIVES AND STRATEGIES

To pursue the development of the project and achieving its ultimate goal, a linear organization structure has been adopted. This structure is done in order to follow a simple step by step approach for the desired goals. The project structure includes: Project Principles, Project Objectives, Project Strategies and Constituent Elements of the Project.

Project Principles: Key words in which the project goals are focused (**Resilience, Connection, Recollection, Preservation**)

Project Objectives: The purpose that the designers want to imprint to transform the area of Melzi Quarry, these objectives are based on the overall principles of the project. The project objectives are the following:

1. Preserve tangible and intangible traces of industrial and extraction landscapes.

2. Connect the urban tissue of Sesto San Giovanni with the Parco Media Valle del Lambro.

3. Repair any environmental damage created by the former industrial | Extractive landscapes

4. Absorb | Mitigate any damage created by nearby environmental features.

5. Treat new public spaces as a continuity extension of the Parco Media Valle del Lambro.

6. Arrange different agreements between public and private stakeholders to pursue a project with long term prospective.

7. Converge the different stakeholders needs within a single built up environment.

Project Strategies: Plan of action designed to achieve long term objectives, in particular are the specific actions to be taken in order to achieve the planned objectives. Each strategy has been including in a category of the objective that is trying to solve. The project strategies are the following:

- A. Create a water based basin to contain any future flooding from the Lambro River
- B. Use the artificial topography left by extractive activities as landscaping features, enhancing the creation of new landscaping formations serving as a barrier from the highway
- C. Design a green overpass connecting Falck Area and Parco Media Valle del Lambro through our project site.
- D. Develop residential building units for different types of population, serving different habitation solutions for the population existing in the Sesto area.
- E. Position a viewpoint in the highest point of the artificial landscape, highlighting a passive view of the former industrial infrastructures of Sesto.
- F. Design a multi utility/ flexible space for community development within the park area, enhancing the memory of former agricultural heritage
- G. Connect the project site with surrounding areas through interventions of surrounding public spaces and road infrastructures.
- H. Recreate the natural ecosystem of the Lambro river by introducing local Flora and Fauna.
- I. Restructure and Preserve the historical Cascinas within the area by creating surrounding developments that enhances the current use of the buildings through the use of public spaces.
- J. Reinterpretation of architectonic language of the former Cascinas Typologies, applying them in the medium density residential solutions.
- K. Use a part of the Lambro's surrounding land to create a system of channels and bring back small artisan agricultural fields.
- L. Establish a framework for a public – private partnership for the plausible development of the project, based on the rules established on Sesto's PGT and a step guided project.
- M. Create a system of lagoons to help with the purification of the water from the Lambro River, using ecological purification processes and return clean water to the Lambro River.
- N. Create a system of different paths around the project that enhances the slow mobility within the project and to the surroundings of the area.

Constituent Elements of the Project: These are the most important elements which determine the content and the spatial framework within the project development. These elements are the following:

Industrial | Extractive Remains: heap of aggregate hills, industrial machinery found in the area, scars left by extractive activities.

Agricultural Remains: Preservation and enhancement of the existent Cascinas buildings, as well establishing an architectural language based in their typology for the newly created housing.

Water as healing element: Water used as the generator of the entire healing of the site, as a genesis of new life and development.

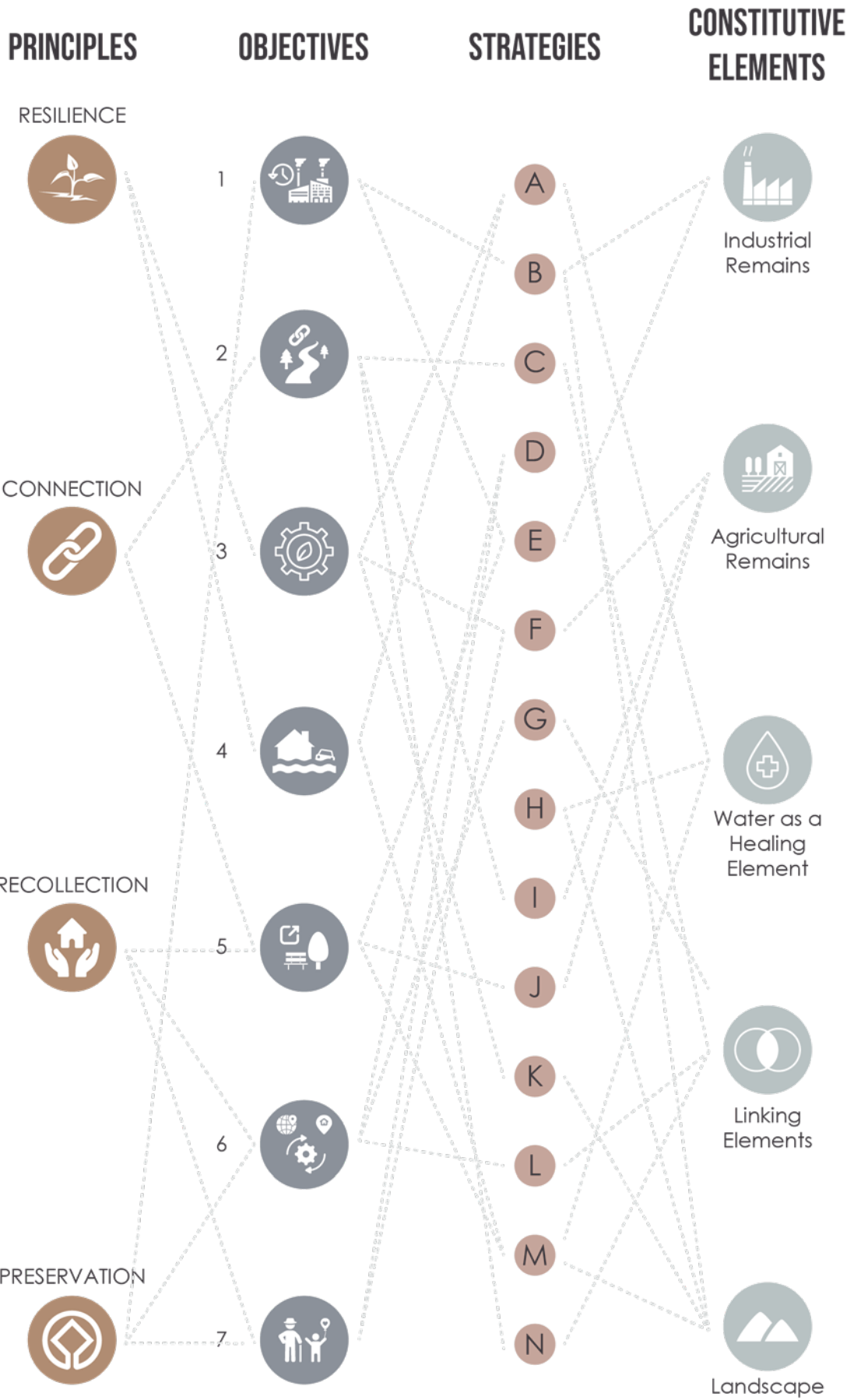
Linking Elements: Establishing a system of different paths, ramps, bridges and circuits for mobility within the site.

Landscape as space defining: Landscape infrastructure is used to define some parts of the complex, creating a clear division between the new built up zones and the natural parts of the Lambro Environment, providing a buffer zone between the highway and the surroundings.

PRINCIPLES	OBJECTIVES	STRATEGIES	CONSTITUTIVE ELEMENTS
RESILIENCE	1. Preserve tangible and intangible trances of industrial and extraction landscapes.	A. Create a water based basin to contain future flooding	1. Industrial | Extraction remains
	2. Connect the urban tissue of Sesto San Giovanni with the Parco Media Valle del Lambro.	B Use the artificial topography left by extractive activities as landscaping formations serving as a highway barrier.	2. Agricultural Remains
CONNECTION	3. Repair any environmental damage created by the former industrial landscapes.	C. Design a green overpass connecting Falck Area and PMVL through the project site.	3. Water as a healing element.
	4. Absorb any damage created by nearby environmental features.	D. Develop residential building units for different populations, providing different housing solutions.	4. Linking Elements.
RECOLLECTION	5. Treat new public spaces as a continuous extension of the PMVL.	E. Position a viewpoint on the highest point of the artificial landscape, highlighting a passive view of the Falck Area.	5. Landscape as space defining
	6. Arrange different agreements between public and private stakeholders to pursue long term projects.	F. Design a multi utility/flexible space for community development within the park area, enhancing memory.	
PRESERVATION	7. Converge the different stakeholders needs within a single built up environment.	G. Connect the project site with surrounding areas through interventions of public spaces.	
		H. Recreate the natural exosystem of the Lambro by introducing local Flora and Fauna	
		I. Restructure and preserve the historical Cascinas within the area by creating surrounding developments.	
		J. Re-interpretation of architectural language of the Cascinas Typology, using them in medium density housing.	
		K. Use a part of the Lambro's surrounding land to create a system of channels and attract artisanal agro firms.	
		L. Establish a framework for public - private partnerships for the plausible development of the entire site, based on Sesto's PGT rules.	
		M. Create a system of lagoons to help with the purification of the water from the Lambro.	
		N. Create a system of different paths for slow mobility.	

PROJECT GOAL

IMAGE_220_Project Development Decision Action Line



IMAGE_221_Relations Between Project Concepts

11

RE THINKING IDEAS FOR MELZI QUARRY

When principles are decided, objectives are set, strategies are applied and constitutive elements are formed, it is possible to start thinking in the main concepts for the re-qualification of the project.

For the development of this project, the concept plan comes into the form of a single idea, to connect the site with its surroundings, using the Melzi area as a hinge to reconnect the industrial area of Sesto San Giovanni with its surrounding environment.

Based in the idea planned in the concept plan, the project imprints the generator idea which includes the use of water elements as a medium of development for new areas and the regeneration of damaged environmental tissues. This concept starts as the generator for the entire developments of the project, meaning that any type of variants should include this idea.

Finally, the project of the Melzi Quarry is projected to expand its borders into many different scales, following this statement the project has developed a concept of 1 Project within 3 Scales.

The scales of the project includes the territorial, the metropolitan city and the local city scale. The territorial scale includes the territories that connect the Lambro river with its nearby areas, both rural and urban landscapes. The Metropolitan city area includes the urban network consolidated between Monza and Milan, since its a large urban conurbation connected by the Lambro river and the landscape of the Parco media della Valle del Lambro. Finally, arriving into the smallest scale which includes the industrial zone of Sesto.

All of these different concepts comes to forge into a single environment, creating new atmospheres and depth to the final result.



IMAGE 222_51 CK 5 T3 Demolition Works

11.1

CONCEPT PLAN

Melzi Quarry has a very particular position within the city of Sesto San Giovanni, the industrial brownfields of the Falck Area and the Natural Environment of the Lambro waterfront, these two areas are very important within the city of Sesto and its potential to be re-qualified should not be neglected. Melzi Quarry could be considered as the merging point where two completely opposite tissues collide. The first one, a former industrial site where massive steel pavilions are left behind and the second one, a natural environment that has been polluted by these former industrial areas. The identity of the Melzi Quarry stands in a far agricultural village and a more recent industrial city.

Previous analysis done in this book points out that this area could be developed in several layers, filling the interruption between the built up and the natural environment, this would

lead to the reconstruction of the urban tissue of Sesto San Giovanni, healing part of the big industrial voids problem and providing a new and fresh renovated image of the town. As indicated by the analysis, the most suitable approach for the Melzi Quarry site is to embrace the qualities of its surroundings to create a new urban development that balances newly created built up stock with natural environment, leading to a development of new functions and services for the area.

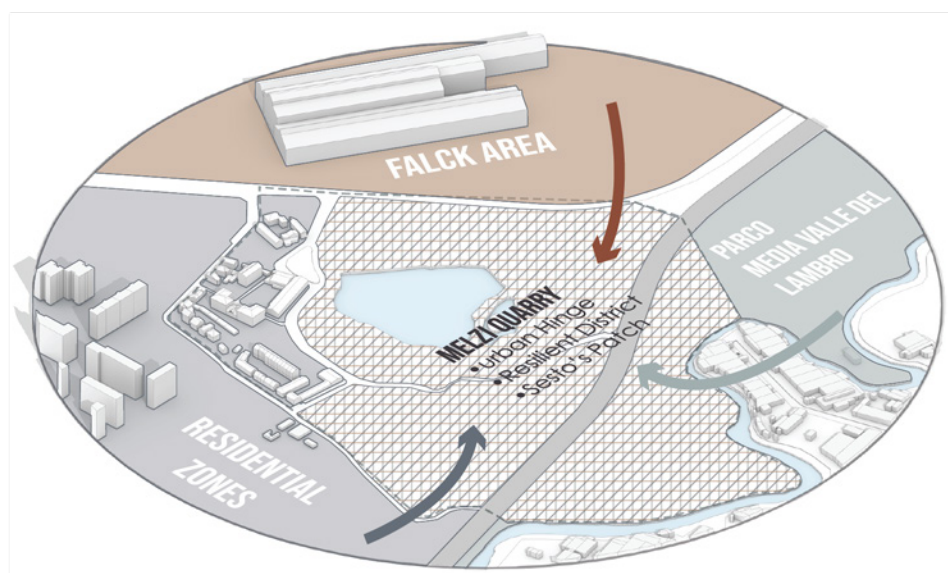
The design aim is to recover an area scarred by extractive activities and transform it into a resilient park, meaning that it will be a place that embraces the surrounding environmental issues and will give a solution through natural mechanisms aided with landscaping in order to solve these problems. Today, the Melzi Quarry is partially active, occupying a partial amount

of the land available and completely isolated from outsiders, the presence of an extractive landscape so close to residential zones have already shown disapproval of its neighbors, which they have grouped and ask a petition to the municipality of Sesto of its riddance, this exemplifies the desire of the community to have this area transformed. With a new re – qualification project, Sesto's inhabitants will be connected to the natural landscape that surrounds the area, most importantly, they will discover the former heritage of the an agricultural past, expressed physically in the architectural buildings find in the area, this will lead generations to come to be more appreciative of the natural environment and the heritage of its site.

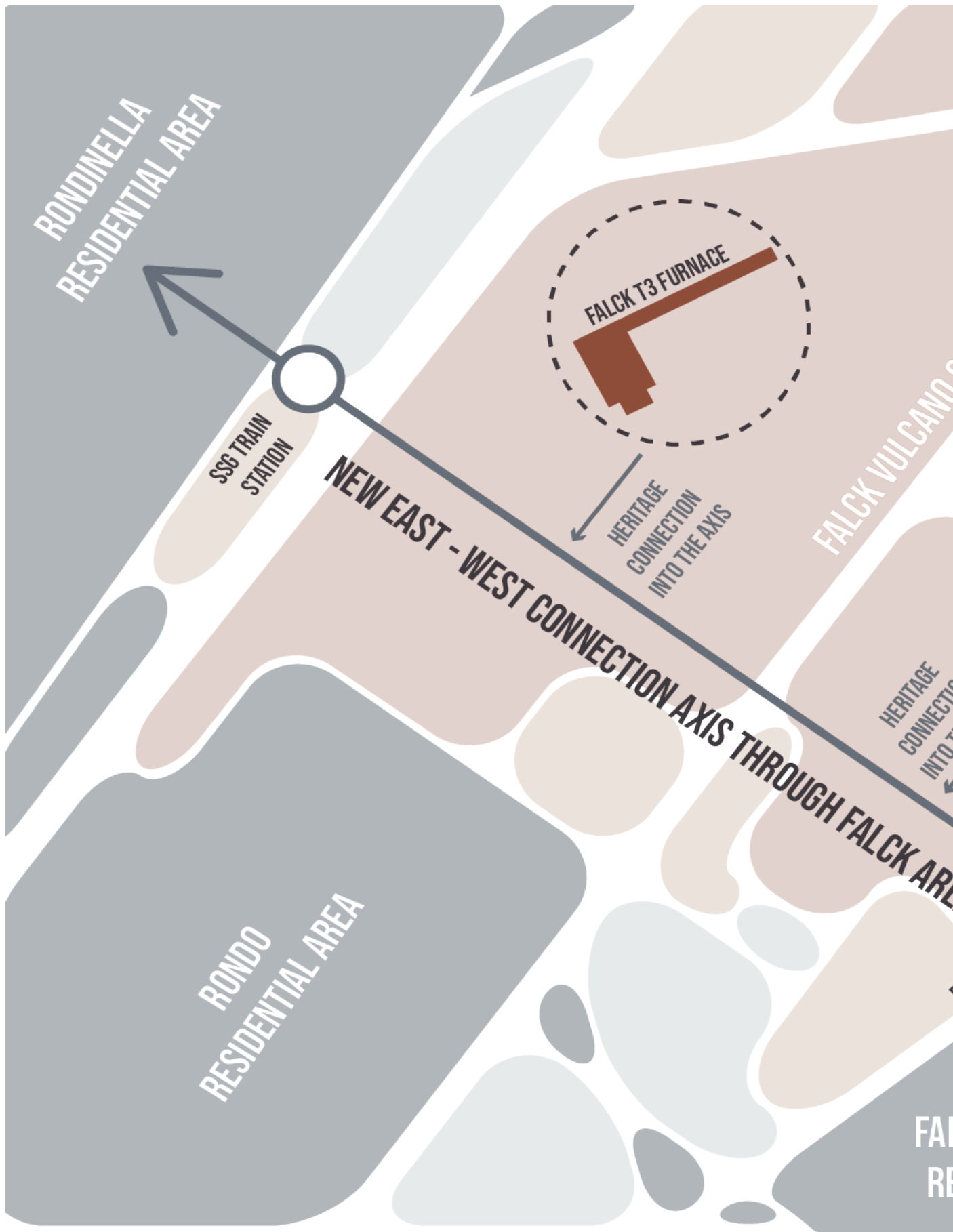
The target is to implement high efficiency resilience infrastructures that will help absorb and mitigate the

environmental issues that currently the site have (Pollution and Flooding). It is evident that the identity of this space will change, but the important thing is to develop a new identity for the site based on its former memory and dynamized the area as a new development pole. Analysis shows that the city of Sesto lacks places for open social interaction, the social quality of inhabitants is on the low level and the city lacks of walkable spaces, creating a polarization of dynamism to some particular areas.

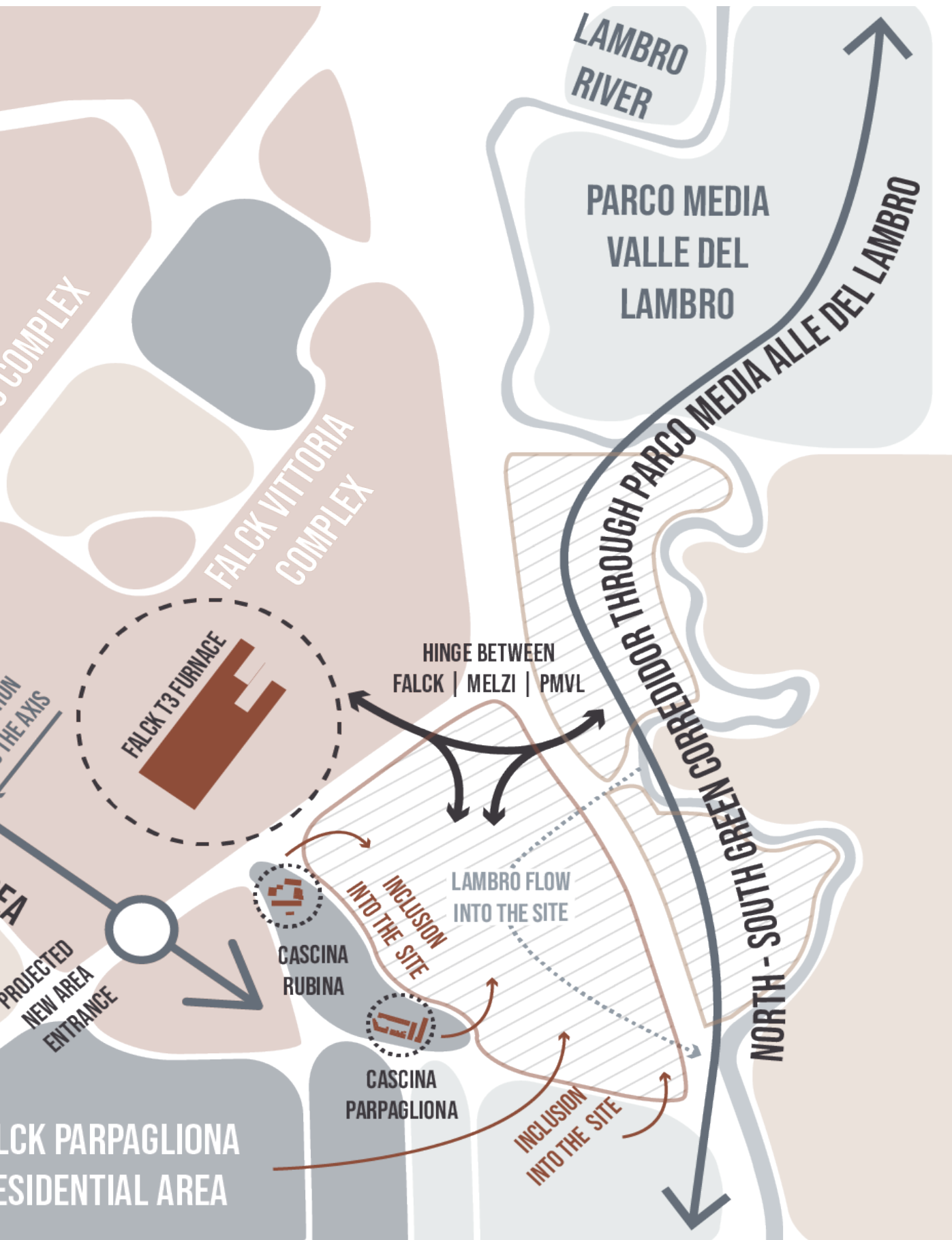
Due to this, design aims to improve the connection between the current built up environment, creating new connection corridors between the built up stock, the natural environment and the existing site in order to re vitalize the surrounding environments.



IMAGE_223_Conceptual Intervention Plan For The Melzi Quarry



IMAGE_224_Diagram For Site Connection With The Urban Tissue



11.2

WATER AS A GENERATOR OF URBAN WELNESS

The Melzi Quarry site and its surroundings have been greatly influenced by the presence of the Lambro River.

Since its early beginnings as an agricultural village which carved artificial channels to bathe its soil from the Lambro, to the pre-industrial town where a big lake of water sprout was used near Cascina Rubina, to the industrial zones which used the river banks to obtain the water necessary for its production purposes and finally to the extraction zones which used the immediateness of the river bed to extract sand to build more industrial complexes, the Lambro has always been there for the development of this particular area.

Therefore, it shouldn't be strange when considering the main driving force for the project re-development, the Lambro and its waters was first in mind.

In this concept idea water is used as the genesis element, an element that is able to create, develop, heal and purifies the land it touches. This is why the most important feature for the re-qualification of Melzi Quarry starts from water and includes it in different forms. Currently, the Lambro is afflicted by two important problems: Pollution and Flooding and its here where the project concept starts to take form.

The water quality of the Lambro River between Milan and Monza is from a pretty bad quality, to a point in which the water arrives "dead" to the meanders located next to the quarry site. Beginning from this, the intention is to create passive purification water mechanisms through the development of a series of purification lakes located within the former scars of the quarry, this system consists in the development of three water lakes in different heights that uses only plant

based techniques to purify the water from the Lambro and then pumping it into a separate lake where the water is already purified and clean, this lake will later flow into a channel that currently exists in the southern border of the site and then returning it to the river, improving the water quality of the river.

By this action it is intended to create an inner water purification cycle within the project site and the infrastructure developed for this will be the generator for the entire development on its surroundings, in this way water develops a purification cycle that regenerates a former polluted area and at the same time a former polluted area helps regenerate polluted water, completing a cycle.



IMAGE_225_Diagram Of Water Inclusion Within The Project Development

RIVER LAMBRO

INFILTRATION GAP

leading the water from River Lambro into the pond with gravel, coarse sand and fine sand to filter the water



Gravel



coarse sand



fine sand

FERTILIZER PURIFICATION



Typha orientalis Presl



Ceratophyllum demersum L.



PRETREATMENT POND

Using the existing quarry lake for water storage, precipitation, and filtration with willows to absorb a maximum amount of fertilizer



Willows

IMAGE_226_Diagram Of The Ourification Lake Process Within The Project

ECOLOGICAL PURIFICATION AREA

Plant plants with strong dirt absorption capacity, strong oxygen transport ability to the roots, strong root penetration of the medium and good landscape effects. Layers of drops allow the water to be filtered and biologically purified.

PURIFICATION POND



Phragmites australis



Acorus calamus L.



Potamogeton crispus L.



Lemna minor L.

HEAVY METAL PURIFICATION POND



Echinochloa crusgalli



Alternanthera philoxeroides



Butomus umbellatus



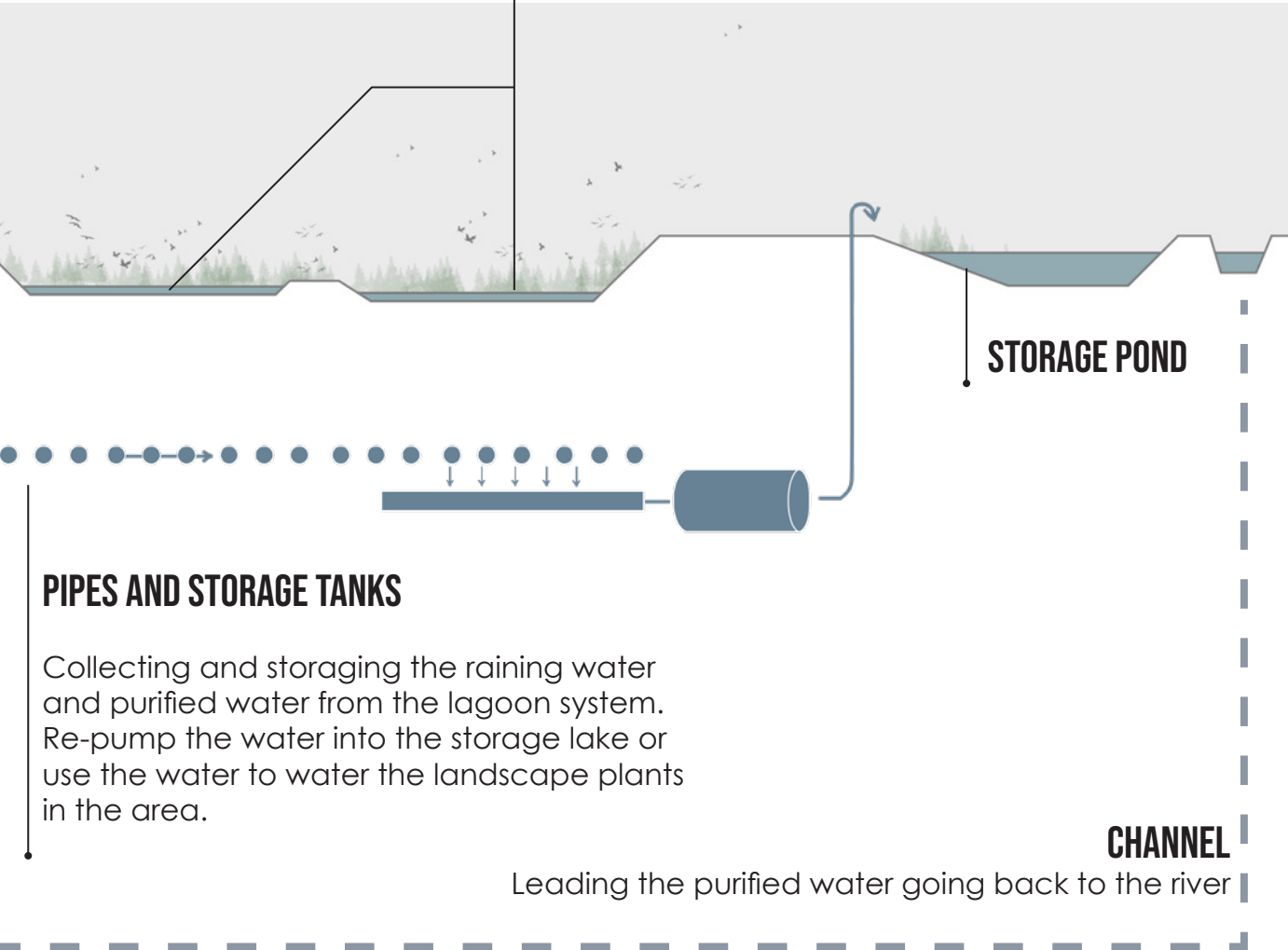
Typha orientalis Presl



Iris pseudacorus



Epilobium hirsutum



PIPES AND STORAGE TANKS

Collecting and storing the raining water and purified water from the lagoon system. Re-pump the water into the storage lake or use the water to water the landscape plants in the area.

CHANNEL

Leading the purified water going back to the river



IMAGE_227_Diagram Of The Normal Water Level Within The Project



IMAGE_228_Diagram Of The Water Level Within Rainy Season



IMAGE_229 Diagram Of The Water Level In The Meximum Flood Capacity

11.3

1 PROJECT WITHIN 3 SCALES

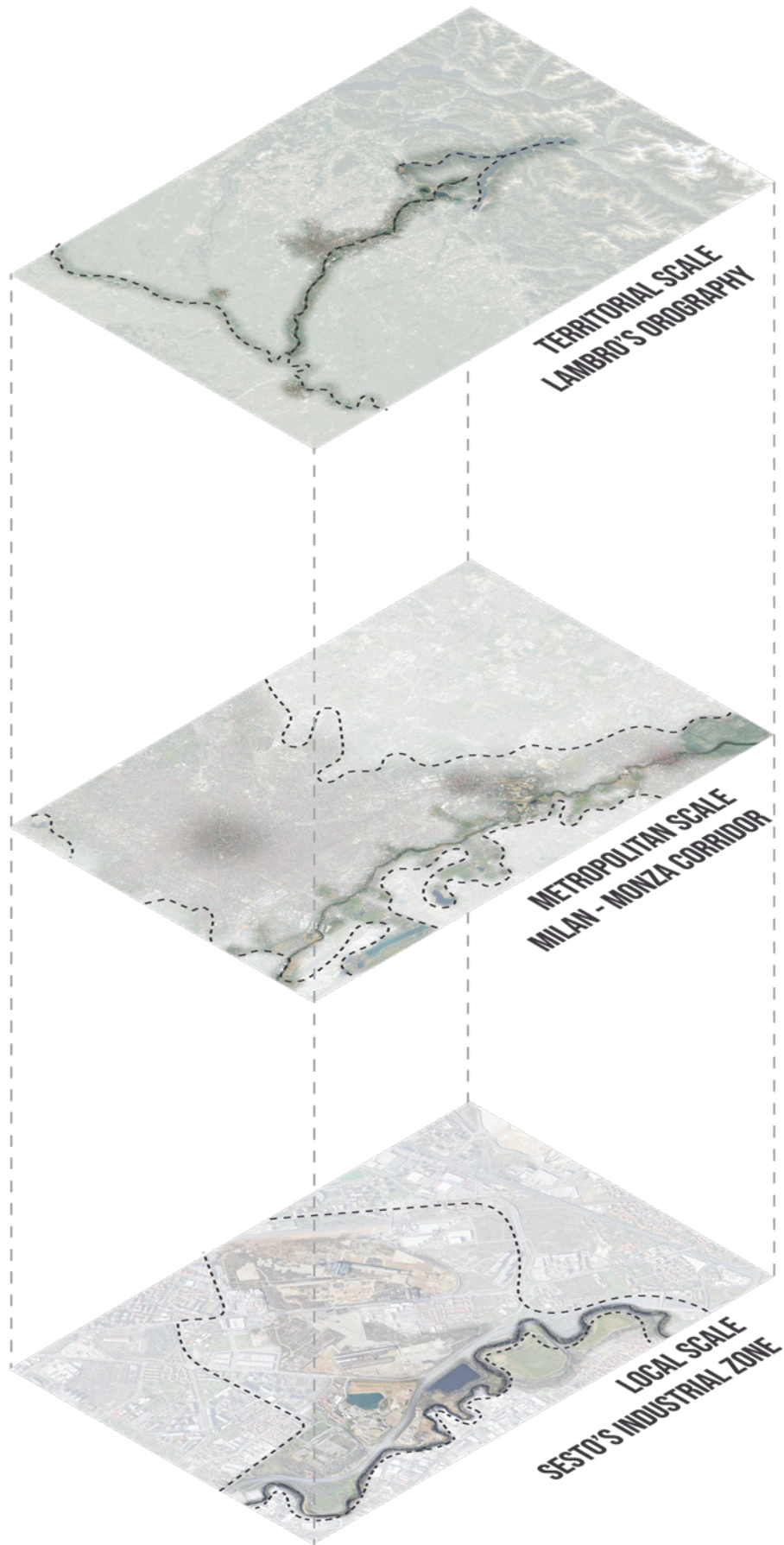
Re-qualification projects of former extractive areas have the main objective of bringing back a dilapidated, contaminated and damaged area into an integral part of the territory. Within the developments of these projects aesthetics are prioritized rather than the integration of the site towards the surrounding urban context. Cava Melzi situation gives a particular opportunity for this project to re – take another direction, one that places the development as a key piece within a large span of territory, the location of the quarry site allows direct connection to two urban players that can project the boundaries of the project, the Lambro River and the Parco Media Valle del Lambro.

This is why the concept idea of “1 Project within 3 Scales” came in place, taking advantage of the site’s location within the city, within nearby

of a green corridor that connect different urban settlements and within a river that stitches together various regions and municipalities. The main idea behind of “1 Project within 3 Scales” is to amplify the boundaries of the Melzi Quarry and make it a fundamental piece of different urban scales, being these:

Territorial Scale: Consists in the biggest scale in which the project can be projected, taking advantage of the Lambro River as a natural infrastructure to connect the project with many other territories.

Metropolitan City Scale: Comprehends the dimension of the Milan Metropolitan Area, being located next to the PMVL the site can expand its border through a coordinated connection with different urban areas that are also connected with the park.



IMAGE_230_Diagram Of The Different Scales Of The Project

Local Scale: This is the smallest scale in which the project should act, as the name suggests the area should be expanded through the surrounding boundaries of the site, in this case the Falck Area. This connection between the areas can develop a synergy that has the opportunity to improve the entire urban tissue of the northern area of Sesto San Giovanni.

TERRITORIAL SCALE

THE LAMBRO AS A NATURAL TERRITORIAL CONNECTOR

As seen in previous chapters, the Lambro River flows across a vast area from the Northern Lakes all across Lombardy and joining the Po River in Emili Romagna, this “natural highway” connects many different environments (cities, towns, national parks, rural landscapes, industrial areas, mobility infrastructure, etc).

Taking advantage of this natural characteristic of the Lambro River, an idea is developed as **“The Lambro as a Territorial Connector”**. In order to apply a strategy that allows the use of the Lambro as territorial connector, it is vital to consider how the site can facilitate any activity that allows a proper connection within the Lambro's shores.

The first consideration comes within the frame of an environmental re – qualification, as discussed in previous sub chapter, the environmental quality of the Lambro' waters start to diminish around urbanized areas, specially when reaching the shores between Milan and Monza. Here we find the quality of the river in a deep state of pollution due to the industrial activities surrounding its shores.

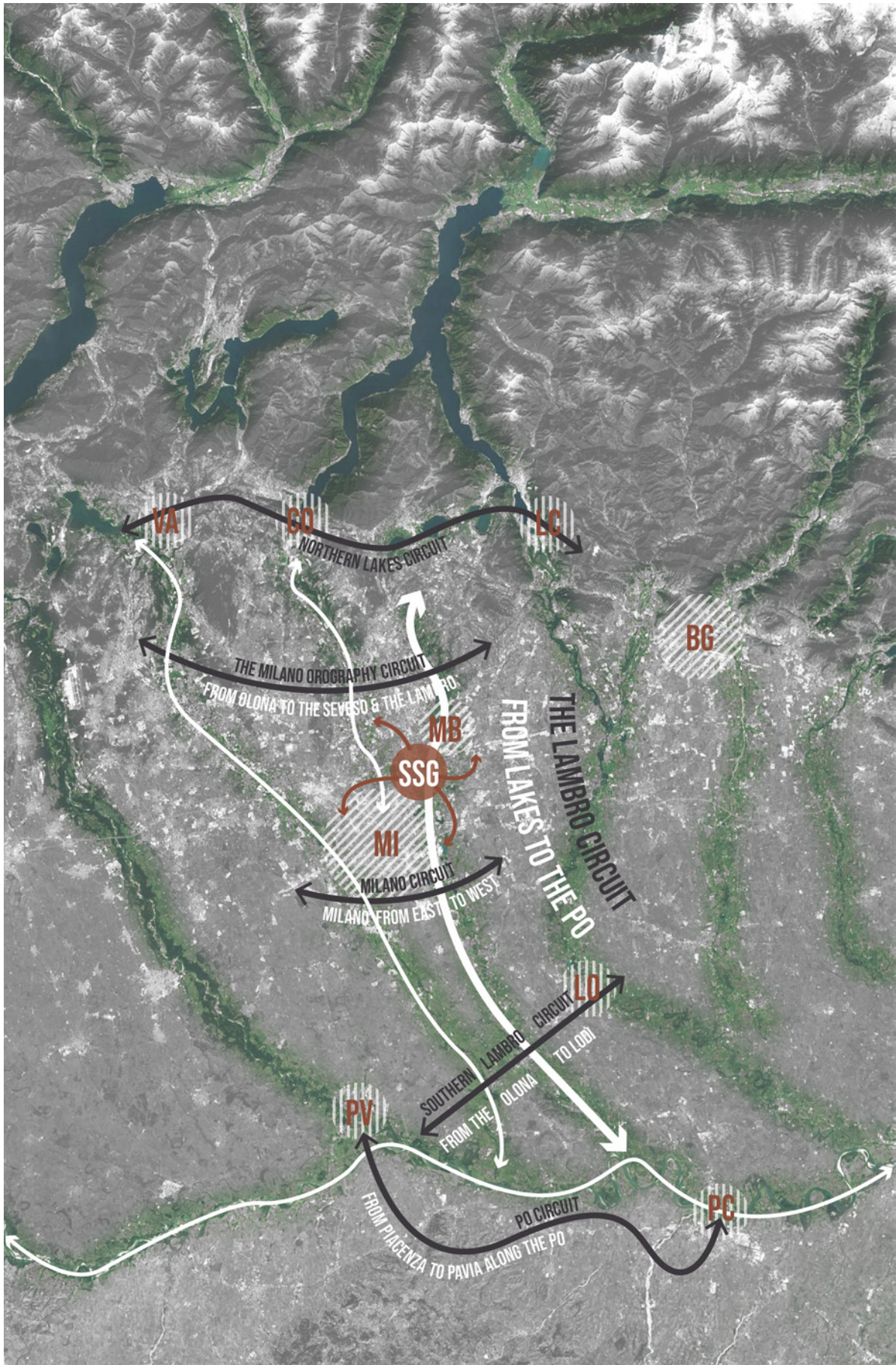
In order to relieve a fraction of this issue, a decision is taken in order to develop several small water basins within the inner site of the Melzi Quarry, these

new infrastructure will have the task of purifying the water through natural means, with the inclusion of specific flora and water based plants located on the lakes shores and a system of porous aggregates found on the lake bed.

This intervention will allow the creation of new water based surfaces that flows within the Lambro to the inner core of the project site and start to create an entire new system of water bodies and green infrastructure aimed to improve the environmental quality of the river and therefore improving the overall quality of the new built environment.

The second consideration taken into account comes from within the frame of resilience infrastructure, also as seen in sub chapters above, the area suffers from some flood issues, something not that common through the Lambro's shores. In order to tackle this issue, an approach is taken to introduce a new system of flood plains in the most drastic part of the rivers meanders.

This controlled flood system is done by digging and extending the river bed surface near the site and surround it with a series of small ponds that can receive a considerable water surplus through the installation of river based plants. This flood system will develop a secondary water based environment near the Lambro shores, which is envisioned as a focal circulation point for visitors in order to recreate themselves and enjoy being in direct contact with the river bed. This strategy creates a synergy between functionality and aesthetics in an effective way to contain the water surplus of the Lambro in rainy seasons and extraordinary events.



IMAGE_231_Territorial Connections Based On The Lambro

MILAN METROPOLITAN CITY SCALE

THE MILANO | MONZA GREEN CORRIDOR

It has been previously discussed how green infrastructures can be a great asset to cities, they can help to bring back the former natural state of an exploited area by creating a series of natural improvements.

Within the Melzi Quarry premises there is one of the most important green infrastructures of the Milan Metropolitan city, the Parco della Media Valle del Lambro. This park works as green corridor that connect several urban areas within the Milan Metropolitan City, such as: Monza, Brugherio, Cologno Monzese, Sesto San Giovanni and Milan, and within each of these mentioned areas there are other green infrastructures serving as natural highways with surrounding areas.

Taking this consideration in mind, that another idea to project the site boundaries appears. With this, an additional idea is born as **“The Milano | Monza Green Corridor”**

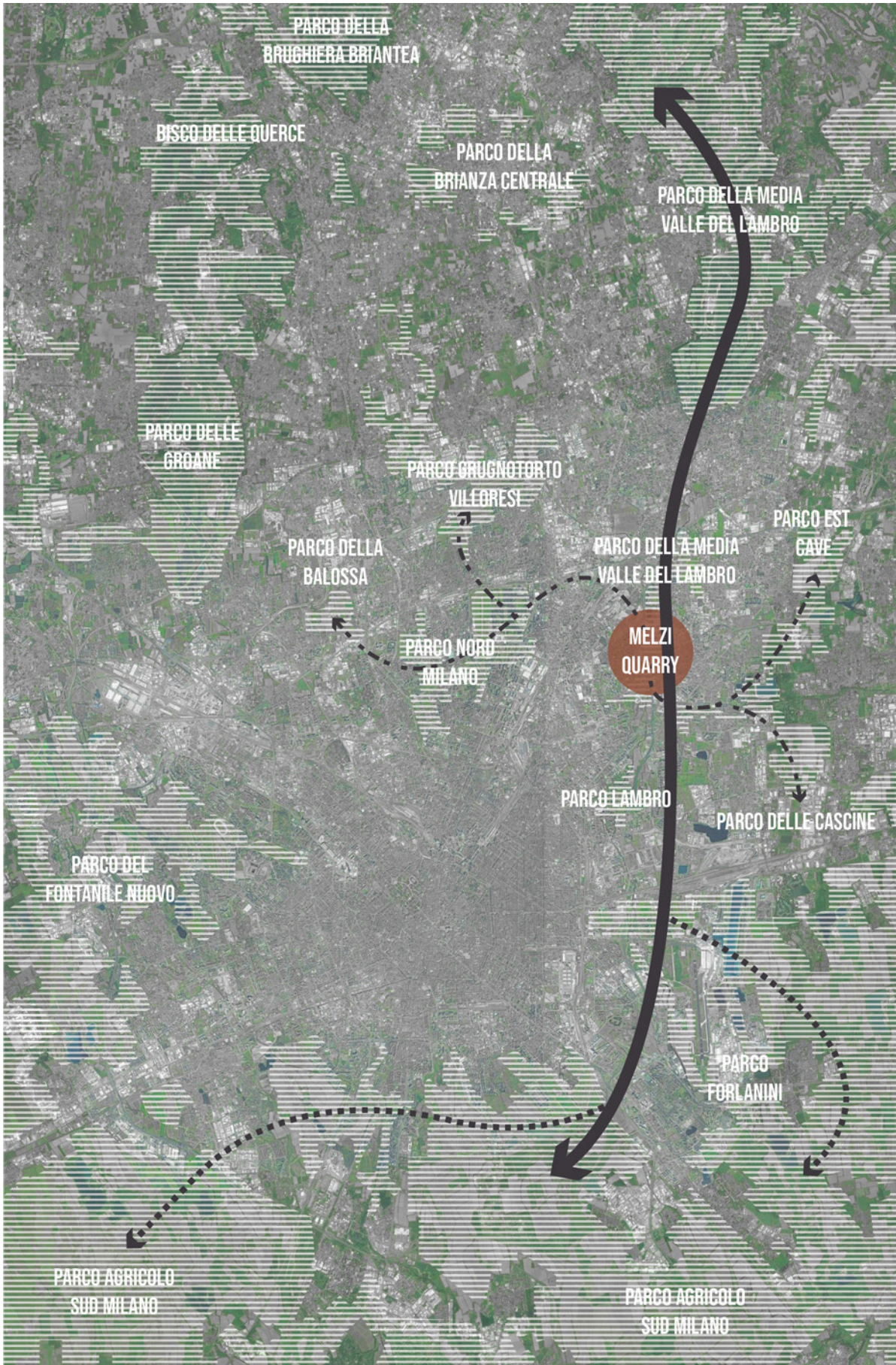
This idea highlights the importance previously discussed of the Metropolis as an entire urban organism composed by several single components but in a general level acting as one. Here the focus is to consider how different urban components within the Milan Metropolitan Area can be joined all together through the areas of the Parco della Media Valle del Lambro, and therefore connected as well with the project site. Due to the location in between Monza and Milan, the Melzi Quarry area will serve as an strategical middle point of the important corridor connecting the urban zones of the Milan Metropolitan Area, most importantly, to achieve the idea of a "Green Highway" between Milan and Monza

To push further with this idea, it is vital to discover the critical points where the project needs to be connected with the surrounding park areas and implement a system of paths, connectors and new land developments that could enhance slow mobility systems. First, A system of different paths is proposed within the quarry site, one that takes into consideration different users and assigns a specific hierarchy over their movements.

A cycle network is proposed, the first one crossing from north to south following the Lambro's shores (as previously planned on Sesto's PGT), taking advantage of the new developments to be built on the river banks, then an extension towards the eastern side of the quarry site, surrounding the new inner water features and the future development of residential zones facing Viale Edison. With this network of cycle paths, the Melzi area will transform into an important slow mobility node that distributes users towards the other areas of Sesto San Giovanni, Monza, Milan and Cologno Monzese.

After the first system is finished, a secondary network of pedestrian paths will be included. The aim of this network is to collect users from Sesto's surrounding residential zones and bring them into the inner zones of the site, these particular paths will surround the inner part of the purifying lakes and the clean water lake zone, until reaching another residential zone and the topography buffer zones, it is in here where they meet the last type of paths.

Finally a third independent path system will be developed, one that allows users to discover and experience the landscape buffer zones, bringing them to the top where viewpoints are located, serving as a passive infrastructure to admire the surrounding industrial heritage.



IMAGE_232_Green Connections In The Milan - Monza Area

CITY SCALE

THE URBAN HINGE

The final scale here proposed is the most basic one but yet not the least important. The local scale is the smallest unit of the possible expansion of the site borders and it is observed through the lens of the area in which the project site is located. In this case, Sesto San Giovanni's northern industrial site.

This part of Sesto is famous for hosting one of the biggest industrial brownfields found in Europe, the most notorious of them is the Falck Area (Concordia and Vittoria areas respectively). Currently, there is a new urban development project for the re – qualification of the entire Falck Area, expecting to transform it into a new modern residential area that is settled within a big green environment surrounded by new services and a big variety of public spaces

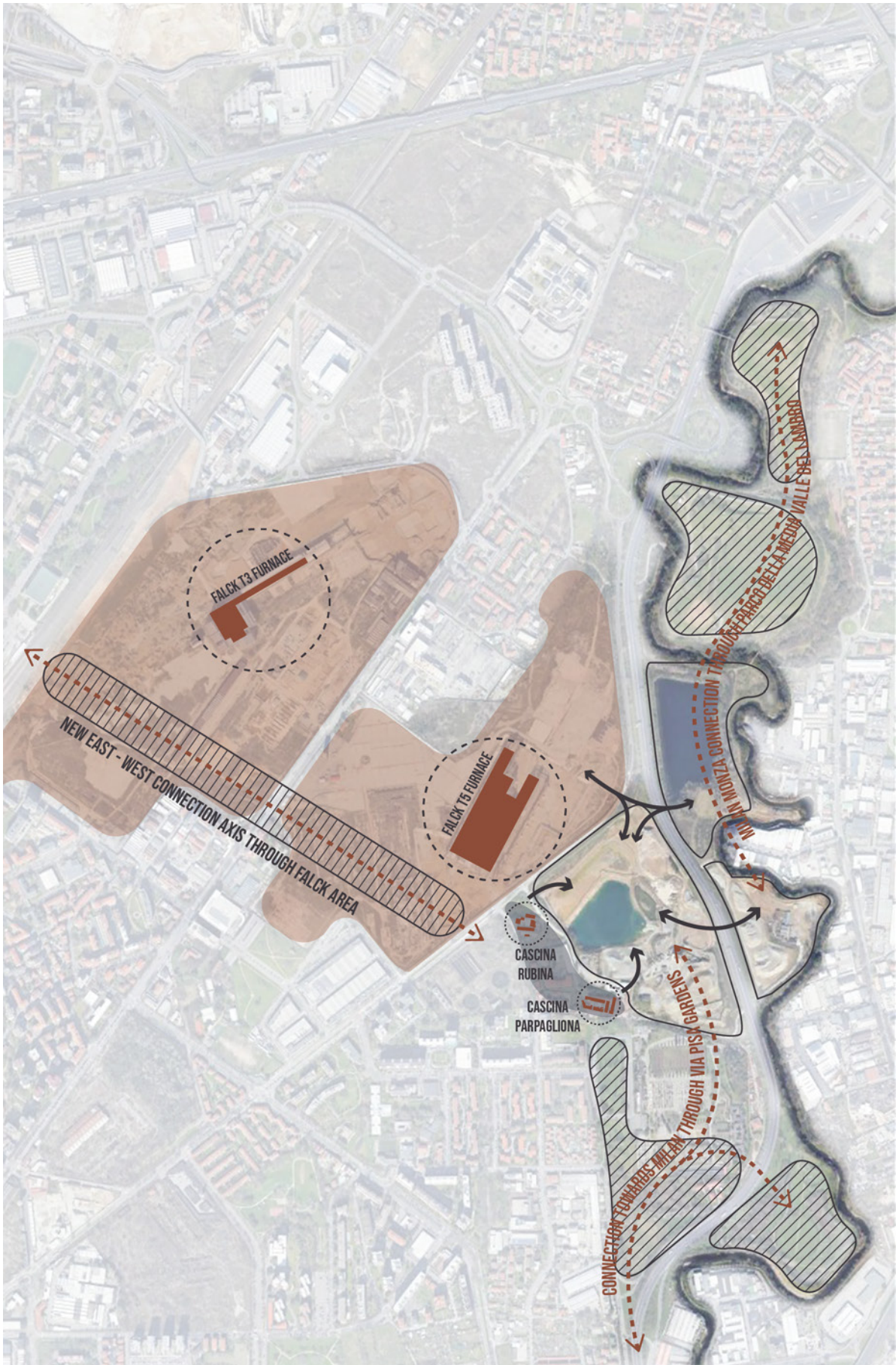
With this future development in mind and the having a particular position of being located between the Falck Area and the Parco della Media Valle del Lambro, it was easy to think how the area could be developed as a "Urban Hinge" between these key important zones.

It is here when the last idea comes into place, denominated **"The Urban Hinge"**

In order to execute this proposal, a simple but effective idea is suggested. To implement an overpass that can connect the Falck Area towards the Parco della Media Valle del Lambro stopping through a specially designed area within the Melzi Quarry site. The main strategy behind this idea is to take into account the previous scales (mentioned above) and expanding their slow mobility networks from the Melzi Quarry site and project them into the Falck Area and the PMVL.

From within the Melzi Quarry site, the main cycle network is brought to the northern part of the site where another buffer topographic infrastructure is developed, here is where in a big flat space the merge happens between the cycle network that comes from the park and the other one incoming from the Falck Area. Once in that point it expands towards Falck's T5 Electric Furnace Structure, creating a loop between both sides; while on the other direction crossing towards the western side of the Melzi Quarry over the highway (Tangenziale Nord) and landing nearby the first water body of the water purification lagoon within the Parco della Media Valle del Lambro. By connecting the Melzi Quarry area into the new Falck tissue a new connection east – west through Sesto San Giovanni is developed, bringing a solution to a long time problem of limited connection of the northern parts of Sesto with the tissue of the other side of the railroad line.

With this proposal, it is intended to transform the Melzi Quarry area in a fundamental piece of development for the new transformations that will be occurring within the northern part of Sesto San Giovanni, becoming a urban hinge that connects the Falck Area, The Parco Media Valle del Lambro and the Cascina dei Gatti neighborhood all together through system of slow mobility networks surrounded by green infrastructures.



IMAGE_233_Diagram Of Possible Connections Within The Local Scale

12

RE THINKING DIFFERENT SCENARIOS

For this section, different scenarios are proposed following the main concept plan and respecting the established rules from the previous sub-chapters. These scenarios represent different alternatives that could be available to decision makers and take advantage of the special features that the surroundings of the Melzi Quarry offer.

In all scenarios features, the main concept plan of the development of the purification lake systems, the Lambro floodplains and the different systems of paths for slow mobility are always present, with this is a common point in which the project for the former quarry should stand firmly regarding of any variation done to the original planning.

The scenarios presented are the following:

Cascina dei Gatti Agro Park, in which the entire zone would be brought

back to its former agri – cultural roots and deploy a series of small artisan areas for food production.

Melzi Quarry Resilience Neighborhood, in which the entire zone would be developed in a series of different layers following the path of resilience towards improving the quality of an entire system. This is the scenario for which the project will continue to be developed further for this thesis project

Melzi Quarry Urban Park, in which the entire zone becomes the natural extension of the Parco Media Valle del Lambro, recreating artificial topography features in order to follow the languages done already in the northern areas of the Park. This scenario is the one closer to the proposal from Sesto San Giovanni's PGT.



IMAGE_234_View Of The Modern Architecture Of Sesto San Giovanni

12.1

SCENARIO # 1 MELZI QUARRY AS AN AGRO PARK

This scenario is developed with the objective to bring back the Melzi Quarry to a former situation before industrial times, transforming the site into a new Agricultural Park. The stakeholders involved into the transformation of this area belong totally to the public sector, in which its participation stake around 100%, the biggest stakeholder to take action within this scenario is the Municipality of Sesto San Giovanni, which should acquire the totality of land from the current private owner. After the land acquisition, the municipality should look for strategic public partnerships in which can form a legal framework to allow long rent concessions of small pieces of land in order to pursue new artisan agricultural farms.

As mentioned earlier, the totality of the area (100%) would be owned by the Municipality of Sesto and managed by a private or public entity

chosen by them. Within this, the first part of development would be the purification lakes and the floodplains near the Lambro shores, the surface of these infrastructures would take around 30% of the entire project surface. Later on, the rest of the areas left from the first step are dedicated towards the parceling of agricultural areas with the development of small water channels that are flow between the purification lakes and the Lambro River, these areas should take around 60% of the project surface, with the possibility of hosting to 7 to 10 farms. Lastly, within the entire project site a system of paths is developed in order to connect the different farms areas with cycle and pedestrian paths and with the surrounding residential areas, these path systems occupy around 10% of the total land area.

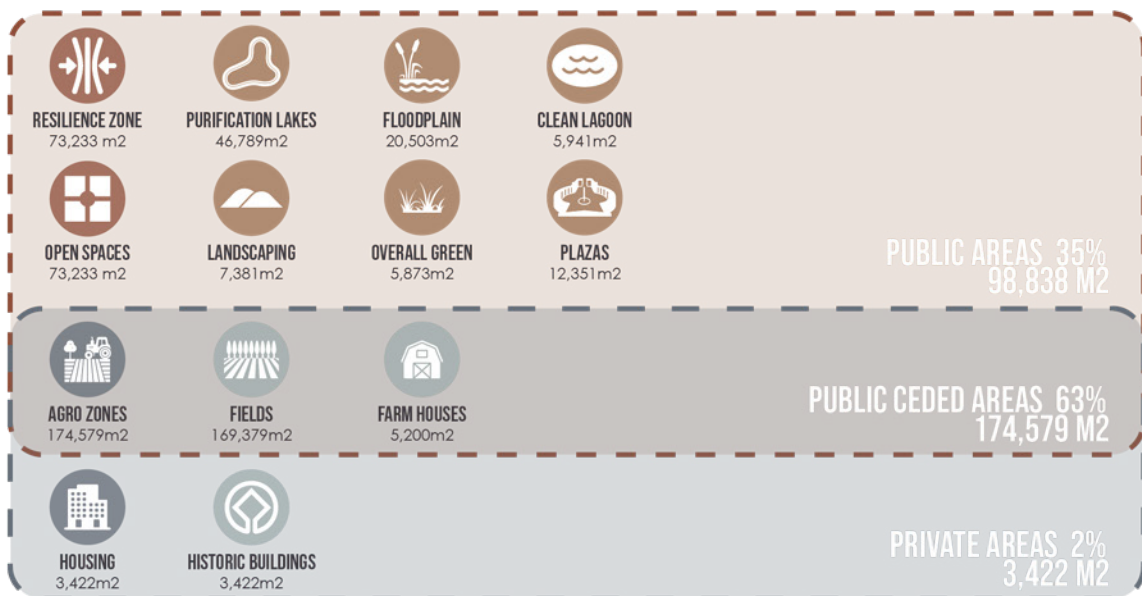
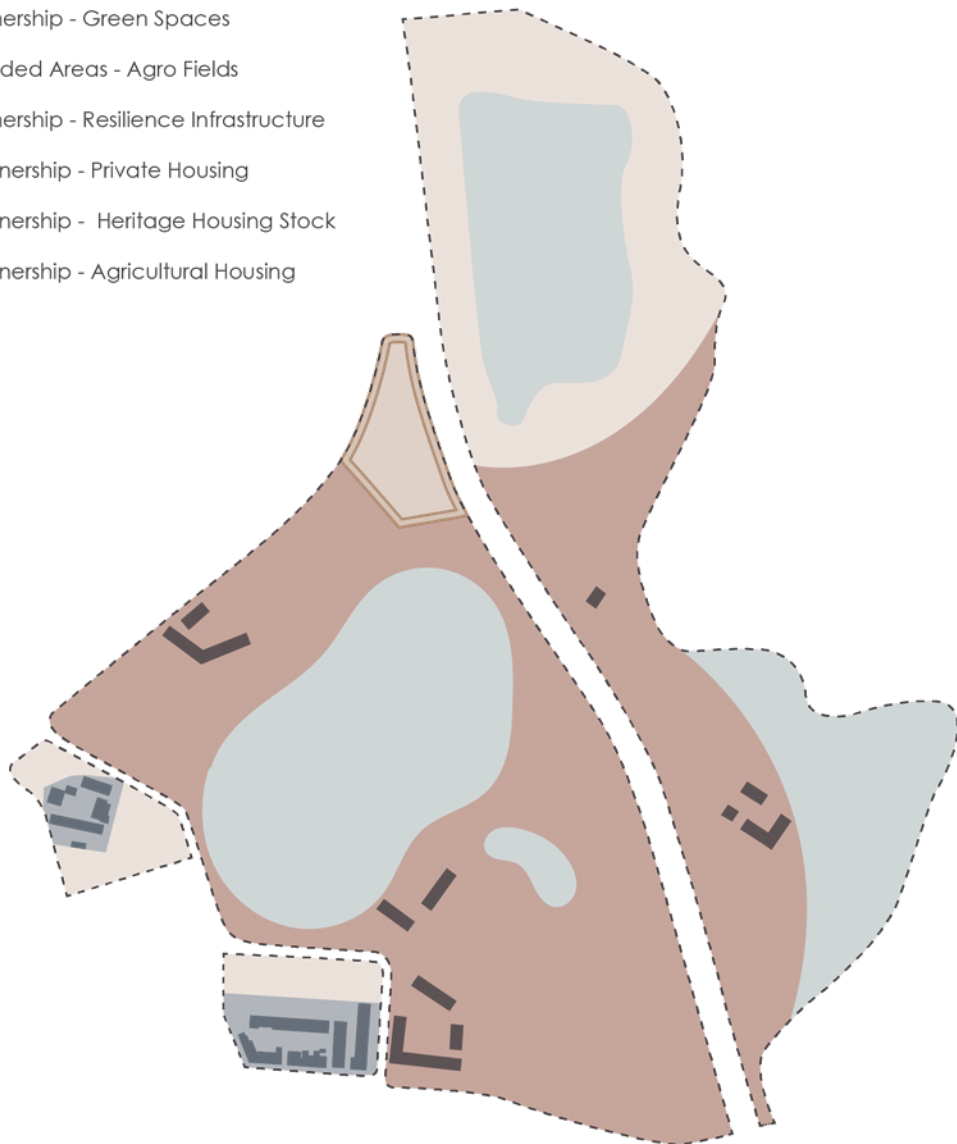


IMAGE_236_Project Of An Agro Park In Copenhagen



IMAGE_235_Diagram And Stakeholders On Scenario 1

- Public Ownership - Green Spaces
- Public Ceded Areas - Agro Fields
- Public Ownership - Resilience Infrastructure
- Private Ownership - Private Housing
- Private Ownership - Heritage Housing Stock
- Private Ownership - Agricultural Housing



IMAGE_237_Amount Of Areas And Stakeholders In Scenario 1



IMAGE_238_Bubble Diagram Of The Areas In Scenario 1

12.2

SCENARIO # 2 MELZI QUARRY AS AN URBAN PARK

This scenario is proposed with the objective to incorporate the Melzi Quarry to the PMVL, following the PGT's vision.

The stakeholders involved into the transformation belong totally to the public sector, with a share of a 100%, the biggest stakeholder to take action within this scenario is the Municipality of Sesto San Giovanni, which should acquire the totality of land from the current private owner. After the land acquisition, the municipality should transfer its management to the board of the Parco Media Valle del Lambro which includes several other Municipalities of the area, this is done as stipulated in the legal framework of the conformation of the Parco Media Valle del Lambro.

As mentioned earlier, the totality of the area (100%) would be owned by the Municipality of Sesto and managed by the direction board of the Parco

Media Valle del Lambro. Within this, the first part of the project is the same as in the other scenarios, which is the construction of the purification lakes and the floodplains near the Lambro shores, occupying a surface around the 30% of the entire project. Then, the rest of the areas are transformed into a big metropolitan park, the design of new hills bordering the highway (like the ones mentioned in the Scenario_1) looking to bring back the former extractive memory of the aggregate hills once found in the site, this new landscape proposal would take around 60% of the land surface, with the possibility of hosting several outdoor activities. Lastly, within the entire project site a system of paths is developed in order to connect the different park areas with cycle and pedestrian paths and with the surrounding all the areas, these path systems occupy around 10% of the total land.

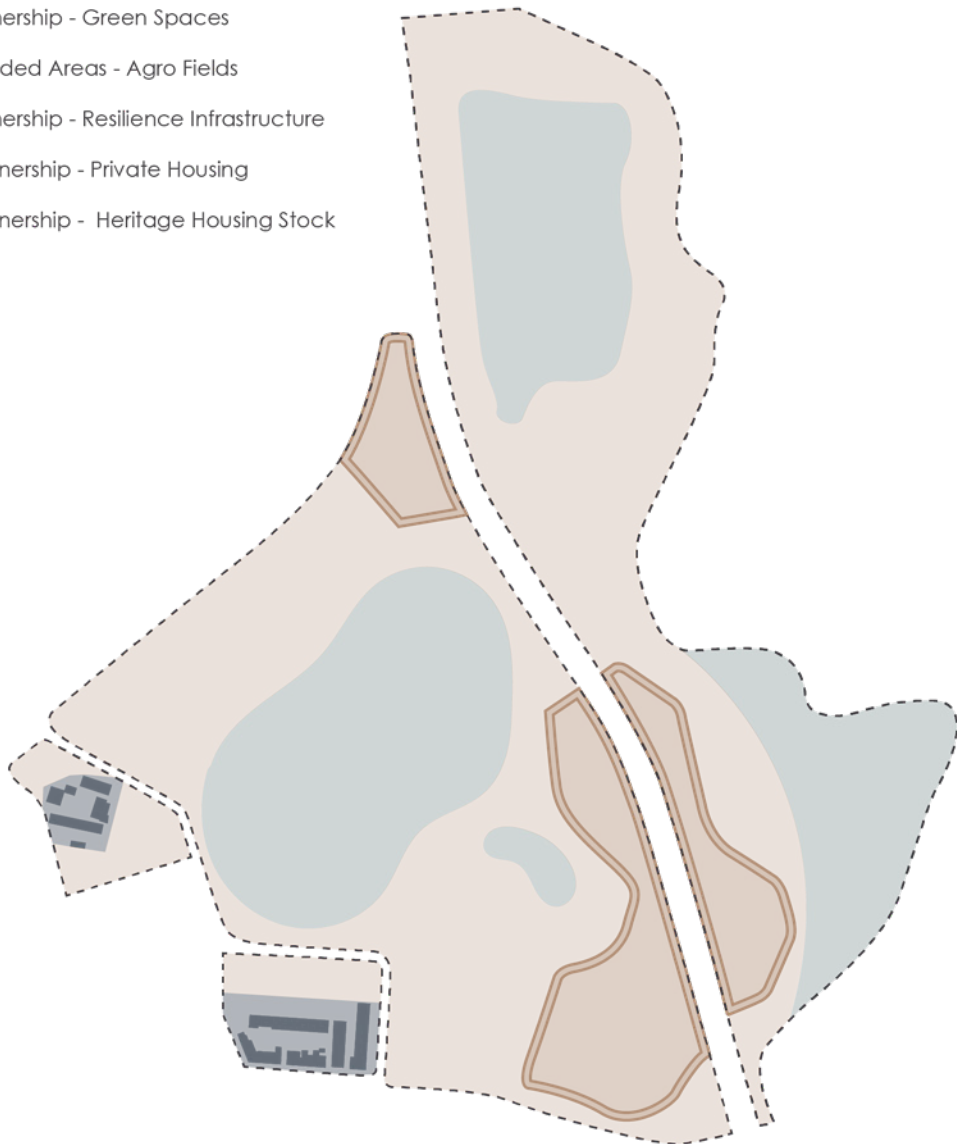


IMAGE_239_Milan's Citylife Urban Park

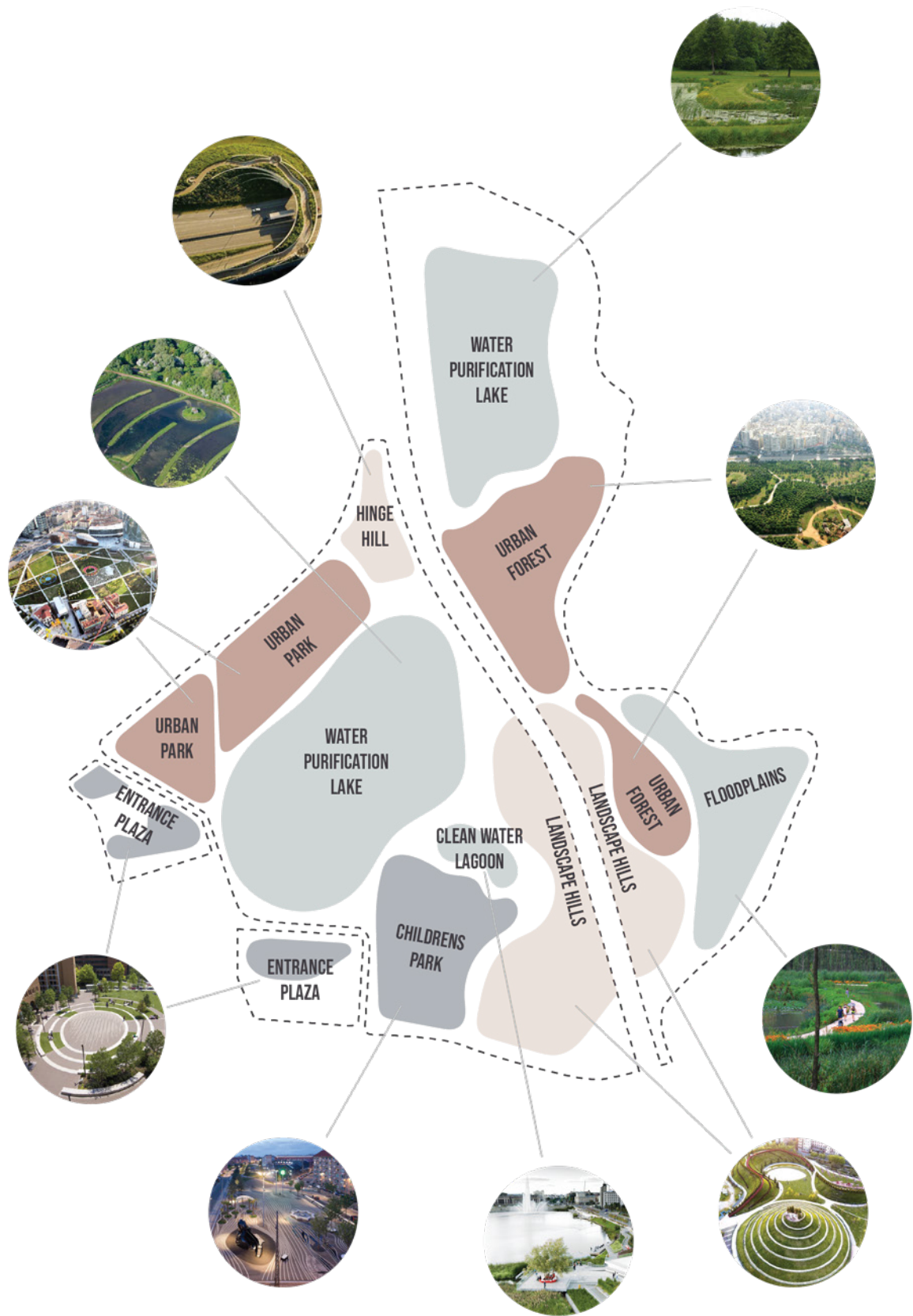


IMAGE_240_Diagram And Stakeholders On Scenario 2

- Public Ownership - Green Spaces
- Public Ceded Areas - Agro Fields
- Public Ownership - Resilience Infrastructure
- Private Ownership - Private Housing
- Private Ownership - Heritage Housing Stock



IMAGE_241 Amount Of Areas And Stakeholders In Scenario 2



IMAGE_242_Bubble Diagram Of The Areas In Scenario 2

12.3

SCENARIO # 3 MELZI QUARRY AS A RESILIENCE QUARTER

This scenario is planned with the objective to re - qualify the Melzi Quarry into a new modern resilience Neighborhood. **The scenario here presented is the one chosen for further developments on the next chapter due to its complexity and the participation of different actors within one urban project.**

In order to develop a complex scenario like this, the involvement of different stakeholders is needed. The strategy selected includes a business structure formed by a public – private partnership, which would include the Municipality of Sesto San Giovanni and the Melzi Family, other important stakeholders to be involved in the project are the Private Real Estate developers, the Community of Sesto, The Directive board of the PMVL and the Real Estate developer behind the Falck Area transformation, Milano Sesto.

To start the re – qualification, the Municipality of Sesto would acquire from the Melzi Family around the 30% of the entire site, in order to start the construction of the purification lakes and the floodplains areas. Once this is settled, the rest of the remaining areas can be developed following private and public investments, for the private part, two residential sectors are going to be constructed which will represent roughly the 30% of the entire surface of the project.

Then, other 20% of the land area would be acquired or in concession from the Melzi Family to develop landscaping features that will border the highway to act as a buffer zone towards the residential zones. Lastly, the rest of the area will be developed as a series of circuits of paths that will include slow mobility circulation, allowing a car free zone within the area and easier connection to other parts of the site.



IMAGE_243_Resilience Neighborhood Project In Rotterdam



IMAGE_244_Interior View Of Resilience Neighborhood Project In Rotterdam

13

RE IMAGINING THE MELZI QUARRY

In this sub - chapter the project is explained into the final stage, revealing all the details of its development.

First, the development of the vocation of the project, in here it will be shown what type of areas can be transformed into something that its benefited by its natural location, this will set the precedent of the most suitable zones for a particular type of development. Then, by selecting the types of areas to be developed, the planners can decide to set the functions of each single area or any of its different possibilities, as well the inclusion of the stakeholders that could be included in the decision making of the development of the zones.

After this, the planners decide to set up a set of rules, divided in different areas: Mobility & Accessibility, Landscape and Natural Systems and Building Environment, for each of these categories it is decided to set

up around 6 - 7 rules.

Finally, with the generation of these rules it is essential to proceed and think of diverse type of developments possible in the site, here comes the time when scenarios are developed.

For the re qualification of the Melzi Quarry, 3 scenarios are developed, being the first the Melzi Quarry as a Agro Park, the second being the Melzi Quarry as an urban park (following the statements of the current PGT of Sesto San Giovanni) and finally, the scenario developed at the end which shows the transformation of the site into a new resilience neighborhood. This scenario is taken in order to show its depth due to the amount of different layers possible that include private and public investors and shows the versatility of the project site.



IMAGE_245 Open Space In Sesto's Univillage

13.1 VOCATIONS FOR THE NEW DEVELOPMENT

Since resilience is one of the main principles driving this re qualification project, it will be represented by the strongest features inside the project.

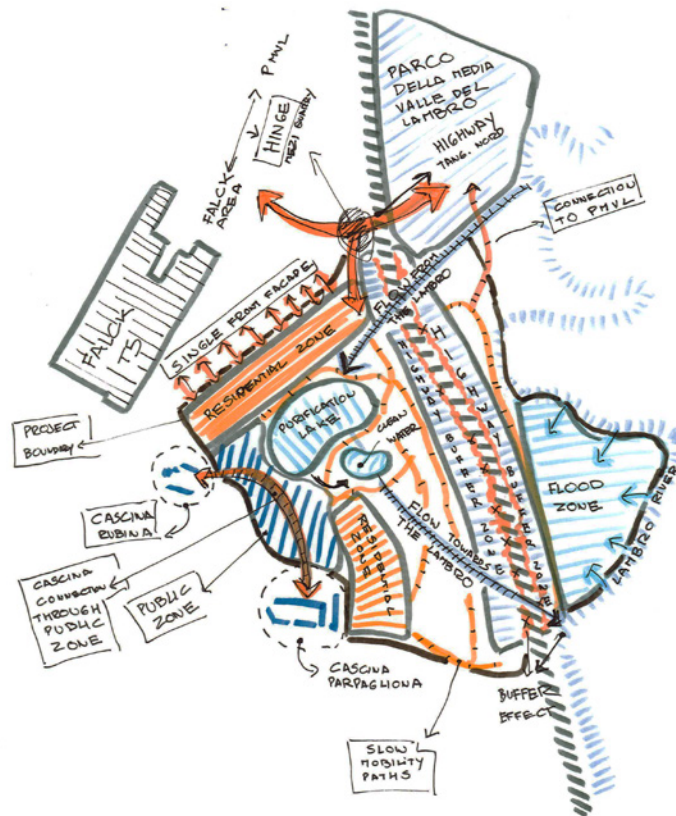
Further on, new resilient areas will provide a dynamic environment and push for the improvement of the surrounding natural environment. The masterplan should propose as a mandatory the inclusion of resilient zones in order to improve and mitigate the environmental factors of the area. A strong design suggestion is given, one that uses water as the "generator" element in which all the other potential development zones will orbit around.

The use of water as the generator of development is based on the decision to include the Lambro River and its natural environment within the Melzi Quarry site, the use of water will be complemented by other green areas that will balance an aesthetic

between natural and "artificial" (This is done following the former industrial traces of the site)

The task of developing a project with these qualities could take a long time, especially in a country like Italy, where a series of regulations and norms should be approved in order to even begin. To tackle this obstacle, the re - qualification of the Melzi Quarry could be divided in several phases according to the development risk of each individual zone. Nevertheless, it is important to recall that the first step of the project area will be required in accordance to start developing any other phases. This structure will secure the main concept of the re - qualification goal, which is to re qualify a former damaged landscape and bring it forward towards a more sustainable and friendly environment.

With this in mind, there is a strong possibility that the course of the



IMAGE_246_Concept Plan

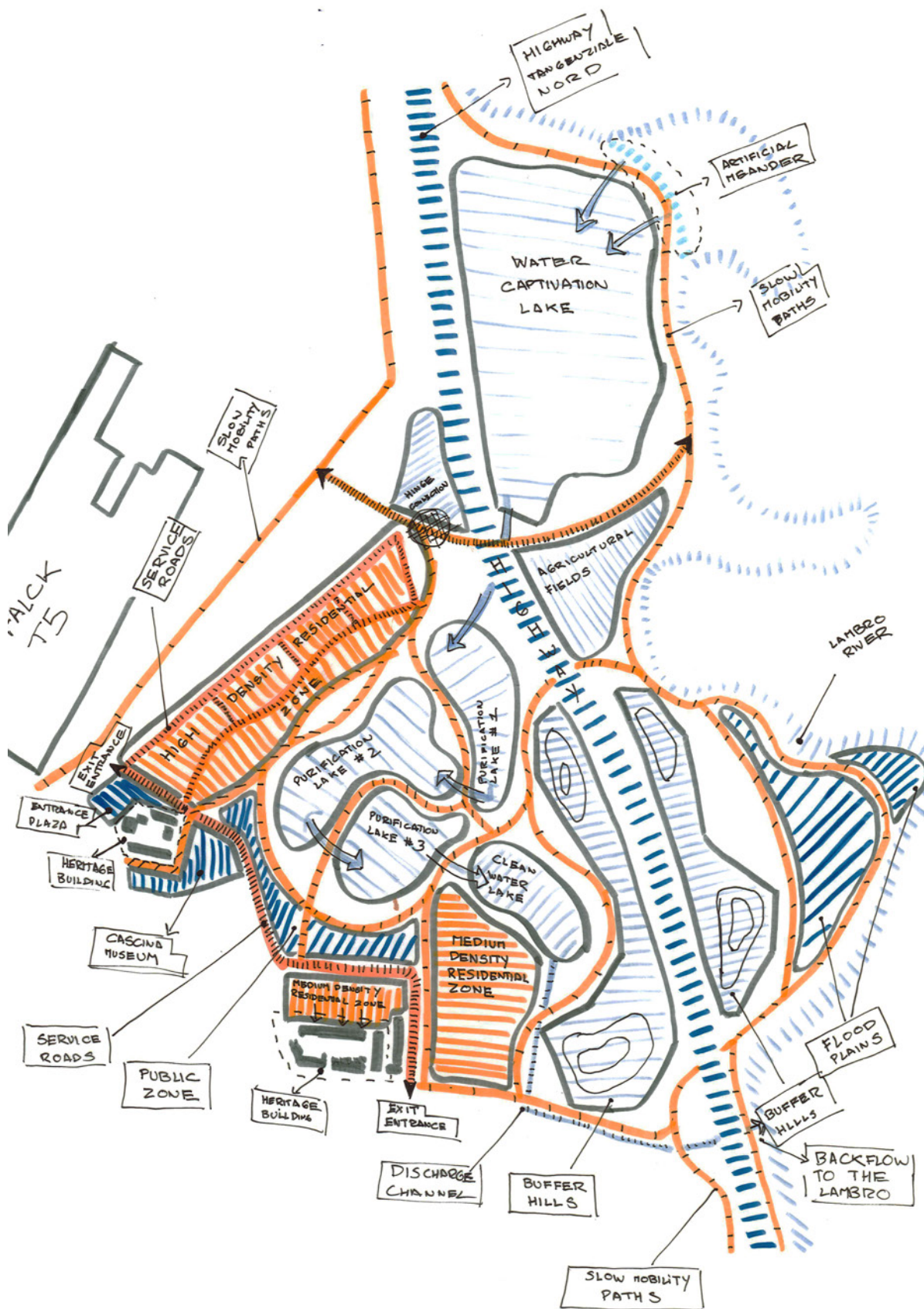
project could be changed and be developed into something else, this is why during the urban planning an approach of different scenarios have been taken into consideration, as the current plan for this area it is very unclear and it remains in hands of the different actors willing to participate.

Following this suggestion, it has been developed a series of suggested zones that could be developed within the site and that could increase greatly its urban quality (**Image 245**)

- **Purification Lake:** This shall be the main project feature, in which the contaminated waters of the Lambro will flow inside a set of 3 smaller lakes located in different heights with the objective to purify its waters. This is done through a series of natural processes that contain water based plants and filtering aggregates. After being cleaned, purified water will go towards a separated lake which will

contain it in order to spread it for secondary uses within the project, such as irrigation and gray water systems. All this process concludes with the clean water surplus flowing back into the Lambro, helping to improve its water pollution issue.

- **Lambro Floodplains:** Resilience zone to be located next to the critical flooding point of the Lambro river, an area that has being indicated by PMVL hydrographical studies, its objective of is to receive the water surplus from the Lambro shores, allowing to flood into smaller ponds located on different height levels, by doing this it is intended to create a new green environment with the existent flora and fauna of the Lambro environment. Finally, this environment is equipped with a series of pedestrian pathways to allow visitors to have a direct connection with the Lambro banks and its natural environment.



IMAGE_247_Detailing The Concept Plan With New Zones

- **Buffer Hills:** A place reminiscent of the former aggregate hills located within the Melzi Quarry, taking shape of the former extractive heritage and transforming them into a new dynamic landscape. Used as a buffer zone between the project developments and the nearby highway, the tallest point of this area is intended to host a viewpoint to appreciate Sesto's skyline and admire the industrial heritage left on the Falck Area, a passive but fun way to preserve the industrial heritage of the area.

- **High Density Residential Zone:** The first residential zone of the project, facing the Falck Area in which creates a built up border from their development, enclosing the newly natural area within the center of the project. The layout of the towers create interiors courtyards that hosts public equipments and views towards the lake and the buffer hills. Their height is equivalent to the one of the industrial structures found in the Falck Area and then descend into smaller terraces, creating terraces that will host green terraces and playing with a gradient of height towards the insight of the natural environment.

- **Medium Density Residential Zone:** The other residential zone of the project, this one is located between the two Cascinas found in the area, therefore their height and architectural language comes from their physical heritage. Their layout is designed in order to create interconnected courtyards following the typology of the Cascina de' Gatti formation, within these spaces would be possible to host piazzas allowing visitors to feel the sensation of an Italian piazza, on top of allowing aperture towards the natural features that surround them. Their entrance is enhanced by big gates formation, reminiscent of big Cascinas compounds.

- **Cascinas Center:** Cultural building within the site, located next to Cascina Rubina and developed with the same architectural language of it, hosting a collection of documentation, pictures and public spaces to honor the rural architecture of the area, in a way that visitors can understand the Cascinas heritage and appreciate them.

- **Heritage Zones:** The heritage of the former Cascinas will be conserved through exterior maintenance and structural restructuring of damages. On the Cascina Rubina side a museum is suggested, forming an open space opening towards the former heritage. On the Parpagliona side, a complex of medium density housing is suggested to be built in front of them, creating a big courtyard between the new and the old, enhancing the perception of a former rural emplacement.

- **Welcome Center:** A multipurpose building located in the eastern part of the project, placing within the agricultural fields developed along the Lambro shores, being closely the junction of the Falck overpass and the bike path of Parco Media Valle del Lambro, this building will host an important space for the visitors that come from the northern areas of the park, bringing them a rest space and a place to admire the agricultural fields.

- **Agricultural Fields:** Envisioned as the area that brings back the former memory of an agricultural past, a small fringe of land enclosed by the bike paths surrounding the Lambro. The agricultural fields are developed through a grid of small channels that flow from the first purification lake into the Lambro River, creating a small network of passages between soil and water, here the visitors can find themselves within new artisan agricultural lands that provide a small but important agricultural industrial production.

13.2 FUNCTIONS AND POSSIBLE PARTNERS

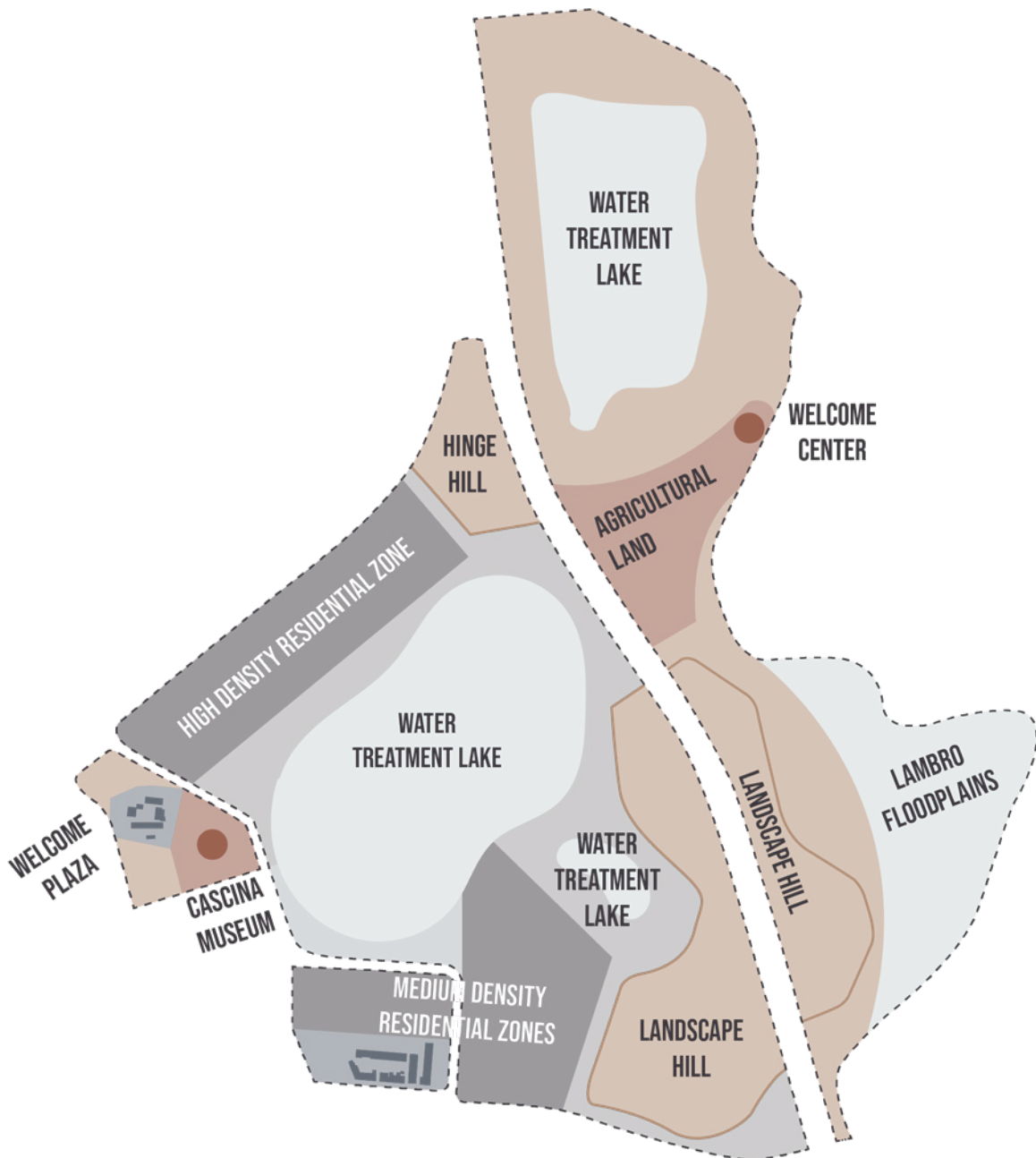
In order to establish a proper relationship between the possible functions to be provided and the possible ownerships, we must first look at the current land ownership situation where Melzi Quarry is placed and its surroundings. Currently, the Melzi Quarry land is occupied by two different private owners; The first, the Melzi & Figli company who owns the entire west side of the former quarry development and a big strip of land on the east side which runs from the boundaries of the PMVL and borders the Lambro's shores until arriving down at the cemetery's height.

Second, there is a small fraction of land on the eastern side which borders the highway and occupies a big chunk of the cement production area, this part is owned by the "Serravalle Company" and represents approximately 20% of the entire surface of the former quarry area.

Another reality comes from the surrounding ownerships, the first one is found on the northern side of the site in which we find the Parco Media Valle del Lambro, this area is public property owned by the municipality of Cologno Monzese and managed by an Assembly conformed by the Mayors of the Municipalities that conforms the park (Brugherio, Cologno Monzese, Milano, Monza and Sesto San Giovanni). Then we have the Falck Area on the western part of the site, which has been sold to a private real estate operator called "Milano Sesto" that at the same time is backed up by two big international investment companies such as Hines and Prelios (Milano-Sesto).

Finally, we find on the southern area a mix of different ownerships, Private stakeholders which represent the housing stock found on the immediate and public

- Public Ownership - Green Spaces
- Public Ownership - Public Functions
- Public Ownership - Resilience Infrastructure
- Private Ownership - Developed by Investors
- Private Ownership - Public Green Spaces
- Private Ownership - Heritage Stock



IMAGE_248_Zones Vocations And Possible Ownerships

ownership from the Comune of Sesto San Giovanni which represent the ownership of the small public areas bordering the site and the new cemetery of the city of Sesto.

With different land owners, a clear idea to whom could be the mayor stakeholders in the re - qualification project and which ones can exert the bigger influence on the decision making for the area.

Another layer of complexity is added to this project, since in the Sesto San Giovanni's current PGT, the zone of the Melzi Quarry is currently marked as a future "ceded" zone for the expansion of the Parco Media Valle del Lambro. However, this action has remained unchanged for more than 15 years and several issues have been presented by inhabitants that live nearby the quarry, which claims that the quarry needs to go and ask for a more decisive action rather than

spending another 15 years waiting for inaction.

This layering of different land ownerships, compatibility of land use between the Municipality and the inhabitants and the slow pace of action to transform this area, makes an ideal point to stand into a project that could be developed as a Public – Private partnership; In which, the Municipality of Sesto buys a partial stock of land where the green areas should be developed and the rest of the land remains owned by private investors. Later, this private ownership could develop an inversion proposal to build some built up stock that is much needed in Sesto by following some guidelines provided by the city of Sesto San Giovanni.



IMAGE_249_Possible Stakeholders And Functions Within The Project

Following this project scheme would bring an important balance of action to finally re – qualify this area, in one side, we have the Municipality of Sesto which would need to buy a lot less of area to develop the promised expansion of the PMVL, then we have the Melzi & Figli, Serravalle Company which can look for investors and develop some built stock in the area, a much needed one that is favored by the real estate expeculation from the new Falck Area development.

CULTURE

- Museum
- Cultural Center
- Gallery
- Exhibition Center
- Auditorium

LEISURE

- Recreational Activities
- Tennis
- Football
- Walking
- Running
- Pier Deck
- Observation Deck
- Fishing
- Biking

OUTDOOR



















- Children Playground
- Passive Recreation
- Outdoor Gym
- Picnic Zones
- Gardening
- Bird Watching
- Sand Pit

POSSIBLE FUNCTIONS

13.3 RULES FOR MOBILITY AND

- **Rule_1:** Connections between the site and the surrounding blocks needs to be provided (**Image 249**).
- **Rule_2:** Links within the surrounding area should be pedestrian and for cyclists. A no traffic neighborhood concept should be applied. (**Image 249**).
- **Rule_3:** A pedestrian and cyclist overpass between Falck Area and Parco Media Valle del Lambro should be provided. This link must include an intermediate stop within the project site (**Image 249**).
- **Rule_4:** Due to the limited traffic concept, access to cars should be left at the boundaries of the site (**Image 249**).

RULES LEGEND

	Connection Axis
	Site Access Axis
	External Connections
	Service Road Axis
	Vehicular Boundary
	Vehicular Circulation Axis
	Main Roads Axis
	P.zzle Nagasaki Extension
	Underground Entrance
	Via Catania Extension
	Vehicular Access to Site
	Service Road
	Residential Buildings
	Parking Fringe
	Opening Street
	Pedestrian Overpass
	Connection Hinge
	Underground | Public Parking

IMAGE_250_Accessibility Rules Legend

- **Rule_5:** A service traffic lane bordering the Cascina Rubina and Parpagliona premises should be created, connecting Viale Edison towards Via Parpagliona (**Image 250**).

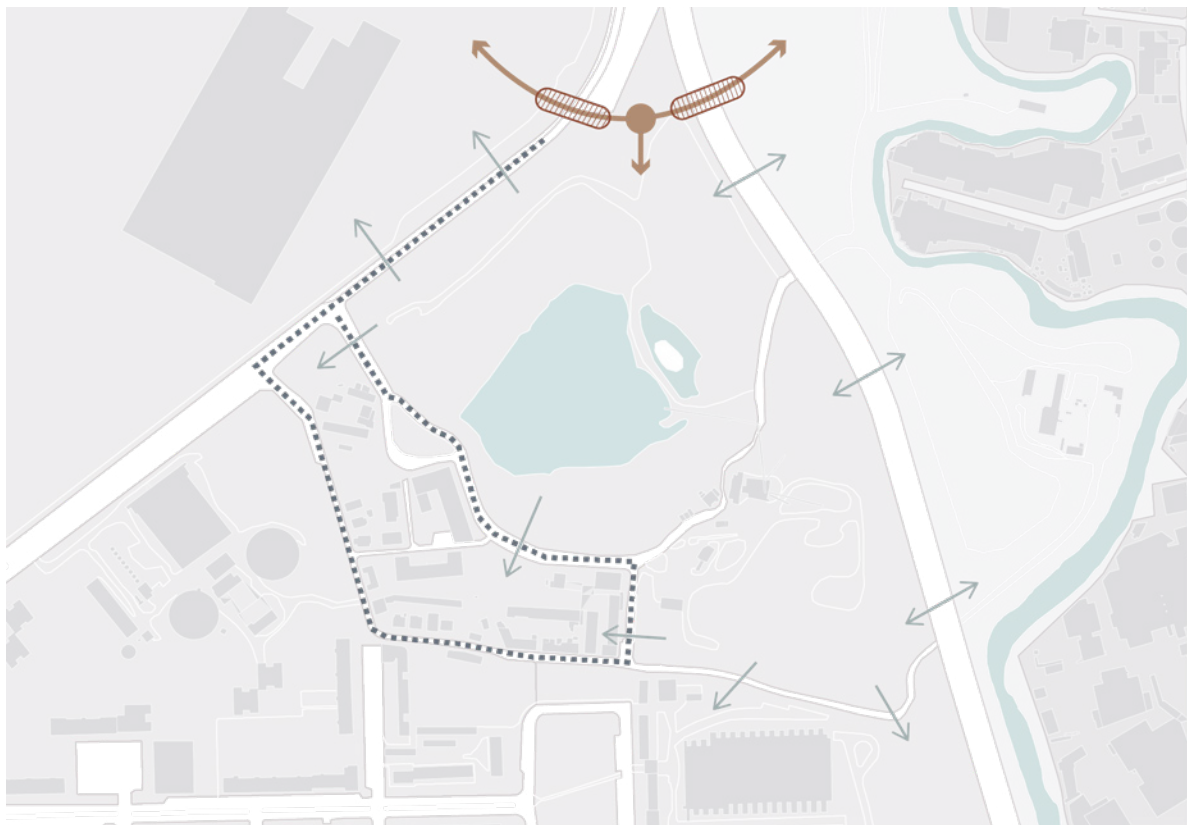
- **Rule_6:** In order to improve mobility surrounding the site, a road expansion should be created. This one includes the extension of Via Catania into Via Parpagliona and then merging into Viale Edison; As well extending the service road towards Piazzale Nagasaki (**Image 250**).

- **Rule_7:** Public parking spaces will be located on the northern edge of the site, on Viale Edison (**Image 251**).

- **Rule_8:** All private housing developments will have their own underground parking structures with their correspondent entry/ exit towards the Service Lane (**Image 251**)

- **Rule_9:** In order to provide easy accessibility to residents, Location of the housing developments should be located next to the main roads surrounding the site (**Image 251**).

- **Rule_10:** Within the interior areas of the site, a separate system of paths should be developed, each path should be dedicated to a different leisure activity (Cycling, Walking, Trekking) and have a different importance category.



IMAGE_251_Accessibility Rules Diagram

- **Rule_11:** Cycle paths should be classified as Category 1 Paths, having a width of 4m, they should be built of material x and have a unique color scheme, Cycle paths should be completely integrated with the bike lanes projected within the Parco Media Valle del Lambro

- **Rule_12:** Pedestrian paths should be classified as Category 2 Paths, having a 2.5m wide, they should be built of a material x and have a unique color scheme, when meeting cycle paths they should not get over the cycle paths.

- **Rule_13:** Trekking paths should be classified as Category 3 Paths, having a width of 1.5m, they should be built of a natural material and

have the texture and color of their material, when meeting pedestrian or cycle paths, they should not get over neither of them.

- **Rule_14:** In order to have a better integration between paths, a merging solution should be provided. When 2 or more paths converge, they should create a circular shape with a radius of 10 meters (2 different Paths merging) or 15 meters (3 different Paths merging). Each merging form should give preference the top priority path to overcome the shape, while the other will converge within the circular shape for its circulation. Activities within the circular shapes should represent the areas in which they are located.



IMAGE_252_Accessibility Rules Diagram



IMAGE_253_Accessibility Rules Diagram

13.4 RULES FOR LANDSCAPE AND NATURAL SYSTEMS

- **Rule_15:** *In order to create a resilient environment, a floodplain bordering the Lambro's shores should be developed. This area should be located on the eastern side of the site, in the banks of the Lambro's meanders and it should have the capacity to hold the rare water overflow on rainy and flood seasons (Image 253).*

- **Rule_16:** *To improve the environmental quality of the Lambro's ecosystem, a system of purification lakes should be developed. This area should be located on the core of the western side of the site, taking advantage of the former formations left by extractive activities (Image 253).*

- **Rule_17_:** *In order to preserve the former extractive heritage, the aggregation hills created by the extractive activity should be transformed into passive landscape hills, allowing users to walk within them (Image 254).*

- **Rule_18:** *In order to preserve the former industrial heritage, the former machines used to modify the landscape should be transformed into totems and allocating them within the greenery, allowing users to walk around them whilst enjoying the open green areas (Image 254).*

- **Rule_19:** *To bring back former heritages, a piece of land no bigger than the 10% of the entire surface should be transformed into urban*

CANOPY



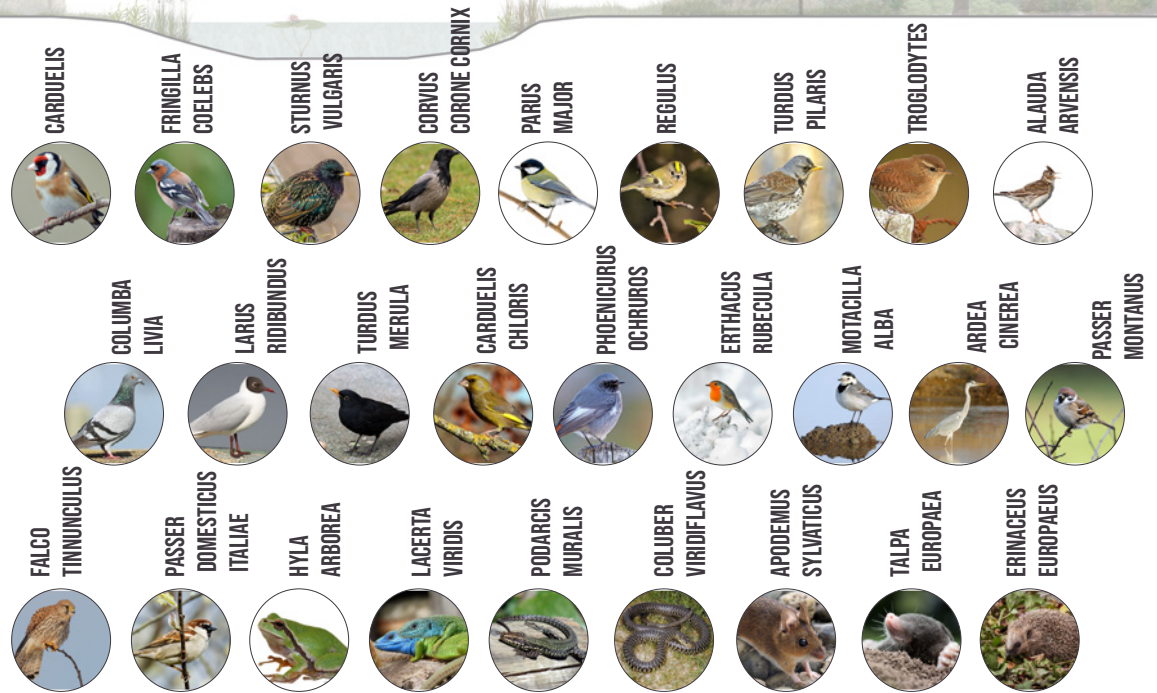
UNDERSTORY



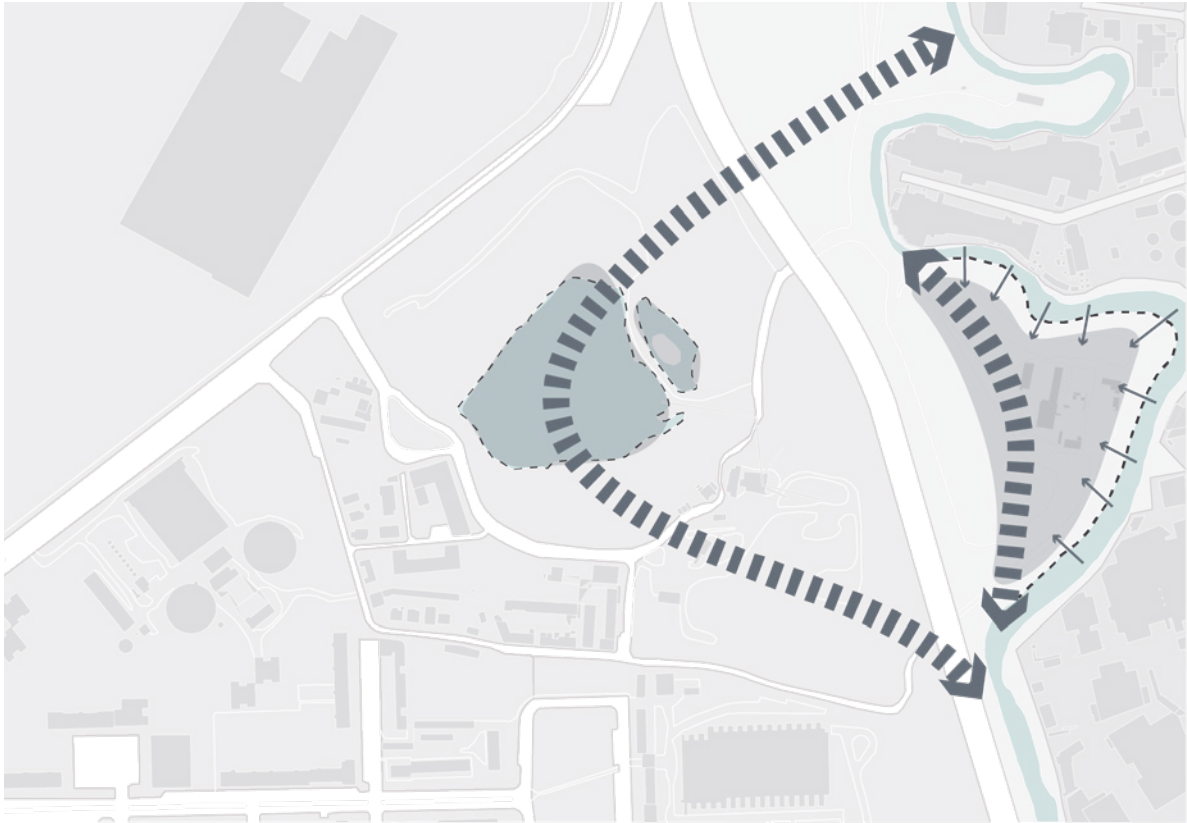
GROUND COVER



FAUNA



IMAGE_254_Flora And Fauna Rules



IMAGE_255_Landscape And Natural Systems Rules Diagram



IMAGE_256_Landscape And Natural Systems Rules Diagram

crops, these crops have the function of allowing small artisan agriculture users to claim their use.

- **Rule_20:** For sustainability actions, in the roofs of the medium rise residential areas, each building should contain an amount no less than the 10% covered in solar panels.

- **Rule_21:** For sustainability improvements, the terraces of the high rise residential areas should be converted to green roofs.

- **Rule_22:** Flora and Fauna to be included in the entire site belong to native species found in the Lambro Environment (**Image 252**).

- **Rule_23:** In the greenery areas, trees should be implemented with the aim to provide shadow and framing particular spaces.

- **Rule_24:** In order to create a green continuity, the green zones should have a same or similar tree density and characteristics to the one found on the Parco Media Valle del Lambro.

RULES LEGEND

- ■ ■ ■ Lambro Flow into the Site
- Lambro Flooding Areas
- Shifting of Industrial Items
- - - - - Water Bodies Boundaries
- Industrial Heritage Area
- New Water Bodies Location
- New Landscape Hills
- Landscape View Point
- Industrial Totems

IMAGE_257_Landscape Rules Legend

13.5 RULES FOR BUILDING ENVIRONMENT

- **Rule_25:** According to the new vocations of the site, areas need to be divided into separated environments and being assigned specific functions **(Image 257)**.
- **Rule_26_:** The new medium residential area should follow the existing architecture language of the Cascinas located around Sesto San Giovanni **(Image 258)**.
- **Rule_27:** The new high rise residential area should follow a contemporary architectural language, taking reference the new architectural elements being developed in the Falck masterplan **(Image 259)**.
- **Rule_28:** The new high rise residential area should enclose itself and create interior courtyards with can host residential activities **(Image 261)**.
- **Rule_29:** The zones that hosts the heritage Cascinas (Parpagliona & Rubina) should develop buildings that enhance its architectonical features through the creation of public spaces **(Image 261)**.
- **Rule_30:** Along the planned pedestrian links, it is required to realize different activities which would increase the dynamics of the zone.

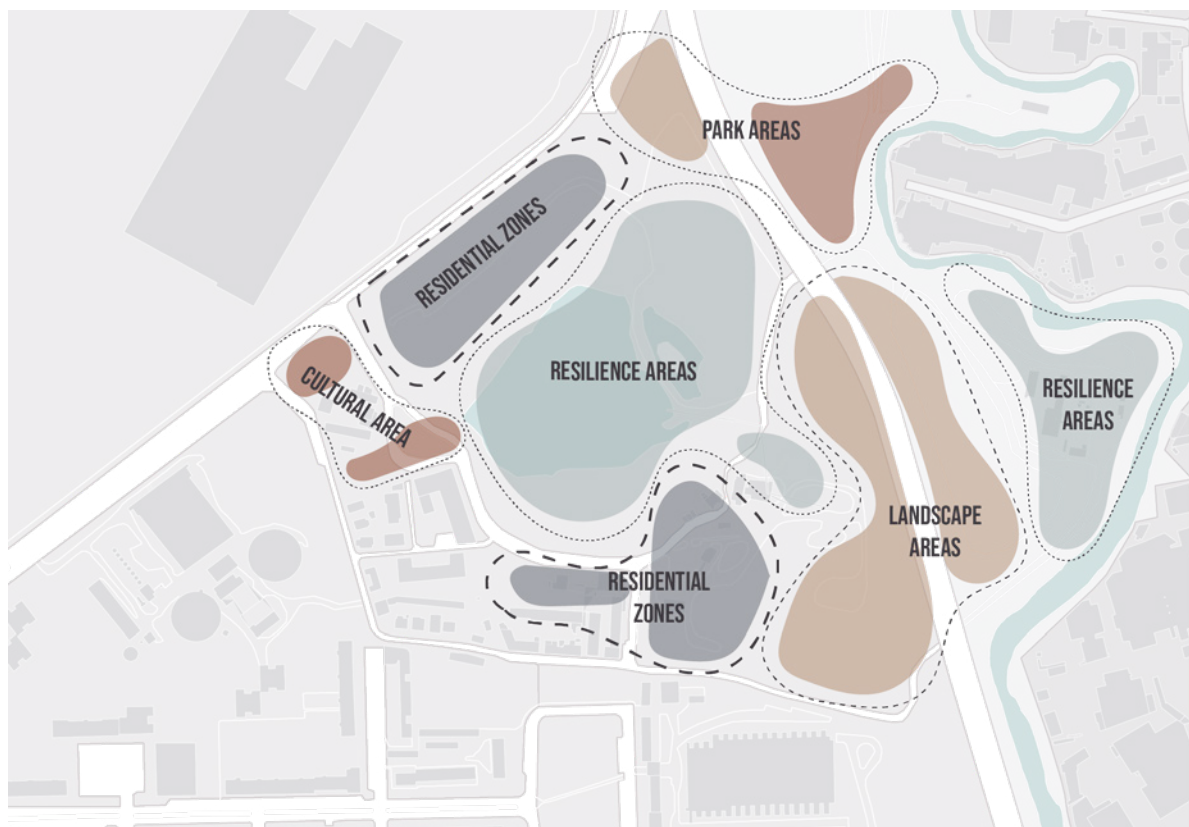
- **Rule_31:** Every buildings needs to have “green” part for itself and semipublic open spaces and open itself towards public spaces.

- **Rule_32:** Smaller surfaces in – between older structures should be planned as pocket parks – small scaled squares with urban furniture and vegetation.

RULES LEGEND

- Opening to the Exterior
- Resilience Zones Boundary
- Public Zones Boundary
- - - - Residence Zones Boundary
- Heritage Building
- Residential Building
- Cultural Zones
- Landscape Zones
- Residential Areas
- Resilience Areas
- Residential Public Space

IMAGE_258_Building Environment Rules



IMAGE_259_Building Environment Rules Diagram



IMAGE_260 Building Environment Rules Diagram



IMAGE_261 Building Environment Rules Diagram

RULES LEGEND

- Opening to the Exterior
- Resilience Zones Boundary
- Public Zones Boundary
- - - - Residence Zones Boundary
- Heritage Building
- Residential Building
- Cultural Zones
- Landscape Zones
- Residential Areas
- Resilience Areas
- Residential Public Space

IMAGE_262_Building Environment Rules



IMAGE_263_Building Environment Rules Diagram

13.6 SELECTED SCENARIO AND ITS DEVELOPMENT

As mentioned earlier, the selected scenario for the future development is the Scenario # 3 "Melzi Quarry as a Resilience Neighborhood".

The selection of this alternative to be further developed responds to the many different depths variables that can hosts to bring a complex and interesting project, most importantly, because it challenges the current scheme of development for former quarry zones into green infrastructures, while in this proposal the amount of different layers and areas are diverse.

The Melzi Quarry Resilience Neighborhood will feature a central purification lake area that gives a centrality and a point of encounter between all the other areas on the site, transforming a former quarry pond into a generator of spaces and urban development, furthermore the function of cleaning the water from the Lambro River. Additionally,

the site will include a floodplain area in the meanders of the Lambro, in order to help the absorption of the Lambro flooding issues while creating a connection between the river and the citizens. Later two buffer zones taking shape of hills will be developed next to the highway to separate the natural environment with the massive mobility infrastructure. Then, a series of residential developments are projected in the northern and southern areas, with two different types of approaches. Finally, on the surrounding areas will be created a series of public buildings that enhances the history of the site, such as the cascina museum and the Eco museum of agriculture landscape .

In this sub - chapter it will be possible to find the process for development, acquisition processes and final result of this project.

MELZI QUARRY RESILIENCE NEIGHBORHOOD PROJECT DATA

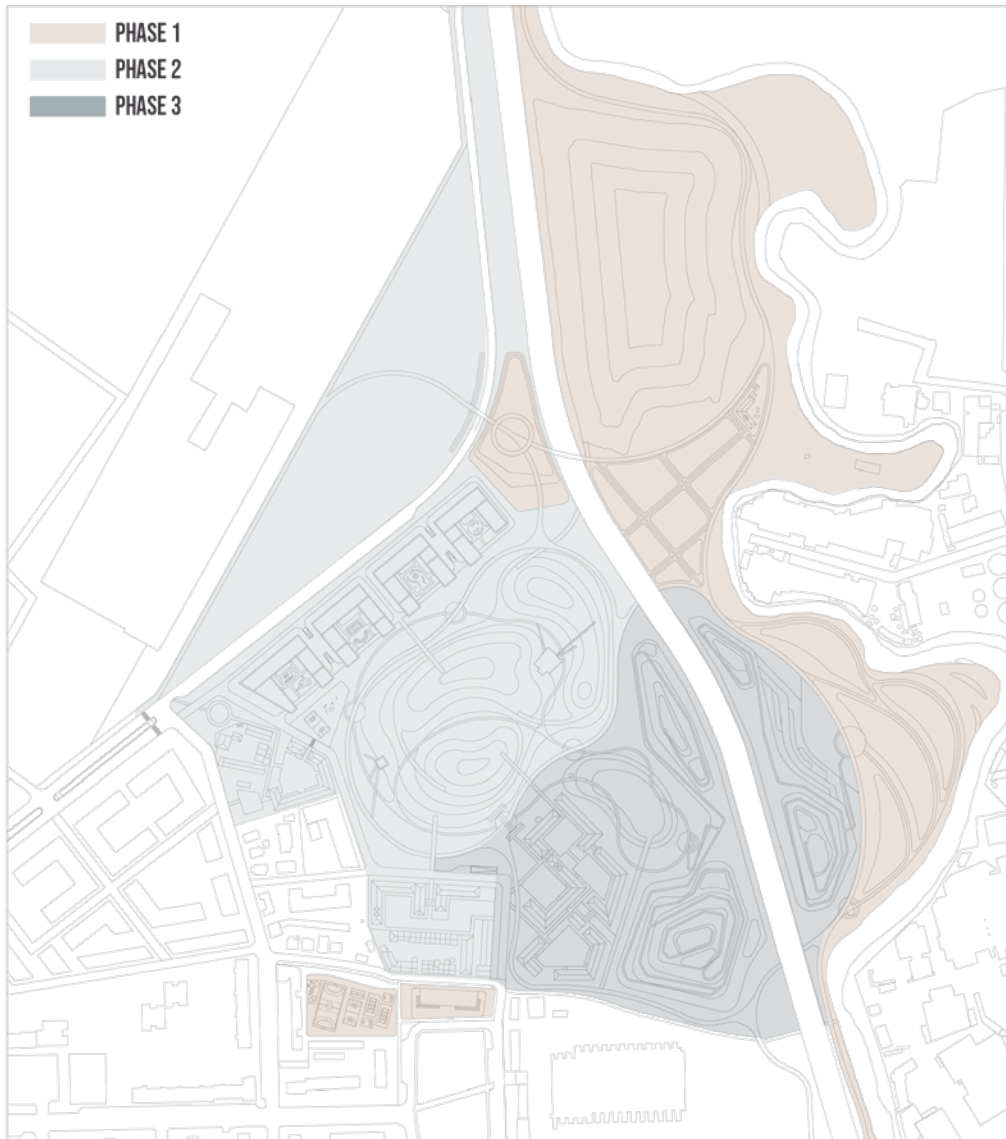
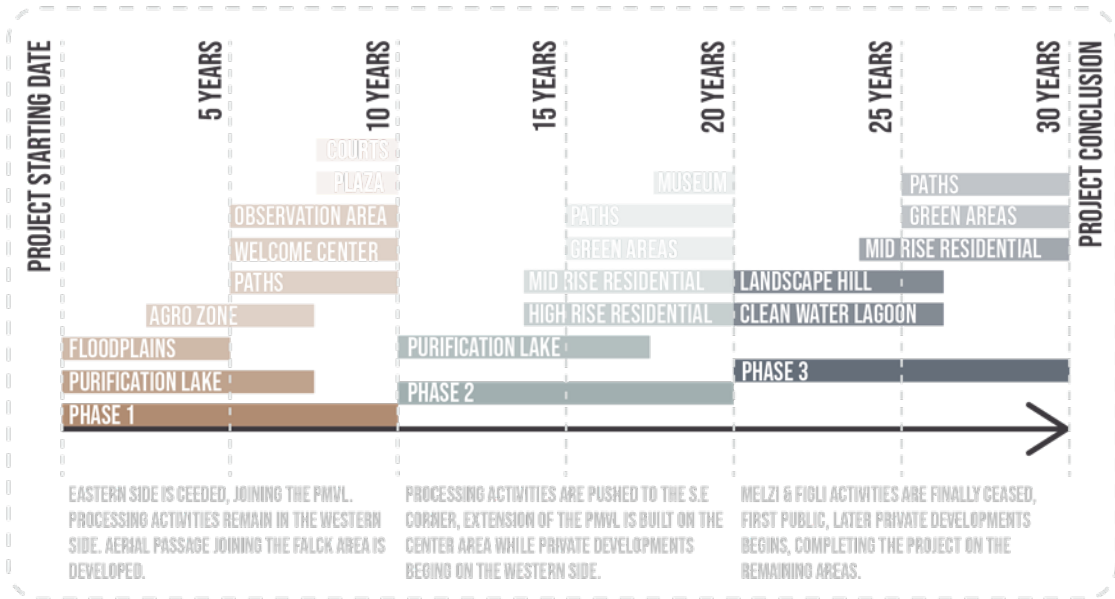
BUILDING FUNCTIONS & PUBLIC | PRIVATE SURFACES	
AREA (HA)	24,79
BUILDING RATIO (M ³ /M ²)	0,96
OVERALL VOLUME (M ³)	237.120
BUILT AREA (M ²)	28.294
UB	219.623
BUB (M ² /M)	28.294 (11,4%) - 219.606 (88,6%)
BUILT / UN BUILT & PERMEABLE AREAS	
PERMEABLE AREA (M ²)	161.468
PA / UB (M ² /M ²)	74%
PRIVATE AREAS (M ²)	66.210 (27%)
PUBLIC AREAS (M ²)	180.460 (73%)
TD (INH / HA)	100
VI (M ³ / INHABITANT)	100
HOUSING UNITS AND ACCESSIBILITY INFRASTRUCTURE	
INHABITANTS	2.479
HOUSING UNITS	826
COMMERCIAL HOUSING UNITS	580 - 70%
SOCIAL HOUSING UNITS	246 - 30%
PRIVATE PARKING (FAMILY = 3 INHABITANTS)	826
PUBLIC PARKING (/10 INHABITANTS)	248
OUTDOOR PUBLIC PARKING	99

The project possesses a **total area of 24.79 hectares** for its development, from which the **73% (180.460m²)** is dedicated to **Public Areas** and a **27% (66.210m²)** towards **Private Areas**. Developing a **building ratio of 0.96 (m³/m²)** and an overall **building volume of 237.120 m²**, while the **permeable areas stand in 161.468 m²**. The project will create **826 housing units**, divided in **580 for commercial purposes** and **246 for social housing**, with the capacity of receiving **2.479 inhabitants**.

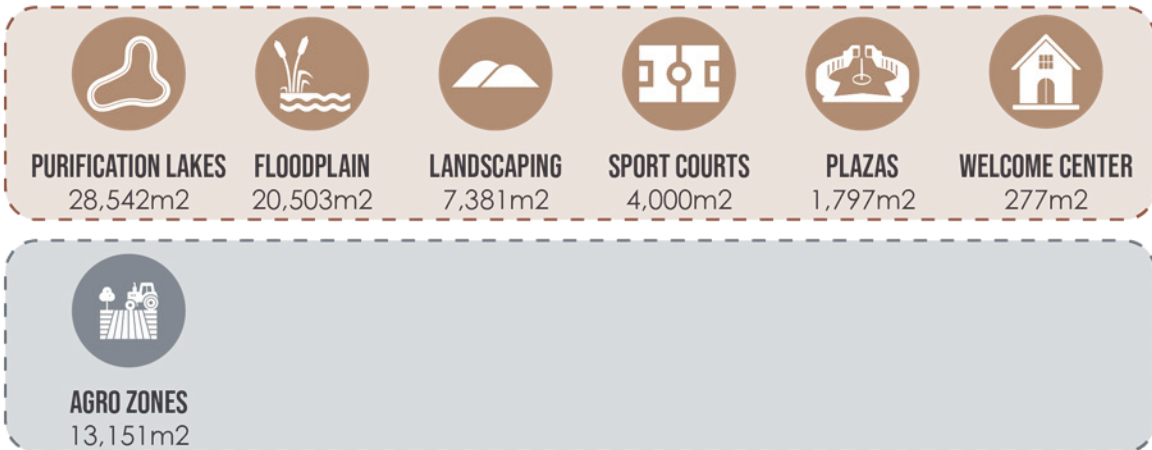
IMAGE_264_Table Of Project Data



IMAGE_265_Areas Division And Dimension Inside The Project



IMAGE_266_Diagram Of Phases Division And Development For The Project



IMAGE_267_Diagram Of The Phase 1 Of The Project



IMAGE_268_Acquisition Process & Zones Diagram

PHASE 2



IMAGE_269 Diagram Of The Phase 2 Of The Project

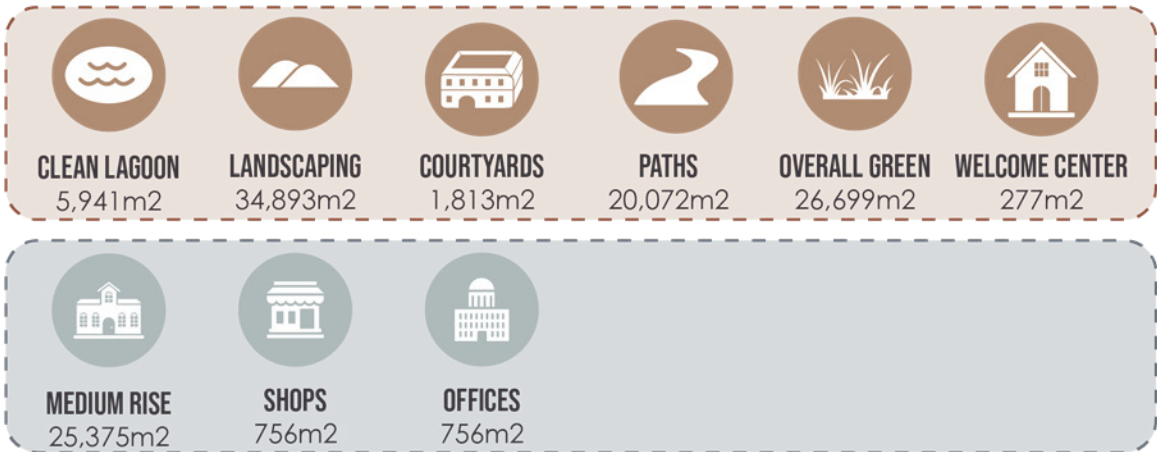


PHASE 1 DEVELOPMENT LAND OBTAINED THROUGH "PEREQUAZIONE" FIGURE MELZI PRODUCTION AREAS



IMAGE_270_Acquisition Process & Zones Diagram

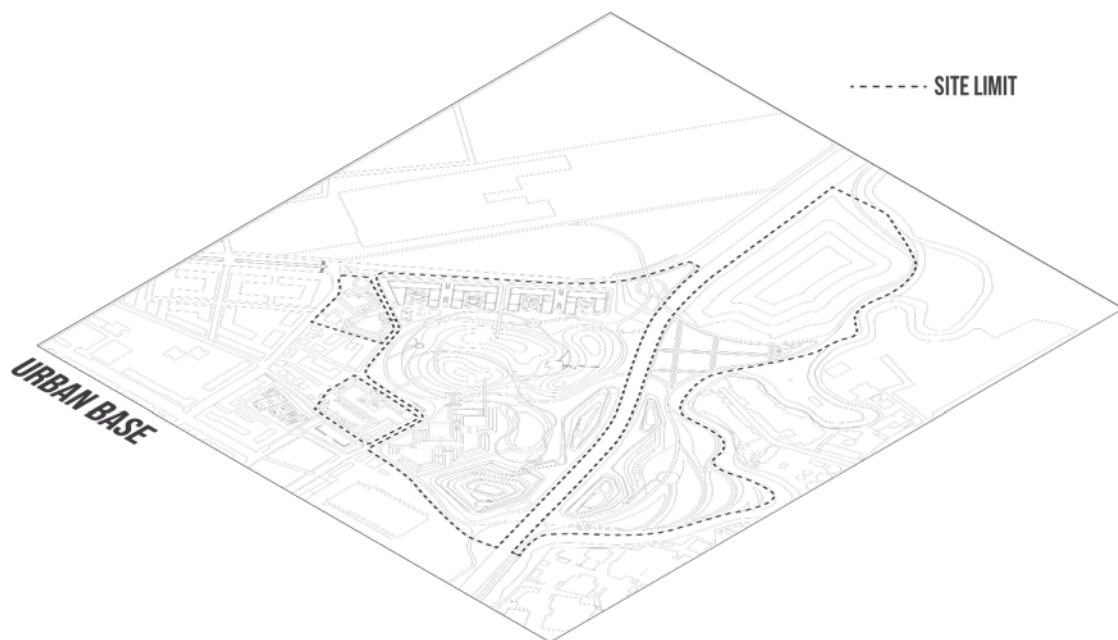
PHASE 3



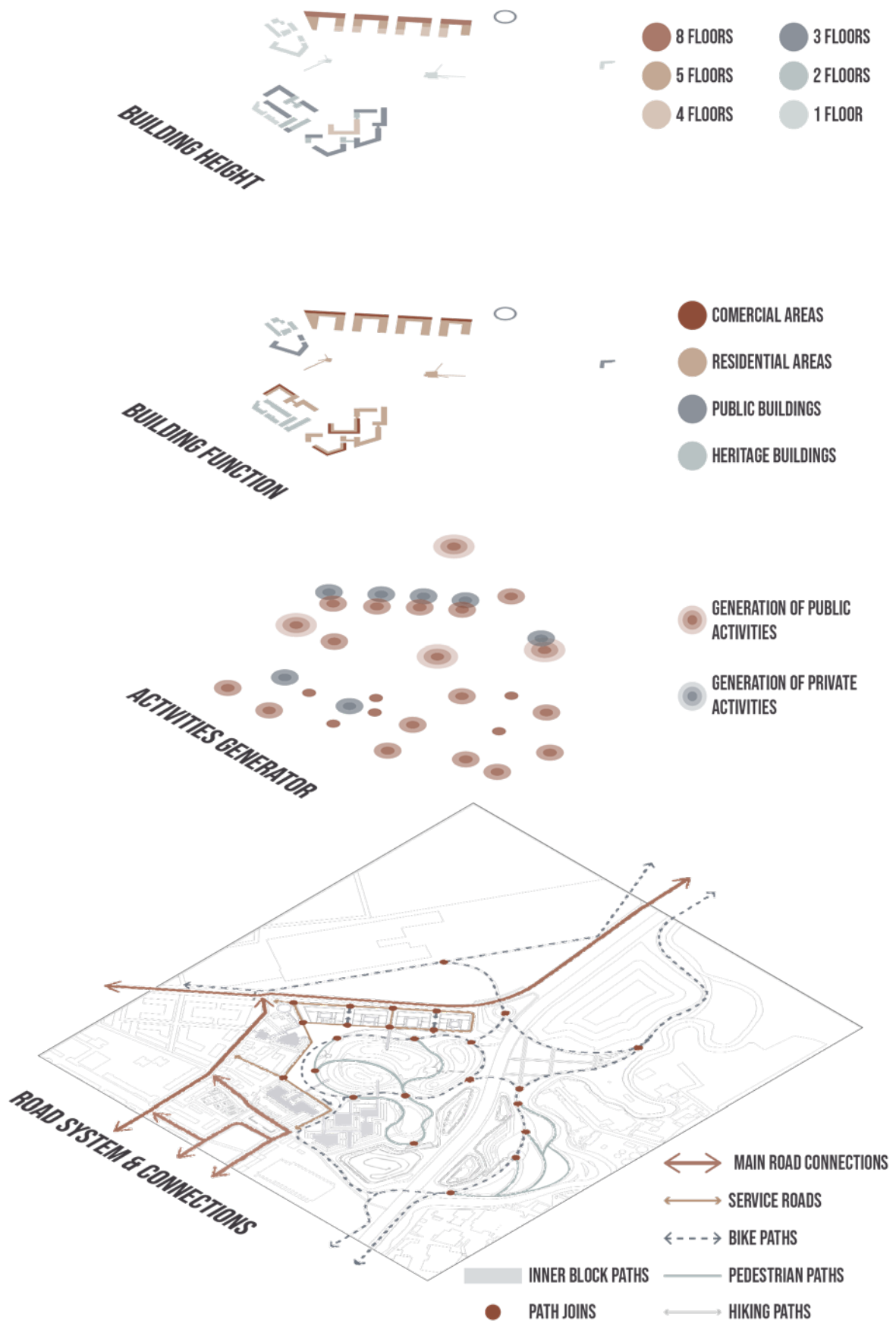
IMAGE_271_Diagram Of The Phase 3 Of The Project



IMAGE_272_Acquisition Process & Zones Diagram



IMAGE_273_Layers Of The Project



IMAGE_274_Layers Of The Project



IMAGE_275_Final Image Included In The Sesto's Tissue

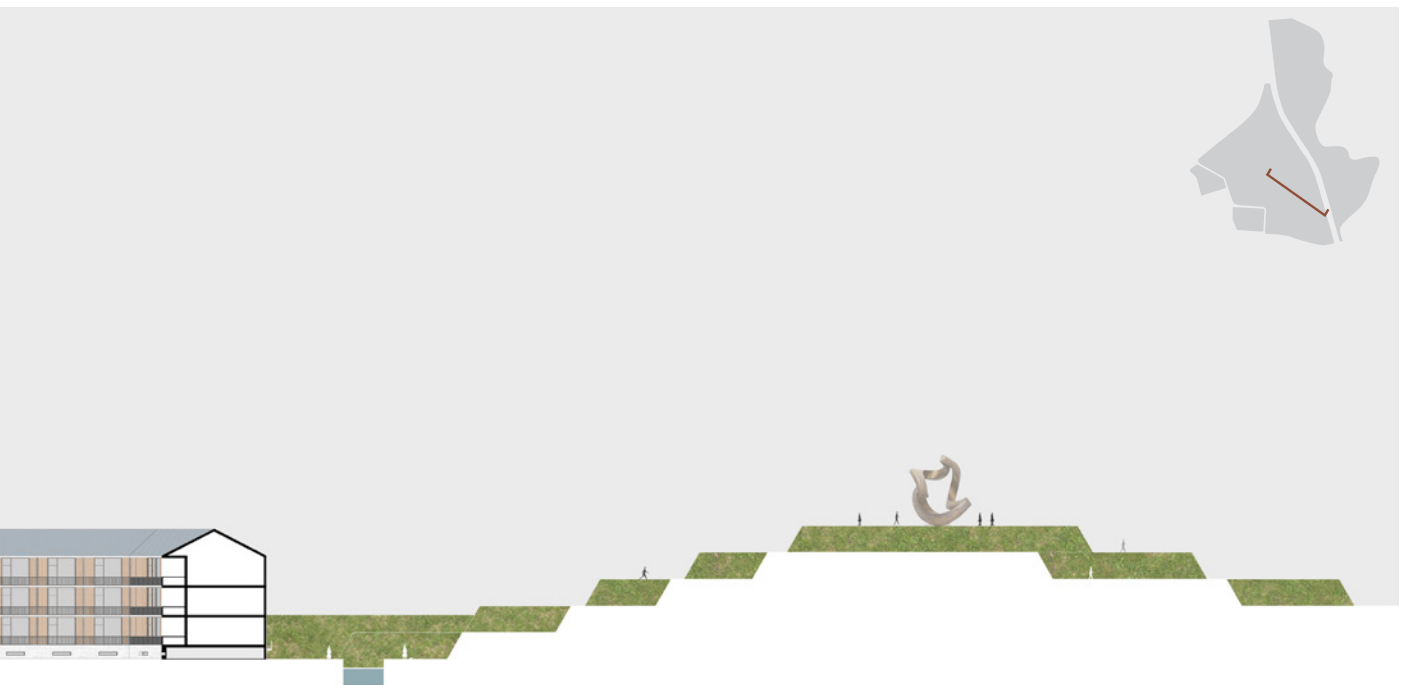




IMAGE_276_Urban Section A_A (Left Side)



IMAGE_277_Urban Section A_A (Right Side)





IMAGE_278 Urban Section B_B (Left Side)

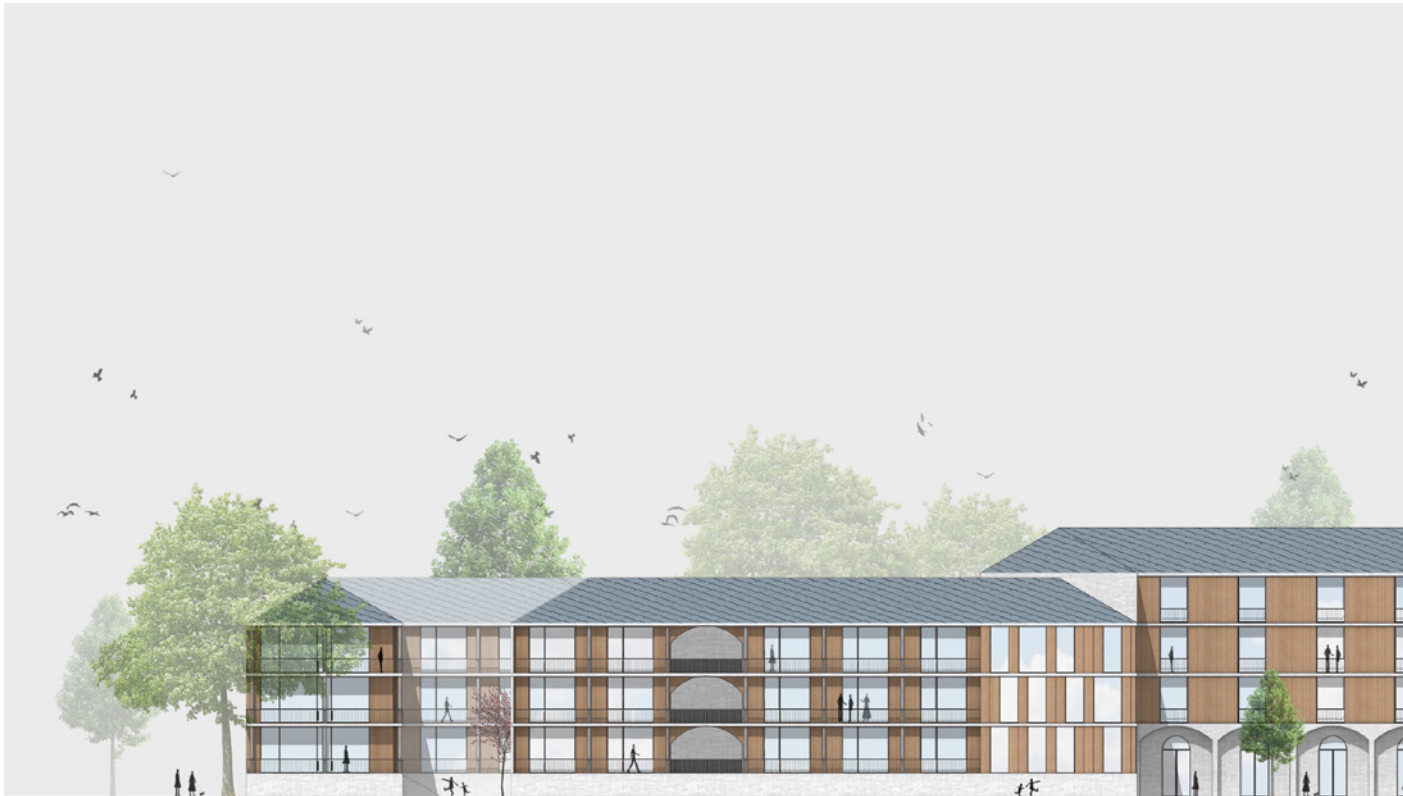


IMAGE_279 Urban Section B_B (Right Side)





IMAGE_280_High Density Residential Buildings Main Facade



IMAGE_281_Medium Density Residential Buildings Main Facade



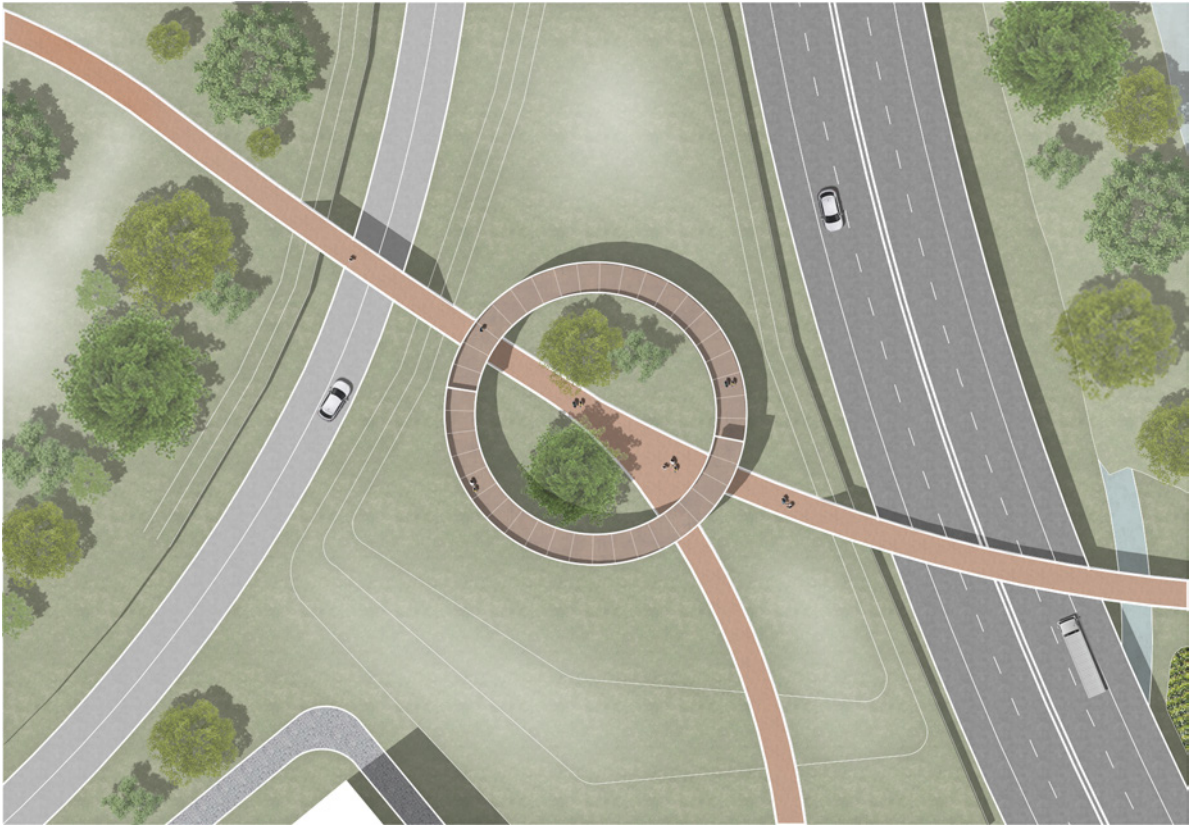


IMAGE_282_Welcome Center Main Facade



IMAGE_283_Eco museum And Bike Center Main Facade

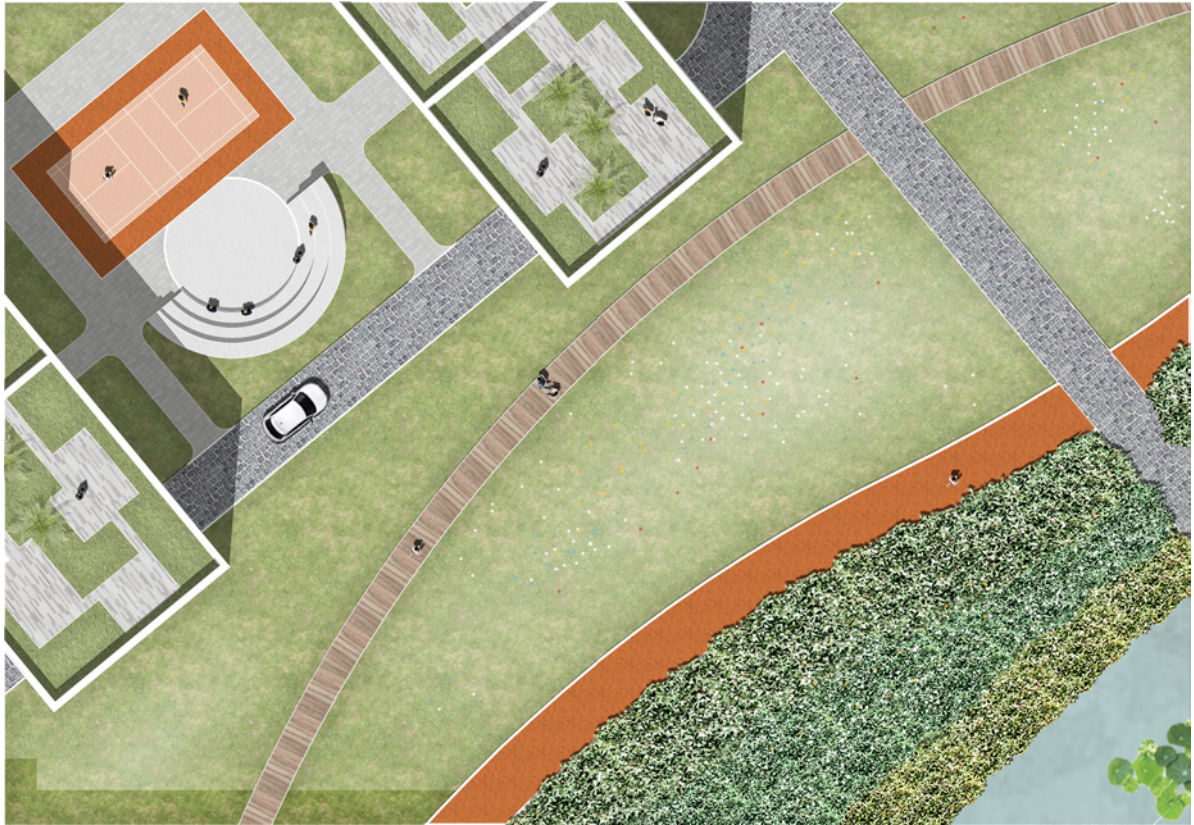




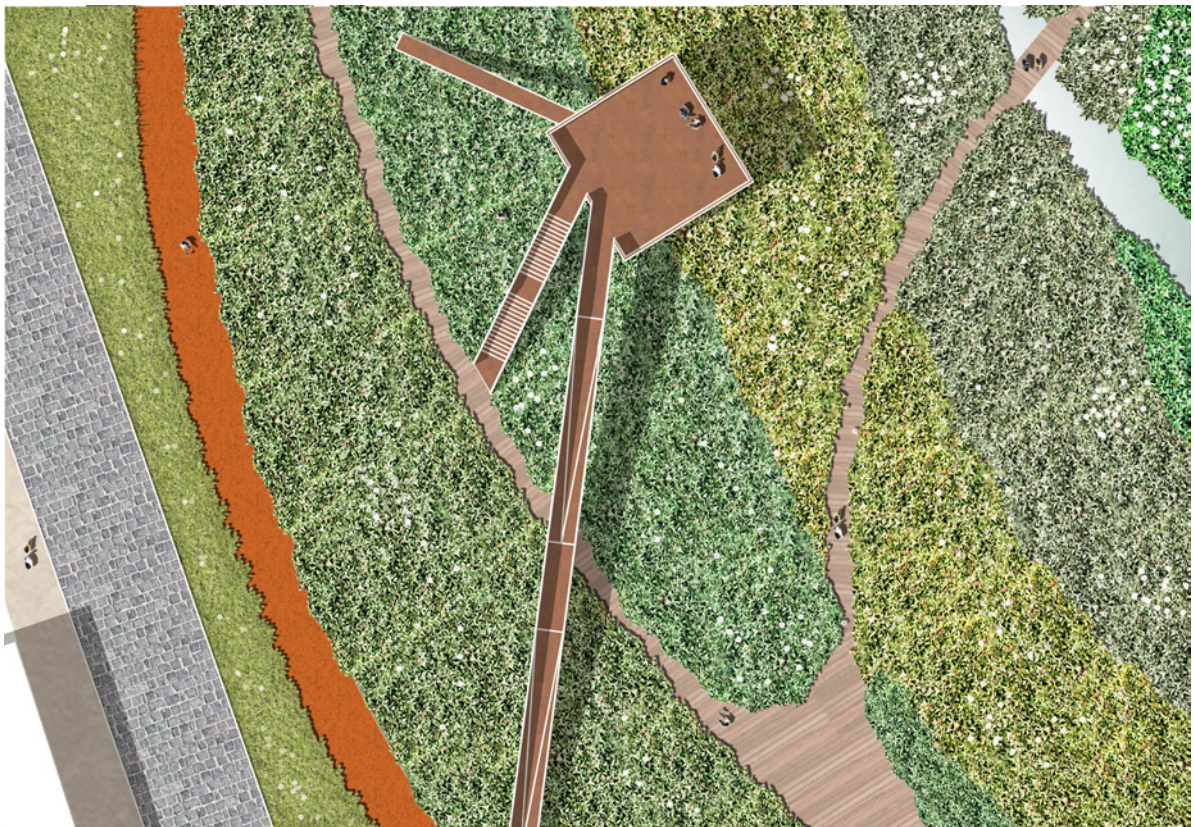
IMAGE_284_Zoom In Detail_1



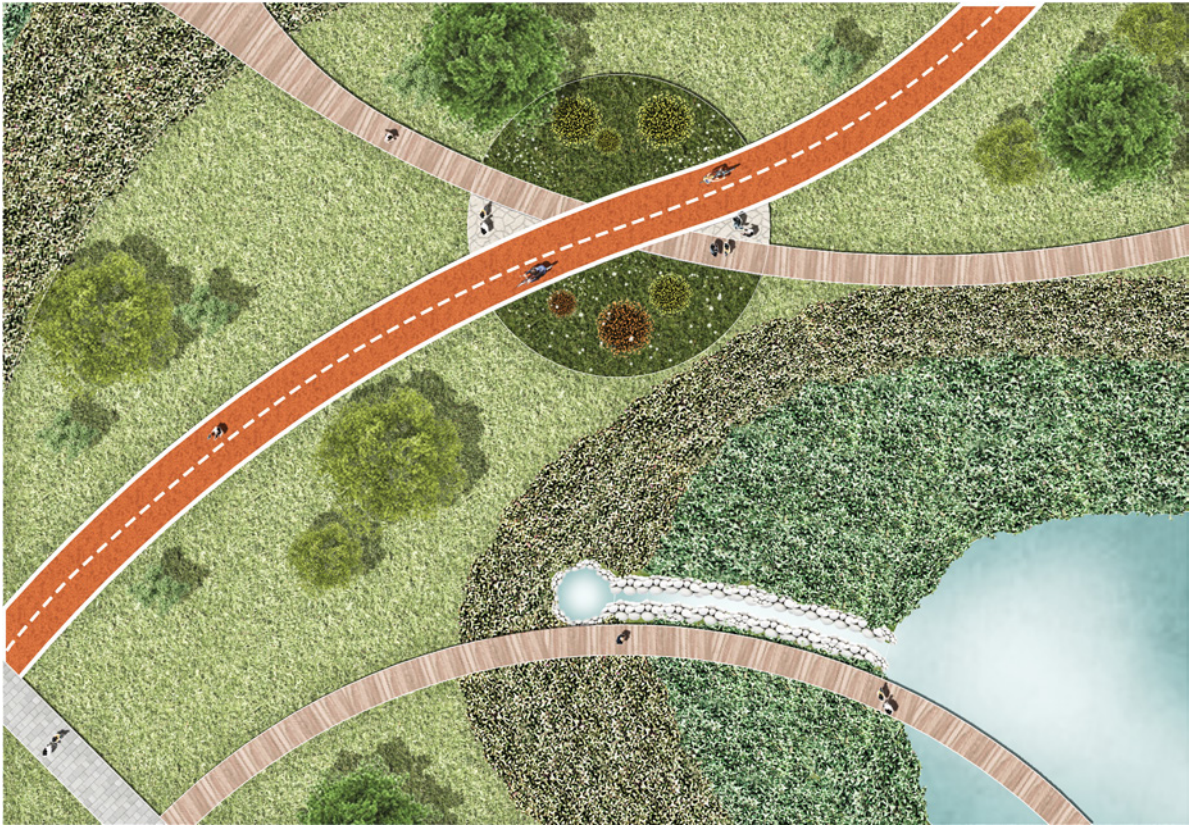
IMAGE_285_Zoom In Detail_2



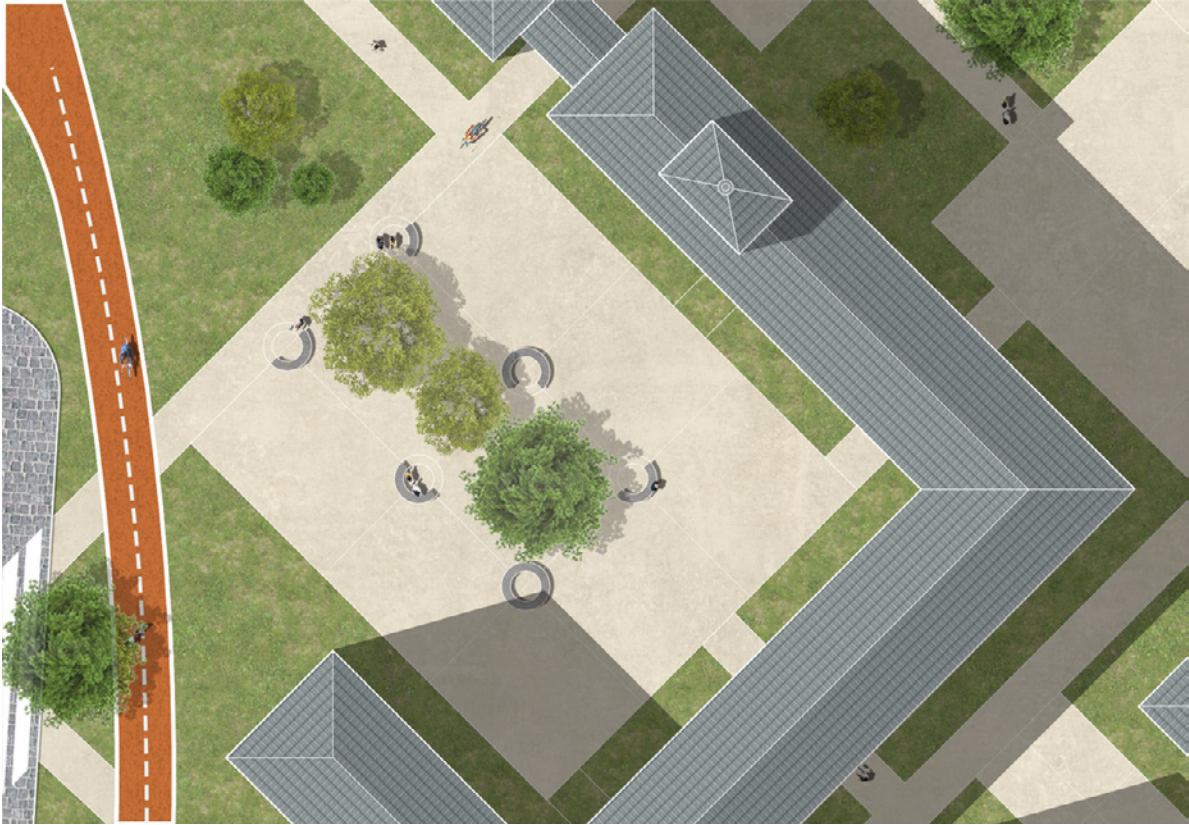
IMAGE_286_Zoom In Detail_3



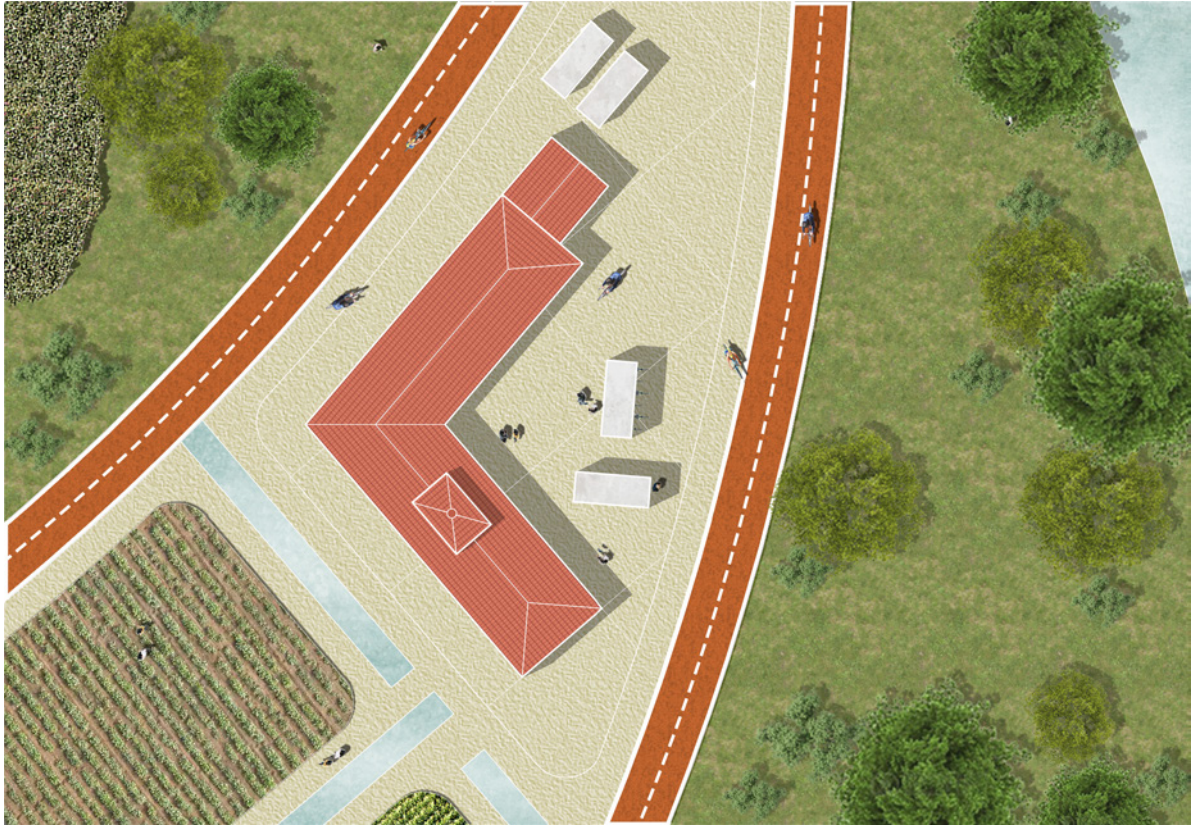
IMAGE_287_Zoom In Detail_4



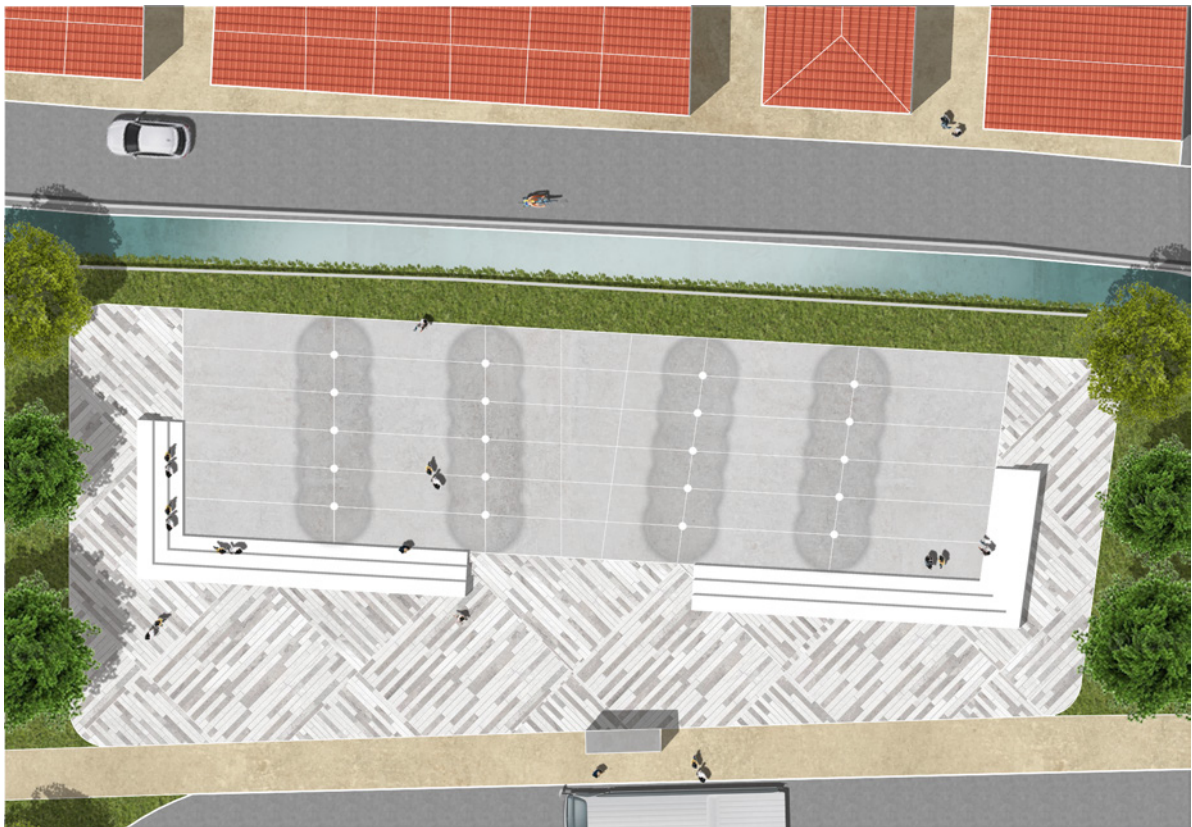
IMAGE_288_Zoom In Detail_5



IMAGE_289_Zoom In Detail_6



IMAGE_290_Zoom In Detail_7



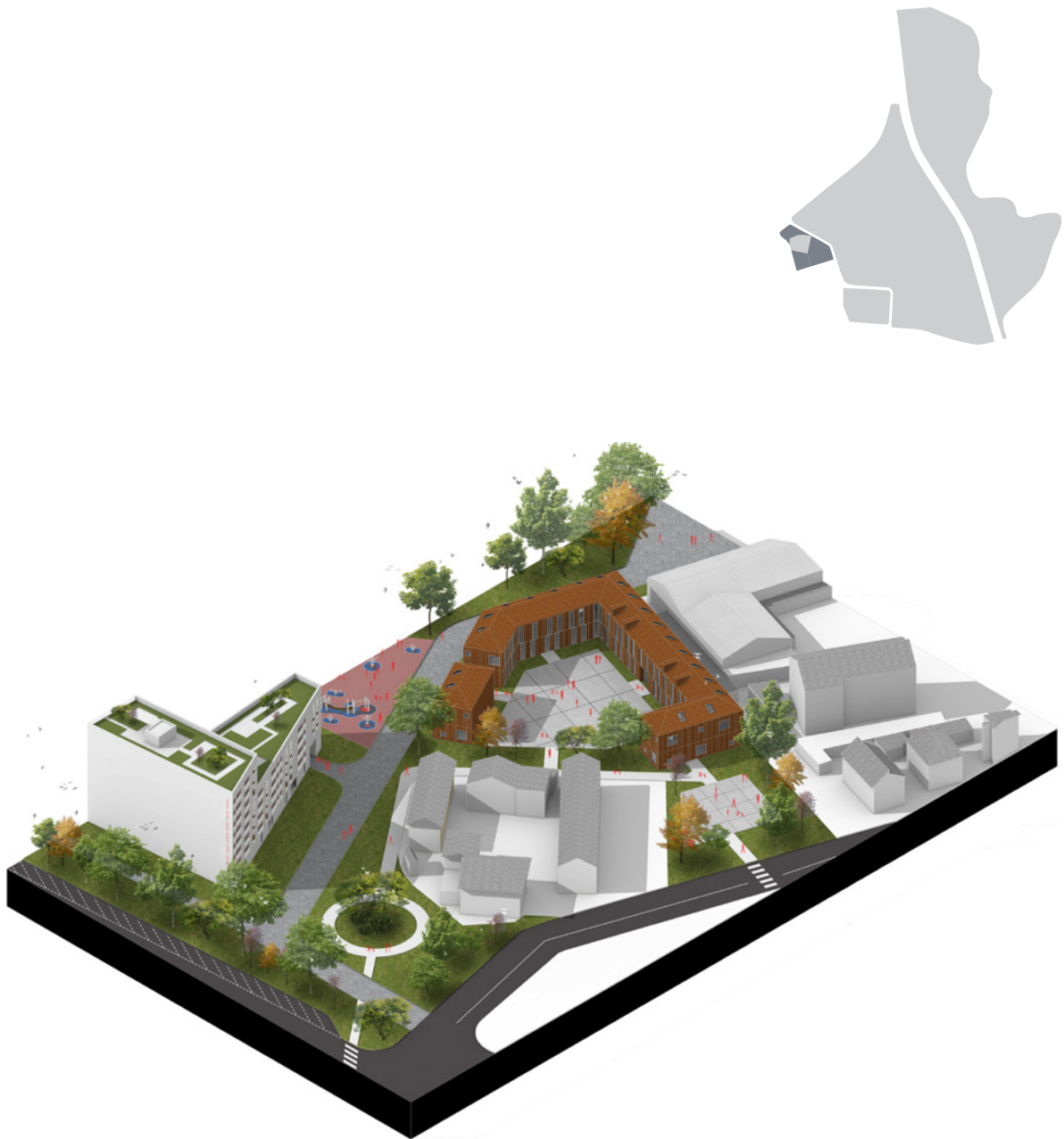
IMAGE_291_Zoom In Detail_8



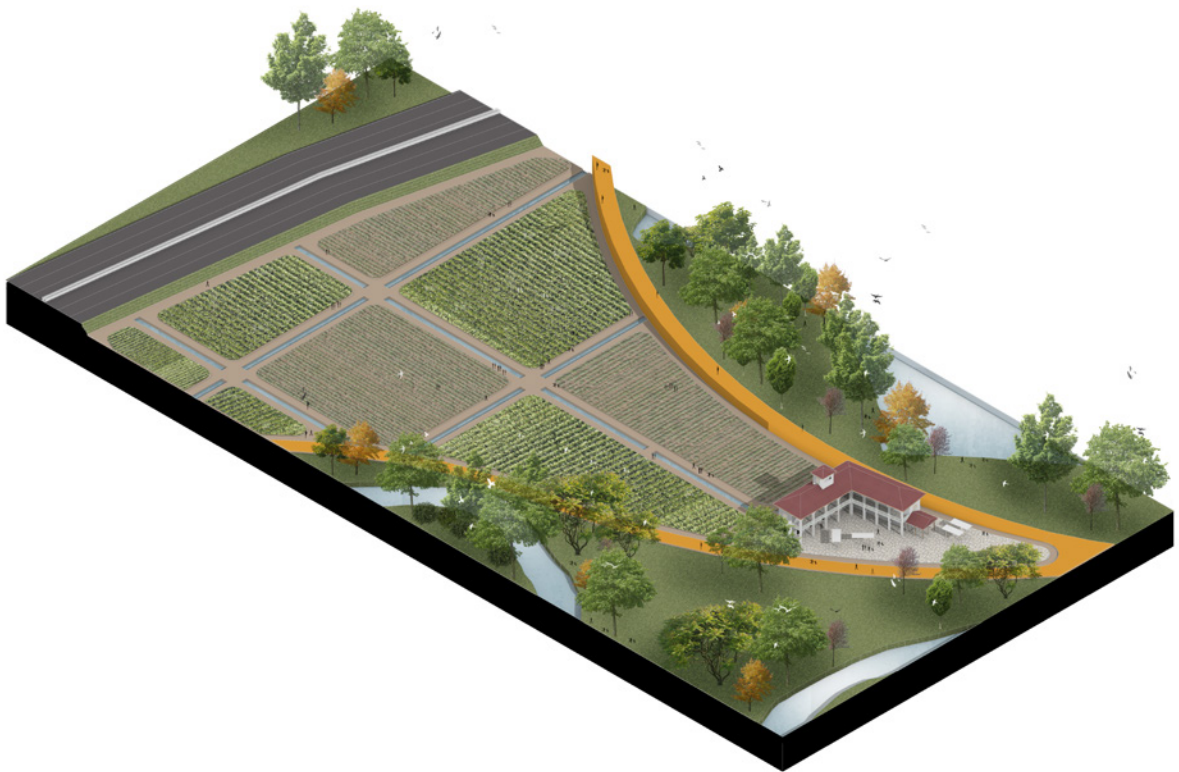
IMAGE_292_High Density Residential Area ISO View



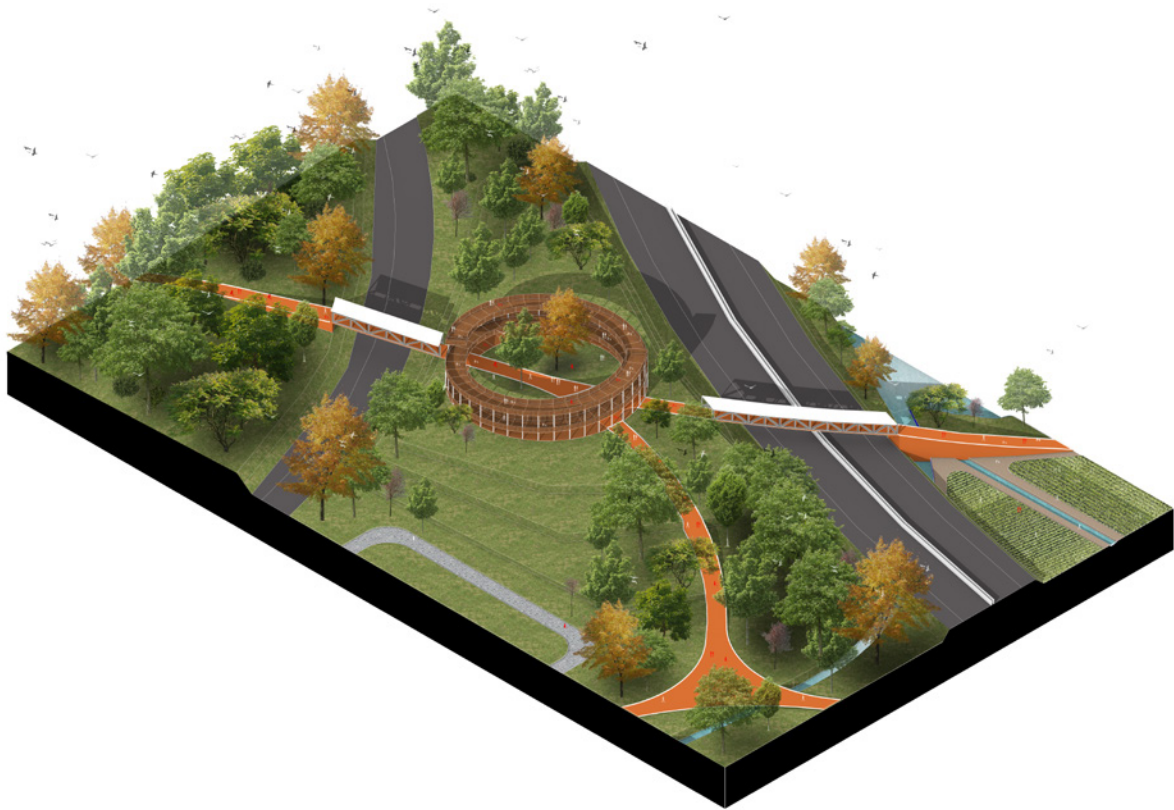
IMAGE_293_Medium Density Residential Area ISO View



IMAGE_294>Welcome Center ISO View



IMAGE_295_Eco museum & Bike Center ISO View



IMAGE_296 Urban Hinge And Observation Deck ISO View



IMAGE_297_Render Image 1





IMAGE_298_Render Image 2



E

**CLOSING
CHAPTER AND
CONCLUSION**

CONCLUSION

The Re - qualification project for the Melzi Quarry Area in Sesto San Giovanni has become an opportunity to understand the process behind urban planning, urban design and architectural design.

This thesis project gives an insight of the possibilities that could be developed in order to re qualify dismissed industrial or extractive areas in the Italian scenario, following the current legislation and understanding the potentialities planned for the future of the area. The Melzi Quarry Re - Qualification gives an important opportunity to the city of Sesto to join the different pieces of its broken tissue with a new green vision. Most importantly, shows the opportunity of connecting the city to its nearby urban areas through a system of urban parks and improving the slow mobility.

Currently, the urban planning of a complicated tissue like the industrial area of Sesto San Giovanni's Falck area has left many doubts on the procedure that should be taken in order to develop a massive piece of land, it its in here when we shall understand that the public administration shouldn't take all the weight when developing these kinds of projects but rather be seen as a guidance entity. Public administration should develop a clear view for the future of the city, hosting the different activities that the city need in the new metropolitan context and most importantly, preserving the traces of heritage that it possesses, should be consider that no heritage is more important than others.

Developing new urban projects through public - private investments is an ideal way to navigate through the realization of massive transformation areas, this is due to the conformation of two entities that would have a different vision, but one that will come together at the end, private investment would look for its financial investment and

therefore creating thousands of jobs in the meantime for the city area, while public entities would imprint the rules and the characteristics of the city that it needed, benefiting its citizens with the city they will like to see. The Italian legislation have already seen examples of this type of development and pushes forward to do so, however during the research phase it has been noted that long amount of time that these developments might take, sometimes even risking the entire development at all.

At the same time, it is vital to understand the possibilities of developing green areas in a more deep and meaningful way, through the creation of resilient infrastructures for the urban tissue. This is done to help urban areas withstand the new challenges posed by the climate change variables imprinted in the natural environment. Green areas should stop being considered just a space dedicated to green, but instead areas that should be thought as natural infrastructure. This new type of infrastructure will have the capacity to close the gap between the built environment and the natural system, improving the overall quality of the city and therefore of the inhabitants.

Finally, the key to preserving a place where history has been so malleable during the pass of time. Understand the importance of heritage as a tool to preserve and show the uniqueness of a particular area, this can be done in many ways, though passive and active interventions, through restructuring works or even with the creation of dedicated museums or with community based experienced museums like "Eco museums". Heritage can imprint a strong identity to an area and create new developments that are strongly based in the past relationships between inhabitants, city and nature.

This thesis project have given us the opportunity to understand the importance of the many layers that a city can have, the importance of history and how it can shape the built environment where we currently live, the importance of the historical economic processes that changes deeply our built environment and that can destroy the natural environment we have. It has shown us the important characteristics of the city of Sesto San Giovanni and its former industrial and agricultural heritage, it has shown us the multi dimension that a city can have when it becomes a bustling metropolis like Milan and how inhabitants change their aptitudes toward the use of the new city.

With this thesis project we would like to close a chapter of studies that enhances the importance of the city and its components, to express the possibilities that there could be when re - developing former dismissed areas and most importantly, to recreate new environments that preserve the natural surroundings, connect the urban tissue of the city and that improves the quality of its inhabitants.

BIBLIOGRAPHY

SCIENTIFIC ARTICLES

- Paolo Bozzuto and Chiara Geroldi, The Extractive Industries and Society, <https://doi.org/10.1016/j.exis.2020.09.007>
- Martín Arboleda (2019): From Spaces to Circuits of Extraction: Value in Process and the Mine/City Nexus, *Capitalism Nature Socialism*
- Talento, K.; Amado, M.; Kullberg, J.C. Quarries: From Abandoned to Renewed Places. *Land* 2020, 9, 136.
- Mori, G. (1974). PROCESSO D'INDUSTRIALIZZAZIONE E STORIA D'ITALIA. *Belfagor*, 29(6), 609-632. Retrieved January 2, 2021, from <http://www.jstor.org/stable/26143270>
- Rongxu Qiu, Wei Xu, John Zhang, The transformation of urban industrial land use: A quantitative method, *Journal of Urban Management*, Volume 4, Issue 1, 2015, Pages 40-52, ISSN 2226-5856, <https://doi.org/10.1016/j.jum.2015.07.001>.
- Li Tian, Land use dynamics driven by rural industrialization and land finance in the peri-urban areas of China: "The examples of Jiangyin and Shunde", *Land Use Policy*, Volume 45, 2015, Pages 117-127, ISSN 0264-8377, <https://doi.org/10.1016/j.landusepol.2015.01.006>.
- Oueslati, Walid & Alvanides, Seraphim & Garrod, Guy. (2013). Determinants of Urban Sprawl in European Cities. *SSRN Electronic Journal*. 10.2139/ssrn.2397141.
- Giulia Urso, Polycentric Development Policies: A Reflection on the Italian "National Strategy for Inner Areas", *Procedia - Social and Behavioral Sciences*, Volume

223, 2016, Pages 456-461, ISSN 1877-0428, <https://doi.org/10.1016/j.sbspro.2016.05.275>

- Matthias Wrede, A continuous spatial choice logit model of a polycentric city, *Regional Science and Urban Economics*, Volume 53, 2015, Pages 68-73, ISSN 0166-0462, <https://doi.org/10.1016/j.regsciurbeco.2015.05.001>.
- C. Kennedy, S. Pincetl, P. Bunje, The study of urban metabolism and its applications to urban planning and design, *Environmental Pollution*, Volume 159, Issues 8–9, 2011, Pages 1965-1973, ISSN 0269-7491, <https://doi.org/10.1016/j.envpol.2010.10.022>
- Nedovic-Budic, Zorica & Connop, Stuart & Foley, Dermot & Foley, Karen & Newport, Darryl & McQuaid, Siobhán & Slaev, Aleksandar & Verburg, Peter. (2013). Transitioning to resilience and sustainability in urban communities. *Cities*. 32. S21-S28. 10.1016/j.cities.2013.03.010.
- Jimenez, Rodrigo & Martilli, Alberto & Balin, Loan & van den Bergh, Hubert & Calpini, Bertrand & Larsen, Bo & Favaro, Giordano & Kita, Dieter. (2000). Measurement of formaldehyde (HCHO) by DOAS: intercomparison to DNPH measurements and interpretation from Eulerian model calculations.
- Renoldi, Matteo & CAMUSSO, MARINA & Tartari, Gianni. (1997). The highly polluted Lambro river(N. Italy): Dissolved and solid transport of Cu, Cr and Fe. *Water Air and Soil Pollution*. 95. 99-118. 10.1023/A:1026482213420.
- Sanetra-Szeliga, Joanna & Jagodzińska, Katarzyna & Vandesande, Aziliz & Thys, Clara. (2015). Cultural Heritage Counts for Europe. Full Report.
- Trono, A., & Zerbi, M. (2002). Milan: The city of constant renewal. *GeoJournal*, 58(1), 65-72. Retrieved April 7, 2021, from <http://www.jstor.org/stable/41147732>
- Boggero, G. (2016). The Establishment of Metropolitan Cities in Italy: An Advance or a Setback for Italian Regionalism? *Perspectives on Federalism*, 8, E-1 - E-22.

BOOKS

- Sordi, Jeannette, et al. *The Camp and the City: Territories of Extraction*. LIST Lab., 2017.
- Consonni, Giancarlo. *L'urbanità Come Risorsa = Urbanity as a Resource: Progetti per Le Aree Falck a Sesto San Giovanni*. Udine, 2010.
- Jarvis, D. *Quarries and Built Afteruses: the Planning and Design of Aggregate Quarries for Non-Agricultural Afteruse*. Griffin House Publishing, 2006.
- Lucchini, Chiara. *Pratiche, Progetti e Politiche per La Citta Dismessa*. Politecnico Di Torino, 2017.
- Martinotti, Guido. *Metropoli: La Nuova Morfologia Sociale Della città*. Il Mulino, 1993.
- Rizzi, Chiara. *Quarto Paesaggio*. LIST Lab, 2104.
- Sordi, Jeannette, et al. *The Camp and the City: Territories of Extraction*. LIST Lab., 2017.

- Trezzi, Luigi. Sesto San Giovanni Alla Fine Del 20. Secolo, 1974-1996: L'eredità Volta Al Futuro. Skira, 2012.
- Vimercati, Luigi. La città Delle Fabbriche: Viaggio Nella Sesto S. Giovanni Del '900. A. Pizzi, 2002.
- Geminiani, Amos, and Renzo Marchi. Cascine Di Sesto. Gelmi Ed. D'Arte, 1970.
- Greco, Sabrina, and Gian Paolo Semino. Costruzione e Trasformazione Del Paesaggio: La città Industriale Di Sesto San Giovanni: Progetto Di Ipertesto per Il Museo Dell'Industria e Del Lavoro. Libreria CLUP, 2002.
- Spampinato, Angelo. Immagini Di Sesto Antica. Gelmi Edizioni D'Arte, 1980.

DOCUMENTS

- Ufficio Urbanistica di Legambiente. "Rapporto Cave 2014." Stampa CSR.
- Regione Lombardia "Disposizioni per l'utilizzo e la valorizzazione del patrimonio minerario dismesso" Bolletino Ufficiale della Regione Lombardia
- Comune di Sesto San Giovanni "LINEE GUIDA Variante Generale Al PGT". p.14. Available at: https://sestosg.net/wp-content/uploads/2020/01/VarPGT_LINEE-GUIDA-DdP.pdf
- Briand, Gilles and Mousquet Francois. Reversing the Image of a Coal Basin at: https://www.nextroom.at/data/media/med_binary/original/1160214553.pdf
- Citta di sesto san Giovanni. "regolamento edilizio comunale". Available at: <https://sestosg.net/wp-content/uploads/2007/01/REGOLAMENTO-EDILIZIO.pdf>
- Ente Regionale Per I Servizi All'Agricoltura E Alle Foreste "RE-LAMBRO - Progettare La Rete Ecologica Del Lambro Milanese". Available at: http://www.contrattidifume.it/export/sites/default/it/doc/Azioni/progetti_collegati/Presentazione-Re-Lambro-ERSAF.pdf
- Comune di Sesto San Giovanni. "PGT Vigente". Available at: <https://sestosg.net/pgt-vigente/>
- Comune di Sesto San Giovanni. "Il Piano delle Regole". Available at: <https://sestosg.net/documenti/pgt-il-piano-delle-regole/>
- Comune di Sesto San Giovanni. "Il Piano dei Servizi". Available at: <https://sestosg.net/documenti/pgt-il-piano-dei-servizi/>
- Comune di Sesto San Giovanni. "Regolamento Edilizio Comunale". Available at: <https://sestosg.net/wp-content/uploads/2007/01/REGOLAMENTO-EDILIZIO.pdf>
- Comune di Milano "Documento Di Visione Strategica". Available at: <https://www.comune.milano.it/documents/20126/5272437/Documento+di+Visione+Strategica.pdf/7e2005c4-0e95-9feb-cb4c-7f8113163f1b?t=1572450187746>
- Comune di Milano " Conoscere Milano". Available at: <https://irp-cdn.multiscreensite.com/0d79c62c/files/uploaded/i%20luoghi%20della.pdf>

WEBSITES

- Agostino, Umberto De, et al. "Homepage." Ecomuseo Del Paesaggio Lomellino, 2 Feb. 2021, www.ecomuseopaesaggiolomellino.it/.
- Arsuffi, Roberto. "Milano: Sesto San Giovanni - Hines e Kuwait Puntano Mezzo Miliardo per MilanoSesto." Urbanfile Blog, 21 Oct. 2020, blog.urbanfile.org/2020/10/21/milano-sesto-san-giovanni-hines-e-kuwait-puntano-mezzo-miliardo-per-milanosesto/.
- Barajas, Cristhian. "Drosscapes: 10 of the Best Examples of Revitalized Post-Industrial Landscapes." AHBE LAB, 20 Oct. 2016, ahbelab.com/2016/10/19/drosscapes-10-of-the-best-example-of-revitalized-post-industrial-landscapes/.
- "Censimento Popolazione Milano (1861 - 2011) Grafici Su Dati ISTAT." Tuttitalia.it, www.tuttitalia.it/lombardia/18-milano/statistiche/censimenti-popolazione/.
- "EU Holistic Approach to Sustainable Development." European Commission - European Commission, 30 Nov. 2020, ec.europa.eu/info/strategy/international-strategies/sustainable-development-goals/eu-holistic-approach-sustainable-development_en.
- Eukalypton, et al. "The Transforming of Former Industrial Areas into Urban Parks." Eukalypton, 26 Nov. 2019, eukalypton.com/fr/2019/11/26/how-cities-are-transforming-former-industrial-areas-into-urban-parks/.
- "Fiume Lambro." Regione.lombardia.it, www.regione.lombardia.it/wps/portal/istituzionale/HP/DettaglioRedazionale/servizi-e-informazioni/Enti-e-Operatori/territorio/interventi-per-l-assetto-idrogeologico/fiumi-sicuri/interventi-assetto-idrogeologico-fiume-lambro/interventi-assetto-idrogeologico-fiume-lambro.
- "Flussi Migratori Interni In Italia ." Storiadigitale Zanichelli Linker - Mappastorica Site, dizionario.zanichelli.it/storiadigitale/p/mappastorica/228/Flussi%20migratori%20interni%20in%20Italia%20a%20confronto:%201955-1961%20e%201962-1971.
- G.chiodi@addlab.it. "Storia Famiglia Falck." Gruppo Falck, Gruppo Falck, 7 Apr. 2021, falck.it/linizio-1800/.
- "GeoPortale Del Comune Di Sesto San Giovanni." Ortofoto Regionale | GeoPortale Del Comune Di Sesto San Giovanni, geoportale.sestosg.net/node/57.
- Il Giorno. "Cave Abbandonate a Sesto La Procura Apre Un'inchiesta." Il Giorno, Il Giorno, 4 Apr. 2013, www.ilgiorno.it/sesto/cronaca/2013/04/05/868888-sesto-cave-ex-falck-melzi-aperta-inchiesta.shtml.
- "International Cooperation " Ecomusei.eu." Ecomusei.eu, www.ecomusei.eu/?page_id=1038.
- "La Difficile Definizione Di Un 'Paesaggio Urbano.'" VIVA L'ARCHITETTURA!, www.vivalarchitettura.it/la-difficile-definizione-di-un-paesaggio-urbano/.
- "Lagunage De Harnes - Harnes, Francia." Recycled Landscapes, 23 June 2017, recycledlandscapes.altvista.org/lagunage-de-harnes-et-bois-de-florimond-harnes-francia/?doing_wp_cron=1615843864.5045270919799804687500.
- "La Rigenerazione Urbana in Corso Delle Aree Ex Falck." Comune Di Sesto San Giovanni, sestosg.net/la-rigenerazione-urbana-in-corso-delle-aree-ex-falck-

rassegna-urbanistica-nazionale-4-aprile-2019/#le-attivit -di-bonifica-dei-suoli.

- Melzi e Figli S.r.l., melziefigli.weebly.com/.
- "MilanoSesto." a City in Progress, www.milanosesto.it/en/.
- "Navigazione." Vai Al Sito Del Comune Di Milano, www.comune.milano.it/-/verde.-il-progetto-relambro-entra-nella-terza-fase-e-rigenera-il-territorio-a-sud-est-di-milano.
- "PROGETTO DIARIO DI UNA BICICLETTA." DIARIO DI UNA BICICLETTA, diariodiunabicicletta.blogspot.com/p/progetto.html.
- "Quarry Gardens in Nanning Garden Expo Park, China by Atelier DYJG." www.gooood.cn/quarry-gardens-in-nanning-garden-expo-park-by-atelier-dyhg.htm?lang=en.
- "Quarry Gardens in Nanning Garden Expo Park: ASLA 2020 Professional Awards." Quarry Gardens in Nanning Garden Expo Park | ASLA 2020 Professional Awards, www.asla.org/2020awards/196.html.
- Quarry Lake at Greenspring, 7 Feb. 2019, www.quarrylakeatgreenspring.com/.
- Radice, Magutdesign and Ilic. "Mappa Del Parco." Parco Media Valle Del Lambro, www.pmvl.it/index.php?pag=sezioni.
- "Rapporto Cave 2014 Di Legambiente: in Italia 'Buchi' Di Tutti i Tipi e Da Tutte Le Parti." L'ippocampo, 12 July 2014, figliodellafantasia.wordpress.com/2014/05/04/rapporto-cave-2014-di-legambiente-in-italia-buchi-di-tutti-i-tipi-e-da-tutte-le-parti/.
- Raul Dal Santo, Lucia Vignati. Centro Di Documentazione, ecomuseo.comune.parabiago.mi.it/ecomuseo/CENTRO.html.
- San Maurizio Al Lambro, Cava Falck, www.muvalo.it/bacheca/nuovi/sanmaurizio/pagina6.htm.
- "Territorio e Pianificazione." Citta Metropolitana Di Milano, www.cittametropolitana.mi.it/parco_agricolo_sud_milano/territorio_e_pianificazione/index2.html.
- "Value Mining Reclamation - Planning for the Best Value." KCI, 19 Feb. 2020, www.kci.com/resources-insights/innovator/value-mining-reclamation-planning-the-transformation-from-quarry-to-place/.

IMAGE TABLE

IMAGE_1 _Worker Standing Next To A Machinery Piece . . . . .	.19
SOURCE: https://www.pinterest.it/pin/770045236261059900/	
IMAGE_2 _Map Of Sesto San Giovanni In 1913 . . . . .	.21
SOURCE: Greco, Sabrina, And Gian Paolo Semino. Costruzione E Trasformazione Del Paesaggio: La Città Industriale Di Sesto San Giovanni: Progetto Di Iper testo Per Il Museo Dell'industria E Del Lavoro. Libreria Clup, 2002.	
IMAGE_3 _Falck Workers Protest At Galleria Vittorio Emmanuele . . . . .	.23
SOURCE: http://www.lombardiabeniculturali.it/fotografie/schede/IMM-2w020-0001344/	
IMAGE_4 _A New Industrial Society Is Born . . . . .	.25
SOURCE: https://prcbrescia.org/2019/03/28/la-riscossa-del-68-69-il-secondo-biennio-rosso-domenica-7-aprile-2019-ore-9-30-brescia/	
IMAGE_5 _Pirelli Factory Complex In Milan(1900) . . . . .	.27
SOURCE: https://www.fondazionepirelli.org/it/iniziative/la-prima-fabbrica-pirelli-una-rivoluzione-industriale/	
IMAGE_6 _Ilva Metalurgical Complex In Taranto (2019) . . . . .	.27
SOURCE: https://www.vocecontrocorrente.it/2019/11/18/ex-ilva-di-taranto-quando-e-comin-	

IMAGE_7 _Italian Main Industrial Districts In 1950. . . . .	.28
SOURCE: Author's Elaboration	
IMAGE_8 _Italian Main Industrial Districts In 2011. . . . .	.29
SOURCE: Author's Elaboration	
IMAGE_9 _Type Of Italian Industrial Complexes In 1950. . . . .	.30
SOURCE: Author's Elaboration	
IMAGE_10 _Type Of Italian Industrial Complexes In 2011 . . . . .	.31
SOURCE: Author's Elaboration	
IMAGE_11 _Italian Migration Phenomena From 1950 - 1970 . . . . .	.32
SOURCE: Author's Elaboration	
IMAGE_12 _Italian Migration Phenomena From 1950 - 1970 . . . . .	.33
SOURCE: Author's Elaboration	
IMAGE_13 _Mario Stroppa's Illustration Of Milan's Industrial Expansion. . . . .	.35
SOURCE: Greco, Sabrina, And Gian Paolo Semino. <i>Costruzione E Trasformazione Del Paesaggio: La Città Industriale Di Sesto San Giovanni: Progetto Di Iperesto Per Il Museo Dell'industria E Del Lavoro</i> . Libreria Clup, 2002.	
IMAGE_14 _Aerial View Of The Falck Factory In 1930 . . . . .	.36
SOURCE: Greco, Sabrina, And Gian Paolo Semino. <i>Costruzione E Trasformazione Del Paesaggio: La Città Industriale Di Sesto San Giovanni: Progetto Di Iperesto Per Il Museo Dell'industria E Del Lavoro</i> . Libreria Clup, 2002.	
IMAGE_15 _Timeline Of Sesto San Giovanni's Main Historic Events . . . . .	.36
SOURCE: Author's Elaboration	
IMAGE_16 _Aerial View Of The Breda Factory In 1950. . . . .	.38
SOURCE: Greco, Sabrina, And Gian Paolo Semino. <i>Costruzione E Trasformazione Del Paesaggio: La Città Industriale Di Sesto San Giovanni: Progetto Di Iperesto Per Il Museo Dell'industria E Del Lavoro</i> . Libreria Clup, 2002.	
IMAGE_17 _View Of Breda's Boiler Production Room For Locomotives . . . . .	.39
SOURCE: Greco, Sabrina, And Gian Paolo Semino. <i>Costruzione E Trasformazione Del Paesaggio: La Città Industriale Di Sesto San Giovanni: Progetto Di Iperesto Per Il Museo Dell'industria E Del Lavoro</i> . Libreria Clup, 2002.	
IMAGE_18 _Sesto's Industrial Zone in 1980 . . . . .	.41

SOURCE: <https://www.skyscrapercity.com/threads/milano-sesto-san-giovanni-proget-to-aree-falck-foster-app.355065/page-83>

IMAGE_19_Sesto San Giovanni's PGT Of 196242

SOURCE: Greco, Sabrina, And Gian Paolo Semino. Costruzione E Trasformazione Del Paesaggio: La Città Industriale Di Sesto San Giovanni: Progetto Di Iperresto Per Il Museo Dell'industria E Del Lavoro. Libreria Clup, 2002.

IMAGE_20_Bottoni's Draft Masterplan For Sesto's 1973 PGT.43

SOURCE: Greco, Sabrina, And Gian Paolo Semino. Costruzione E Trasformazione Del Paesaggio: La Città Industriale Di Sesto San Giovanni: Progetto Di Iperresto Per Il Museo Dell'industria E Del Lavoro. Libreria Clup, 2002.

IMAGE_21_New Urban Developments On Former Marelli Factory.44

SOURCE: https://it.wikipedia.org/wiki/Sesto_San_Giovanni

IMAGE_22_Current Brownfields In The Former Falck Factories45

SOURCE: <http://www.andreacentonze.com/2017/12/04/area-delle-ex-acciaierie-falck-a-sesto-san-giovanni-ad-inizio-2017/>

IMAGE_23_Satellite Image Of Sesto's Falck Area In 2000.46

SOURCE: Google Earth

IMAGE_24_Satellite Image Of Sesto's Falck Area In 2019.47

SOURCE: Google Earth

IMAGE_25_Milan Evolution Legend.48

SOURCE: Author's Elaboration

IMAGE_26_Milan In 1931 "Mono Centric Model"49

SOURCE: Author's Elaboration

IMAGE_27_Milan In 1971 "Urban Village Model"49

SOURCE: Author's Elaboration

IMAGE_28_Milan In 2011 "Polycentric Model".49

SOURCE: Author's Elaboration

IMAGE_29_Satellite Image Of Milan Metropolitan City Area.50

SOURCE: https://www.reddit.com/r/europe/comments/hxk2do/milan_at_night_seen_from_space/

IMAGE_30_Drawing Of The First Milanese City Expansion Project53

SOURCE: Greco, Sabrina, And Gian Paolo Semino. Costruzione E Trasformazione Del Paesaggio: La Città Industriale Di Sesto San Giovanni: Progetto Di Iperresto Per Il

Museo Dell'industria E Del Lavoro. Libreria Clup, 2002.

IMAGE_31 Low Density City In The Milan Metropolitan Area55

SOURCE: <https://it.wikipedia.org/wiki/Nosate>

IMAGE_32 High Density City In The Milan Metropolitan Area55

SOURCE: https://it.wikipedia.org/wiki/Grattacieli_di_Milano

IMAGE_33 Diagram Of Different Generation Cities.58

SOURCE: Author's Elaboration

IMAGE_34 Milan Metropolitan Area Within Different City Generations59

SOURCE: Author's Elaboration

IMAGE_35 Inner View Of Melzi Quarry Areas61

SOURCE: <http://melziefigli.weebly.com/gallery.html>

IMAGE_36 Diagram Of The Extractive Economic Cycle63

SOURCE: Author's Elaboration

IMAGE_37 Coal Extraction Site63

SOURCE: <https://www.sierraclub.org/articles/2020/11/coal-mining-industry-collapsing-and-communities-are-risk-abandoned-mines>

IMAGE_38 Diagram Of The Industrial Transformation Economic Cycle64

SOURCE: Author's Elaboration

IMAGE_39 Working Camps For Oil Industries In Irak.65

SOURCE: <https://www.mottmac.com/article/3392/rumaila-oilfield-iraq>

IMAGE_40 Big Infrastructure Areas In Urban Areas Of China67

SOURCE: <https://largest.org/technology/road-networks/>

IMAGE_41 Urban Quarry Within The Urban Area Of Atlanta67

SOURCE: <https://atlanta.curbed.com/atlanta-photo-essays/2018/1/11/16879302/photos-atlanta-bellwood-quarry-beltline>

IMAGE_42 Sesto'S Extraction Cycle Before The Industrial Downfall68

SOURCE: Author's Elaboration

IMAGE_43 Sesto'S Extraction Cycle After The Industrial Downfall68

SOURCE: Author's Elaboration

IMAGE_44 Satellite Image Of A Sand Quarry In The Outskirts Of Milan71

SOURCE: Google Earth

IMAGE_45_Satellite Image Of A Marble Quarry In Colonnata71

SOURCE: Google Earth

IMAGE_46_Satellite Image Of A Stone Quarry In Frosolone71

SOURCE: Google Earth

IMAGE_47_Diagram Of Possible Interventions Within Quarries72

SOURCE: Google Earth

IMAGE_48_Legal Framework For Quarries In Italy77

SOURCE: Author's Elaboration

IMAGE_49_Intercontinental Shanghai Quarry Hotel81

SOURCE: <https://www.lonelyplanet.com/articles/quarry-hotel-shanghai-china-open>

IMAGE_50_Quarry Used As A City Park In Shanghai, China82

SOURCE: <http://landezine.com/index.php/2013/02/quarry-garden-in-shanghai-botanical-garden>

IMAGE_51_Quarry Collapse In Borba, Portugal (2018)83

SOURCE: <https://www.portugalresident.com/quarry-dangers-continue-one-year-on-from-bor%ADba-disaster/>

IMAGE_52_Quarry Collapse Inside An Urban Area In Malta83

SOURCE: <https://timesofmalta.com/articles/view/natural-and-man-made-factors-behind-quarry-collapse-architect.297378>

IMAGE_53_Diagram Of Productive Circuits Model86

SOURCE: Author's Elaboration

IMAGE_54_Relationship Between Financial And Extraction Circuits89

SOURCE: Author's Elaboration

IMAGE_55_C - Mine Square Project In Belgium91

SOURCE: <https://timesofmalta.com/articles/view/natural-and-man-made-factors-behind-quarry-collapse-architect.297378>

IMAGE_56_Industrial Heritage In Zollverein Park, Germany.92

SOURCE: <http://lepamphlet.com/2012/12/17/zollverein/>

IMAGE_57_Industrial And Natural Landscapes In Emscher Park, Germany.93

SOURCE: <https://www.open-iba.de/en/geschichte/1989-1999-iba-emscher-park/landschafts-park-duisburg-nord-duisburg/>

IMAGE_58 _Inside Melzi Quarry Overlooking The Falck Area . . . . .	.97
SOURCE: http://melziefigli.weebly.com/	
IMAGE_59 _Legend Of Sesto's Growth . . . . .	.98
SOURCE: Author's Elaboration	
IMAGE_60 _Sesto San Giovanni In 1840 . . . . .	.99
SOURCE: Author's Elaboration	
IMAGE_61 _Sesto San Giovanni In 1914 . . . . .	.99
SOURCE: Author's Elaboration	
IMAGE_62 _Sesto San Giovanni In 1888 . . . . .	.99
SOURCE: Author's Elaboration	
IMAGE_63 _Sesto San Giovanni In 1936 . . . . .	.99
SOURCE: Author's Elaboration	
IMAGE_64 _Sesto San Giovanni In 1968	100
SOURCE: Author's Elaboration	
IMAGE_65 _Satellite View Of Sesto In 2000	101
SOURCE: Google Earth	
IMAGE_66 _Satellite View Of Sesto In 2020	101
SOURCE: Google Earth	
IMAGE_67 _Urban Environment Of Sesto's Industrial Area	103
SOURCE: Author's Elaboration	
IMAGE_68 _Surroundings Of The Melzi Quarry	103
SOURCE: Author's Personal Photographs	
IMAGE_69 _T5 Building In The Area Falck	104
SOURCE: Author's Personal Photographs	
IMAGE_70 _CECA Residential Neighborhood	105
SOURCE: https://www.ordinearchitetti.mi.it/it/mappe/itinerari/edificio/623/28-lo-studio-bb-pr-e-milano/galleria	
IMAGE_71 _North Ring Highway Milano	105
SOURCE: https://www.dagospia.com/mediagallery/Dago_fotogallery-255389/1238070.htm	
IMAGE_72 _Former Masterplan Of Falck Area By RPBW	107

SOURCE: <https://www.architetturaecosostenibile.it/architettura/progetti/renzo-piano-ex-falck-732>

IMAGE_73_Falck's Masterplan By Foster And Partners 107

SOURCE: https://www.monitorimmobiliare.it/hines-e-intesa-500-mln-per-milanosesto_20201021937

IMAGE_74_Situation Of Falck Area After Urban Intervention. 108

SOURCE: Author's Elaboration

IMAGE_75_ Situation Of Falck Area Before Intervention 108

SOURCE: Author's Elaboration

IMAGE_76_Proposed Residential Areas In The New Falck Development 109

SOURCE: <https://www.corriere.it/economia/finanza/cards/milano-cosi-rinasciranno-ex-acciaierie-falck-sesto-progetto-hines-prelios/impegno-hines-prelios.shtml>

IMAGE_77_Future Project for Sesto'a Train Station 110

SOURCE: <https://www.milanotoday.it/attualita/progetto-nuova-stazione-sesto.html>

IMAGE_78_Future City Of Health Project. 110

SOURCE: <https://www.mcarchitects.it/project/citta-della-salute-e-della-ricerca>

IMAGE_79_Interior Rendering Of Falck Area Project 110

SOURCE: <https://www.corriere.it/economia/finanza/cards/milano-cosi-rinasciranno-ex-acciaierie-falck-sesto-progetto-hines-prelios/impegno-hines-prelios.shtml>

IMAGE_80_Interior view Of Sesto's New Train Station 111

SOURCE: <https://www.milanotoday.it/attualita/progetto-nuova-stazione-sesto.html>

IMAGE_81_Future City Of Health Project. 111

SOURCE: <https://www.mcarchitects.it/project/citta-della-salute-e-della-ricerca>

IMAGE_82_Rendering Of Falck Area Project 111

SOURCE: <https://blog.urbanfile.org/2020/10/21/milano-sesto-san-giovanni-hines-e-kuwait-puntano-mezzo-miliardo-per-milanosesto/>

IMAGE_83_Cascina De' Gatti Gate 113

SOURCE: Author's Personal Photographs

IMAGE_84_The Residential Surroundings Of Melzi Quarry. 115

SOURCE: https://issuu.com/diariodiunabicietta/docs/diario_di_una_bicietta

IMAGE_85_Sesto's Skyline Seen From Cavalcavia Vulcano 115

SOURCE: <https://www.vivalarchitettura.it/la-difficile-definizione-di-un-paesaggio-urbano/>

IMAGE_86 _Diagram Of Analysis Area	116
SOURCE: Author's Elaboration	
IMAGE_87 _Land Use Legend	118
SOURCE: Author's Elaboration	
IMAGE_88 _Curren Land Use Of Melzi Quarry Surrounding	119
SOURCE: Author's Elaboration	
IMAGE_89 _Future Land Use Of Melzi Quarry Surrounding	119
SOURCE: Author's Elaboration	
IMAGE_90 _Public Gatherings Legend	120
SOURCE: Author's Elaboration	
IMAGE_91 _Jogging At The Parco Della Media Valle Del Lambro	121
SOURCE: https://issuu.com/diariodiunabicietta/docs/diario_di_una_bicietta	
IMAGE_92 _Diagram Of Spatial Concentration Of The Population	121
SOURCE: Author's Elaboration	
IMAGE_93 _Stretching On The Public Areas Of Sesto	122
SOURCE: https://issuu.com/diariodiunabicietta/docs/diario_di_una_bicietta	
IMAGE_94 _Activities Generato Legend	122
SOURCE: Google Earth	
IMAGE_95 _Spaces Capable Of Generating Public Activities	123
SOURCE: Author's Elaboration	
IMAGE_96 _Main Plaza On Sesto San Giovanni's Center	123
SOURCE: https://www.nordmilano24.it/2018/12/28/sesto-il-caso-del-cane-del-non-vedente-nella-basilica-di-santo-stefano/	
IMAGE_97 _Interior View Of The Parco Della Media Valle Del Lambro	125
SOURCE: Author's Personal Photographs	
IMAGE_98 _Natural Systems Around Melzi Quarry	127
SOURCE: Author's Elaboration	
IMAGE_99 _Top Hill View On The Parco Della Media Valle Del Lambro	128
SOURCE: Author's Personal Photographs	

IMAGE_100 _Karl Marx Park In Sesto San Giovanni	128
SOURCE: Author's Personal Photographs	
IMAGE_101 _Green Spaces Surrounding The Milan Metropolitan City	129
SOURCE: https://www.cittametropolitana.mi.it/parco_agricolo_sud_milano/territorio_e_pianificazione/index2.html	
IMAGE_102 _Orography Of The Lambro River	131
SOURCE: Author's Elaboration	
IMAGE_103 _Lambro Flooding In Sesto In 1963	132
SOURCE: http://www.muvilo.it/bacheca/nuovi/sanmaurizio/pagina3.htm	
IMAGE_104 _Lambro River In Cologno Monzese	133
SOURCE: https://it.wikipedia.org/wiki/Lambro#/media/File:1.1.11.vallelambro_158.JPG	
IMAGE_105 _Flora And Fauna of The Lambro's Ecosystem	134
SOURCE: Author's Elaboration	
IMAGE_106 _Current Situation Of The Lambro Banks Within PMVL	135
SOURCE: Author's Personal Photographs	
IMAGE_107 _Lambro River Natural Environment Close To Melegnano.	135
SOURCE: https://it.wikipedia.org/wiki/Lambro#/media/File:Vettabbia_foce51.JPG	
IMAGE_108 _Re Lambro Park Project	136
SOURCE: http://www.contrattidifume.it/export/sites/default/it/doc/Azioni/progetti_collegati/Presentazione-Re-Lambro-ERSAF.pdf	
IMAGE_109 _Masterplan Proposal For Relambro Project	136
SOURCE: http://www.contrattidifume.it/export/sites/default/it/doc/Azioni/progetti_collegati/Presentazione-Re-Lambro-ERSAF.pdf	
IMAGE_110 _Falck Hill In Parco Media Valle Del Lambro	139
SOURCE: http://www.pmv.it/index.php?pag=sezioni&id_sezione=55&id_supersezione=38	
IMAGE_111 _Environment Inside The Neighboring Falck Park.	139
SOURCE: http://www.pmv.it/index.php?pag=sezioni&id_sezione=55&id_supersezione=38	
IMAGE_112 _Environment Inside The Neighboring Karl Marx Park	139
SOURCE: http://www.pmv.it/index.php?pag=sezioni&id_sezione=55&id_supersezione=38	
IMAGE_113 _Sesto Rondo Metro Station	141
SOURCE: https://it.wikipedia.org/wiki/Sesto_Rond%C3%B2	

IMAGE_114 _Road Network Surrounding Milan And Sesto San Giovanni	143
SOURCE: Author's Elaboration	
IMAGE_115 _Road Layout In Sesto Connecting Industrial Areas	144
SOURCE: Author's Elaboration	
IMAGE_116 _Milan Metro System	145
SOURCE: Author's Elaboration	
IMAGE_117 _Current View Of Viale Italia In Sesto San Giovanni	146
SOURCE: Google Street View	
IMAGE_118 _Transport Map Legend	146
SOURCE: Author's Elaboration	
IMAGE_119 _Transport Network In The Melzi Site Surroundings	147
SOURCE: Author's Elaboration	
IMAGE_120 _Future Transport Network In The Melzi Site Surroundings	147
SOURCE: Author's Elaboration	
IMAGE_121 _Sidewalk On Viale Edison	149
SOURCE: Author's Personal Photographs	
IMAGE_122 _Slow Mobility Infrastructure Near The Site	149
SOURCE: Google Street View	
IMAGE_123 _Current Situation With No Sidewalks On Via Parpagliona	150
SOURCE: Author's Personal Photographs	
IMAGE_124 _Pedestrian System Legend	150
SOURCE: Author's Elaboration	
IMAGE_125 _Situation Of Pedestrian Infrastructure Within The Site	151
SOURCE: Author's Elaboration	
IMAGE_126 _Proposed Pedestrian Infrastructure For The Site	151
SOURCE: Author's Elaboration	
IMAGE_127 _Current Situation Of Pedestrian Infrastructure Within The Site	152
SOURCE: https://issuu.com/diariodiunabicietta/docs/diario_di_una_bicicletta	
IMAGE_128 _Current Situation With No Sidewalks On Via Parpagliona	152

SOURCE: https://issuu.com/diariodiunabicietta/docs/diario_di_una_bicietta	
IMAGE_129 _cycle areas in the northern part of sesto san giovanni	153
SOURCE: https://tuttosesto.net/sesto-pista-ciclabile-eliminate-le-interruzioni-nella-par-te-nord/	
IMAGE_130 _View Of Via Parpagliona Overlooking The Falck Area	157
SOURCE: http://www.andreacentonze.com/2017/12/04/area-delle-ex-acciaiaerie-falck-a-ses-to-san-giovanni-ad-inizio-2017/	
IMAGE_131 _ District Of The Lambro Valley In 1869	159
SOURCE: Greco, Sabrina, And Gian Paolo Semino. Costruzione E Trasformazione Del Paesaggio: La Città Industriale Di Sesto San Giovanni: Progetto Di Iperresto Per Il Museo Dell'industria E Del Lavoro. Libreria Clup, 2002.	
IMAGE_132 _Falck Quarry Used As A Swimming Lagoon In The 1950'S.	160
SOURCE: http://www.muvido.it/bacheca/nuovi/sanmaurizio/pagina2.htm	
IMAGE_133 _Pietro Bottoni's 1963 PGT For Sesto San Giovanni	161
SOURCE: Greco, Sabrina, And Gian Paolo Semino. Costruzione E Trasformazione Del Paesaggio: La Città Industriale Di Sesto San Giovanni: Progetto Di Iperresto Per Il Museo Dell'industria E Del Lavoro. Libreria Clup, 2002.	
IMAGE_134 _ Aerial View Of The Melzi Quarry	161
SOURCE: https://issuu.com/diariodiunabicietta/docs/diario_di_una_bicietta	
IMAGE_135 _Satellite Image Of The Melzi Quarry And Its Surroundings	162
SOURCE: Google Earth	
IMAGE_136 _Diagram Of The Inner Zones Within Melzi Quarry	165
SOURCE: Author's Elaboration	
IMAGE_137 _Processes Diagram Of Activities Within Melzi Quarry	166
SOURCE: Author's Elaboration	
IMAGE_138 _View Of The Sand Embankment Area	167
SOURCE: http://melziefigli.weebly.com/	
IMAGE_139 _Aggregate Processing On The Melzi Quarry	168
SOURCE: http://melziefigli.weebly.com/	
IMAGE_140 _General Process Of Activities Done Within Melzi Quarry	168
SOURCE: Author's Elaboration	

IMAGE_141 _View Of The Concrete Packaging Area	169
SOURCE: http://melziefigli.weebly.com/	
IMAGE_142 _Sesto´s PGT "Acting Plan"	171
SOURCE: Comune Di Sesto San Giovanni. "Pgt Vigente " Documento Di Piano, 2019	
IMAGE_143 _Sesto´s PGT "Land Use"	172
SOURCE: Comune Di Sesto San Giovanni. "Pgt Vigente " Documento Di Piano, 2019	
IMAGE_144 _Sesto´s PGT "Productive System"	173
SOURCE: Comune Di Sesto San Giovanni. "Pgt Vigente " Documento Di Piano, 2019	
IMAGE_145 _Sesto´s PGT "Public and Consolidated City"	173
SOURCE: Comune Di Sesto San Giovanni. "Pgt Vigente " Documento Di Piano, 2019	
IMAGE_146 _Diagram Of Hierarchy Of Governance And Levels Of Planning.	175
SOURCE: Author's Elaboration	
IMAGE_147 _Diagram Of The Plan Rules In Sesto San Giovanni's PGT	176
SOURCE: Comune Di Sesto San Giovanni. "Pgt Vigente " Documento Di Piano, 2019	
IMAGE_148 _Planning And Evaluation Processes For Urban Developments In Italy. . .	177
SOURCE: Author's Elaboration	
IMAGE_149 _State Of Implementation Of The 2004 Pgt Projects	179
SOURCE: Comune Di Sesto San Giovanni. "Pgt Vigente " Documento Di Piano, 2019	
IMAGE_150 _Sesto's Transformation Areas By Competence	179
SOURCE: Comune Di Sesto San Giovanni. "Pgt Vigente " Documento Di Piano, 2019	
IMAGE_151 _Sesto's Industrial Skyline From The Pmvl.	181
SOURCE: Author's Personal Photographs	
IMAGE_152 _View Of The Melzi Quarry From The Pmvl.	181
SOURCE: Author's Personal Photographs	
IMAGE_153 _Sign Of Cascina De' Gatti Complex	185
SOURCE: Author's Personal Photographs	
IMAGE_154 _Farming Parcels Around Sesto's Main Core In 1855	187
SOURCE: Greco, Sabrina, And Gian Paolo Semino. Costruzione E Trasformazione Del Paesaggio: La Città Industriale Di Sesto San Giovanni: Progetto Di Iper-testo Per Il Museo Dell'industria E Del Lavoro. Libreria Clup, 2002.	

IMAGE_155 _Farming In The Premises Of Casa Colonica De Ponti In Sesto	188
SOURCE: Spampinato, Angelo. Immagini Di Sesto Antica. Gelmi Edizioni D'arte, 1980	
IMAGE_156 _Faces Of A Former Rural Past Of Sesto San Giovanni.	189
SOURCE: Geminiani, Amos, And Renzo Marchi. Cascine Di Sesto. Gelmi Ed. D'arte, 1970.	
IMAGE_157 _Villa Torretta As Sesto's Rural Heritage	190
SOURCE: https://www.villatorretta.it/history/?lang=en	
IMAGE_158 _Former Main Courtyard Of The Rural Sesto	190
SOURCE: Spampinato, Angelo. Immagini Di Sesto Antica. Gelmi Edizioni D'arte, 1980	
IMAGE_159 _Italian Rural Landscapes	191
SOURCE: https://www.lonelyplanet.com/articles/italy-city-of-wine-2021	
IMAGE_160 _Rural Parcels Surrounding Cascina De' Gatti In 1855	193
SOURCE: Greco, Sabrina, And Gian Paolo Semino. Costruzione E Trasformazione Del Paesaggio: La Città Industriale Di Sesto San Giovanni: Progetto Di Iper testo Per Il Museo Dell'industria E Del Lavoro. Libreria Clup, 2002.	
IMAGE_161 _Current Overview Of Cascina De' Gatti	194
SOURCE: Google Earth	
IMAGE_162 _View Of Cascina De' Gatti Under The Snow In 1900'S.	194
SOURCE: Spampinato, Angelo. Immagini Di Sesto Antica. Gelmi Edizioni D'arte, 1980	
IMAGE_163 _Satellite Image Of Cascina De' Gatti	196
SOURCE: Google Earth	
IMAGE_164 _View Of Cascina De Gatti's Internal Courtyard	197
SOURCE: Spampinato, Angelo. Immagini Di Sesto Antica. Gelmi Edizioni D'arte, 1980	
IMAGE_165 _Cascinas Location Within Sesto San Giovanni.	199
SOURCE: Author's Elaboration	
IMAGE_166 _Cascina Parpagliona In 1930	200
SOURCE: Geminiani, Amos, And Renzo Marchi. Cascine Di Sesto. Gelmi Ed. D'arte, 1970.	
IMAGE_167 _ Cascina Parpagliona In 1970	200
SOURCE: Geminiani, Amos, And Renzo Marchi. Cascine Di Sesto. Gelmi Ed. D'arte, 1970.	
IMAGE_168 _Current Situation Of Cascina Parpagliona.	200

SOURCE: Author's Personal Photographs

IMAGE_169_General Plan Of Cascina Parpagliona 201

SOURCE: Author's Elaboration

IMAGE_170_ Main Facade Of Cascina Parpagliona 201

SOURCE: Author's Elaboration

IMAGE_171_Areas Of Cascina Parpagliona 203

SOURCE: Author's Elaboration

IMAGE_172_Areas Of Cascina Rubina 204

SOURCE: Author's Elaboration

IMAGE_173_Cascina Rubina In 1950 206

SOURCE: Geminiani, Amos, And Renzo Marchi. Cascine Di Sesto. Gelmi Ed. D'arte, 1970.

IMAGE_174_Main Facade Of Cascina Rubina In 1950 206

SOURCE: Geminiani, Amos, And Renzo Marchi. Cascine Di Sesto. Gelmi Ed. D'arte, 1970.

IMAGE_175_Current Situation Of Cascina Rubina 206

SOURCE: Author's Personal Photographs

IMAGE_176_General Plan Of Cascina Rubina 207

SOURCE: Author's Elaboration

IMAGE_177_Southern Facade Of Cascina Rubina 207

SOURCE: Author's Elaboration

IMAGE_178_Tuscan Rural Landscapes Currently Protected By Rural Heritage Laws . . 208

SOURCE: <https://www.lonelyplanet.com/articles/green-spikes-italy>

IMAGE_179_Diagram Of Sustainable Development Components 210

SOURCE: <https://www.europanostra.org/our-work/policy/cultural-heritage-counts-europe/>

IMAGE_180_Diagram Of What Makes A Smart City 211

SOURCE: Neumann, Oliver & Portmann, Edy. (2017). Smart Cities: Lösungsansätze für die Städte der Zukunft. Innovative Verwaltung. 39. 8-12. 10.1007/s35114-017-0051-1.

IMAGE_181_Rural Landscapes On The Lomellina Area 212

SOURCE: <https://www.bedandbreakfastlomellina.it/lomellina/>

IMAGE_182 _Lomellina Landscapes In Winter	214
SOURCE: https://www.facebook.com/Ecomuseo-del-Paesaggio-Lomelli-no-214192312077244/	
IMAGE_183 _Rural Heritage Within The Ecomuseo Del Paesaggio Lomellino	215
SOURCE: https://www.facebook.com/Ecomuseo-del-Paesaggio-Lomelli-no-214192312077244/photos/a.214202765409532/422748567888283	
IMAGE_184 _Main Lake At Nanning Gardens	217
SOURCE: https://www.gooood.cn/quarry-gardens-in-nanning-garden-expo-park-by-atelier-dy-jg.htm?lang=en	
IMAGE_185 _Location Of The Case Study	218
SOURCE: Author's Elaboration	
IMAGE_186 _Satellite Image Of The Case Study	219
SOURCE: Google Earth	
IMAGE_187 _Zones Of The Harnes Project	220
SOURCE: http://recycledlandscapes.altervista.org/lagunage-de-harnes-et-bois-de-florimond-harnes-francia/	
IMAGE_188 _Former Mining Past Of Harnes	221
SOURCE: http://recycledlandscapes.altervista.org/lagunage-de-harnes-et-bois-de-florimond-harnes-francia/	
IMAGE_189 _Aerial View Of The Purification Lake	221
SOURCE: http://recycledlandscapes.altervista.org/lagunage-de-harnes-et-bois-de-florimond-harnes-francia/	
IMAGE_190 _Runners Around The Lakes Shores	221
SOURCE: http://recycledlandscapes.altervista.org/lagunage-de-harnes-et-bois-de-florimond-harnes-francia/	
IMAGE_191 _Location Of The Case Study.	222
SOURCE: Author's Elaboration	
IMAGE_192 _Satellite Image Of The Site Before The Project Intervention	223
SOURCE: Google Earth	
IMAGE_193 _Situation Of The Former Quarries Of Nanning	225
SOURCE: https://www.gooood.cn/quarry-gardens-in-nanning-garden-expo-park-by-atelier-dy-jg.htm?lang=en	

IMAGE_194	Masterplan For The Nanning Gardens Development.	225
	SOURCE: https://www.goood.cn/quarry-gardens-in-nanning-garden-expo-park-by-atelier-dy-jg.htm?lang=en	
IMAGE_195	View Of The Former Quarry Walls	226
	SOURCE: https://www.goood.cn/quarry-gardens-in-nanning-garden-expo-park-by-atelier-dy-jg.htm?lang=en	
IMAGE_196	Main Lagoon View Within Nanning Gardens	226
	SOURCE: https://www.goood.cn/quarry-gardens-in-nanning-garden-expo-park-by-atelier-dy-jg.htm?lang=en	
IMAGE_197	Recreation Zones Within The Park.	226
	SOURCE: https://www.goood.cn/quarry-gardens-in-nanning-garden-expo-park-by-atelier-dy-jg.htm?lang=en	
IMAGE_198	Location Of The Case Study.	228
	SOURCE: Author's Elaboration	
IMAGE_199	Satellite Image Of The Greenspring Project	229
	SOURCE: Google Earth	
IMAGE_200	Zoning Diagram For The Development Of Greenspring	230
	SOURCE: https://www.kci.com/resources-insights/innovator/value-mining-reclamation-planning-the-transformation-from-quarry-to-place/	
IMAGE_201	Aerial View Of The Quarry Lake With The Offices Buildings.	231
	SOURCE: https://www.obrechtproperties.com/properties/2510-2638-quarry-lake-drive-baltimore-md-21209/	
IMAGE_202	View Of The Main Retail Zone In Greenspring	231
	SOURCE: https://www.corfac.com/main/properties?propertyId=643408-lease	
IMAGE_203	Greenspring Residential & Mixe Use Zones.	231
	SOURCE: https://www.kci.com/resources-insights/innovator/value-mining-reclamation-planning-the-transformation-from-quarry-to-place/	
IMAGE_204	Location Of The Case Study.	232
	SOURCE: Author's Elaboration	
IMAGE_205	Milan And Its Disused Railway Stations	233
	SOURCE: Comune di Milano. " Documento Di Visione Strategica". 2017	
IMAGE_206	Overview Of The Scalo Farini Area	235
	SOURCE: Comune di Milano. " Documento Di Visione Strategica". 2017	

IMAGE_207 _Oma's Winner Proposal For The Scalo Farini Railway	235
SOURCE: https://oma.eu/projects/scalo-farini	
IMAGE_208 _Aerial View Of Scalo San Cristoforo	236
SOURCE: Comune di Milano. " Documento Di Visione Strategica". 2017	
IMAGE_209 _Oma's Winning Proposal For The Scalo San Cristoforo	236
SOURCE: https://oma.eu/projects/scalo-farini	
IMAGE_210 _Aerial Overview Of Scalo Porta Romana	237
SOURCE: Comune di Milano. " Documento Di Visione Strategica". 2017	
IMAGE_211 _Rendering Image By Project Winners Outcomist	237
SOURCE: https://www.domusweb.it/it/architettura/gallery/2021/03/31/annunciati-i-vincitori-del-concorso-per-lo-scalo-milanese-di-porta-romana.html	
IMAGE_212 _Aerial View Of The Scalo Lambrate	238
SOURCE: Comune di Milano. " Documento Di Visione Strategica". 2017	
IMAGE_213 _Aerial View Of The Scalo Greco - Pirelli	239
SOURCE: Comune di Milano. " Documento Di Visione Strategica". 2017	
IMAGE_214 _L'innesto Winner Proposal For Scalo Greco - Pirelli	239
SOURCE: https://blog.urbanfile.org/2019/05/22/milano-greco-reinventing-cities-al-lo-scalo-linnesto/	
IMAGE_215 _Aerial View Of Scalo Porta Genova	240
SOURCE: Comune di Milano. " Documento Di Visione Strategica". 2017	
IMAGE_216 _Diagram Of The Circle Line Project	241
SOURCE: Comune di Milano. " Documento Di Visione Strategica". 2017	
IMAGE_217 _Cloud Of Key Words Found Within The Case Studies	243
SOURCE: Author's Elaboration	
IMAGE_218 _Marelli's Workers During A Protest In Front Of The Factory	247
SOURCE: Vimercati, Luigi. La città Delle Fabbriche: Viaggio Nella Sesto S. Giovanni Del '900. A. Pizzi, 2002.	
IMAGE_219 _Word Map Of The Principles Of The Project	250
SOURCE: Author's Elaboration	
IMAGE_220 _Project Development Decision Action Line	254
SOURCE: Author's Elaboration	

IMAGE_221 Relations Between Project Concepts	255
SOURCE: Author's Elaboration	
IMAGE_222 Falck's T3 Demolition Works	257
SOURCE: https://www.archiportale.com/news/2007/10/eventi/ecomondo-2007-appuntamento-con-il-sistema-ambiente_10673_32.html	
IMAGE_223 Conceptual Intervention Plan For The Melzi Quarry.	259
SOURCE: Author's Elaboration	
IMAGE_224 Diagram For Site Connection With The Urban Tissue	260
SOURCE: Author's Elaboration	
IMAGE_225 Diagram Of Water Inclusion Within The Project Development.	263
SOURCE: Author's Elaboration	
IMAGE_226 Diagram Of The Ourification Lake Process Within The Project	264
SOURCE: Author's Elaboration	
IMAGE_227 Diagram Of The Normal Water Level Within The Project	266
SOURCE: Author's Elaboration	
IMAGE_228 Diagram Of The Water Level Within Rainy Season	266
SOURCE: Author's Elaboration	
IMAGE_229 Diagram Of The Water Level In The Maximum Flood Capacity	267
SOURCE: Author's Elaboration	
IMAGE_230 Diagram Of The Different Scales Of The Project.	269
SOURCE: Author's Elaboration	
IMAGE_231 Territorial Connections Based On The Lambro.	271
SOURCE: Author's Elaboration	
IMAGE_232 Green Connections In The Milan - Monza Area	273
SOURCE: Author's Elaboration	
IMAGE_233 Diagram Of Possible Connections Within The Local Scale	275
SOURCE: Author's Elaboration	
IMAGE_234 View Of The Modern Architecture Of Sesto San Giovanni	277
SOURCE: http://www.botta.ch/it/SPAZI%20DEL%20LAVORO?idx=3	
IMAGE_235 Project Of An Agro Park In Copenhagen	279

SOURCE: <https://www.archdaily.com/794507/agro-food-park-expansion-in-denmark-to-combine-urbanity-and-agriculture>

IMAGE_236_Diagram And Stakeholders On Scenario 1 279

SOURCE: Author's Elaboration

IMAGE_237_Amount Of Areas And Stakeholders In Scenario 1 280

SOURCE: Author's Elaboration

IMAGE_238_Bubble Diagram Of The Areas In Scenario 1. 281

SOURCE: Author's Elaboration

IMAGE_239_Milan's Citylife Urban Park 283

SOURCE: <https://www.one-works.com/our-works/citylife-milan-urban-park>

IMAGE_240_Diagram And Stakeholders On Scenario 2 283

SOURCE: Author's Elaboration

IMAGE_241_Amount Of Areas And Stakeholders In Scenario 2 284

SOURCE: Author's Elaboration

IMAGE_242_Bubble Diagram Of The Areas In Scenario 2. 285

SOURCE: Author's Elaboration

IMAGE_243_Resilience Neighborhood Project In Rotterdam. 287

SOURCE: <https://worldarchitecture.org/article-links/egnpc/lola-landscape-architects-koer-design-brings-back-lost-biotopes-in-rotterdam.html>

IMAGE_244_Interior View Of Resilience Neighborhood Project In Rotterdam 287

SOURCE: <https://worldarchitecture.org/article-links/egnpc/lola-landscape-architects-koer-design-brings-back-lost-biotopes-in-rotterdam.html>

IMAGE_245_Open Space In Sesto's Univillage 289

SOURCE: <https://www.uni-village.it/>

IMAGE_246_Concept Plan. 291

SOURCE: Author's Elaboration

IMAGE_247_Detailing The Concept Plan With New Zones 292

SOURCE: Author's Elaboration

IMAGE_248_Zones Vocations And Possible Ownerships 295

SOURCE: Author's Elaboration

IMAGE_249 Possible Stakeholders And Functions Within The Project	296
SOURCE: Author's Elaboration	
IMAGE_250 Accessibility Rules Legend.	298
SOURCE: Author's Elaboration	
IMAGE_251 Accessibility Rules Diagram	299
SOURCE: Author's Elaboration	
IMAGE_252 Accessibility Rules Diagram	300
SOURCE: Author's Elaboration	
IMAGE_253 Accessibility Rules Diagram	301
SOURCE: Author's Elaboration	
IMAGE_254 Flora And Fauna Rules	303
SOURCE: Author's Elaboration	
IMAGE_255 Landscape And Natural Systems Rules Diagram	304
SOURCE: Author's Elaboration	
IMAGE_256 Landscape And Natural Systems Rules Diagram	304
SOURCE: Author's Elaboration	
IMAGE_257 Landscape Rules Legend.	305
SOURCE: Author's Elaboration	
IMAGE_258 Building Environment Rules Diagram	307
SOURCE: Author's Elaboration	
IMAGE_259 Building Environment Rules	307
SOURCE: Author's Elaboration	
IMAGE_260 Building Environment Rules Diagram	308
SOURCE: Author's Elaboration	
IMAGE_261 Building Environment Rules Diagram	308
SOURCE: Author's Elaboration	
IMAGE_262 Building Environment Rules	309
SOURCE: Author's Elaboration	
IMAGE_263 Building Environment Rules Diagram	309

SOURCE: Author's Elaboration	
IMAGE_264 _Table Of Project Data	311
SOURCE: Author's Elaboration	
IMAGE_265 _Areas Division And Dimension Inside The Project	312
SOURCE: Author's Elaboration	
IMAGE_266 _Diagram Of Phases Division And Development For The Project	313
SOURCE: Author's Elaboration	
IMAGE_267 _Diagram Of The Phase 1 Of The Project	314
SOURCE: Author's Elaboration	
IMAGE_268 _Acquisition Process & Zones Diagram	315
SOURCE: Author's Elaboration	
IMAGE_269 _Diagram Of The Phase 2 Of The Project	316
IMAGE_270 _Acquisition Process & Zones Diagram	317
SOURCE: Author's Elaboration	
IMAGE_271 _Diagram Of The Phase 3 Of The Project	318
SOURCE: Author's Elaboration	
IMAGE_272 _Acquisition Process & Zones Diagram	319
SOURCE: Author's Elaboration	
IMAGE_273 _Layers Of The Project.	320
SOURCE: Author's Elaboration	
IMAGE_274 _Layers Of The Project.	321
SOURCE: Author's Elaboration	
IMAGE_275 _Final Image Included In The Sesto's Tissue	322
SOURCE: Author's Elaboration	
IMAGE_276 _Urban Section A_A (Left Side).	325
SOURCE: Author's Elaboration	
IMAGE_277 _Urban Section A_A (Right Side)	325
SOURCE: Author's Elaboration	
IMAGE_278 _Urban Section B_B (Left Side)	327

SOURCE: Author's Elaboration

IMAGE_279_Urban Section B_B (Right Side) 327

SOURCE: Author's Elaboration

IMAGE_280_High Density Residential Buildings Main Facade 328

SOURCE: Author's Elaboration

IMAGE_281_Medium Density Residential Buildings Main Facade 328

SOURCE: Author's Elaboration

IMAGE_282_Welcome Center Main Facade 330

SOURCE: Author's Elaboration

IMAGE_283_Eco museum And Bike Center Main Facade 330

SOURCE: Author's Elaboration

IMAGE_284_Zoom In Detail_1 332

SOURCE: Author's Elaboration

IMAGE_285_Zoom In Detail_2 332

SOURCE: Author's Elaboration

IMAGE_286_Zoom In Detail_3 333

SOURCE: Author's Elaboration

IMAGE_287_Zoom In Detail_4 333

SOURCE: Author's Elaboration

IMAGE_288_Zoom In Detail_5 334

SOURCE: Author's Elaboration

IMAGE_289_Zoom In Detail_6 334

SOURCE: Author's Elaboration

IMAGE_290_Zoom In Detail_7 335

SOURCE: Author's Elaboration

IMAGE_291_Zoom In Detail_8 335

SOURCE: Author's Elaboration

IMAGE_292_High Density Residential Area ISO View 336

SOURCE: Author's Elaboration

IMAGE_293 _Medium Density Residential Area ISO View	337
SOURCE: Author's Elaboration	
IMAGE_294 _Welcome Center ISO View	338
SOURCE: Author's Elaboration	
IMAGE_295 _Eco museum & Bike Center ISO View	339
SOURCE: Author's Elaboration	
IMAGE_296 _Urban Hinge And Observation Deck ISO View	340
SOURCE: Author's Elaboration	
IMAGE_297 _Zoom In Detail_4	341
SOURCE: Author's Elaboration	
IMAGE_298 _Render Image 1	342
SOURCE: Author's Elaboration	
IMAGE_299 _Render Image 2	344
SOURCE: Author's Elaboration	

AND SAGABES
MORNING
BE