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Principles of sustainability and ecological design planning and construction. A new approach for ecological design and organic urban development in Cesate

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Un ringraziamento va a tutte le persone che mi hanno sostenuto, incoraggiato e sopportato nel corso di questi anni.

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Abstract (english version)

In the cities there is a presence of diffuse and disorderly landlocked wide-open spaces between the buildings, as a result of urbanization of land (sprawl). These areas are examples of disorder and mode of growth of many medium size Italian cities. It is a characteristic morphological result of construction processes that occurred in the 50s, where there was a lack of planning policy. But even in cities where urban expansion has taken place respecting the rules of urban planning, the city are equipped with a series of spaces that remained partly unrealized, without identity that don't contribute essentially to the livability of cities.

With these features and with the intent to support the dissemination of knowledge and best practices as a tool to guide the sustainable decisions and behaviors, this thesis intends to discuss the elements and criteria which might address the development of 3 areas located into Cesate Municipality, in order to activate redevelopment projects to consolidate the presence of significant open spaces in the city and returning them to their environmental, social or ecological sustainable functions.

The goals pursued by the studies conducted on the 3 areas are to:

- reactivate the ecological and landscape values;
- maintain and qualify natural areas in urban and peri-urban areas;
- increase the sustainable use;
- restore and maintain a local identity;
- reduce human pressure;
- compact the urban form.

In other words, the thesis works into 3 areas without identity, with a high level of naturalistic resources but not recognized by the community and into the urban design. Their "anonymity" makes them weak facing the urbanization process and soil consumption. In fact, the effects of urban sprawl are those of inclusion and reduction of green spaces and the consequent lack of planning of the open areas, considered less important than the built-up areas. This phenomenon of expansion of the built environment has led to a fragmentation of the same open areas and their non-recognition in the landscape. (Kaplan & Austin, 2004)

The thesis proposes a guidelines to redesign the urban form through the establishment of a new dialogue between town and country, from the natural elements (countryside) to the urban open spaces. This thesis would suggest the importance of how areas of low value can become "heads" and the resources regenerating a new model of "urbanity"; these are the elements more than ever necessary to re-balance the human presence and the natural species (biodiversity).

Keywords: sustainable planning, land use, soil consumption, urban fringe/edges, renaturation of urban areas, sprawl, environmental sustainability

Abstract (italian version)

Nelle città è diffusa la presenza di disordinati ampi spazi aperti non costruiti racchiusi tra l'edificato come risultato dell'urbanizzazione sui territori liberi (sviluppo urbanistico incontrollato). Queste aree sono l'esempio del disordine pianificatorio e delle modalità costruttive di molte città italiane di medie dimensioni. È una caratteristica morfologica risultante dai processi di costruzione avvenuti a partire dagli anni '50, nei quali si registrava una carenze di pianificazione urbanistica. Anche nelle città dove l'espansione urbana ha avuto luogo rispettando le disposizioni della pianificazione urbanistica si ritrova una serie di spazi rimasti inurbanizzati, senza identità che essenzialmente non contribuiscono alla vivibilità delle città stesse.

Stante queste caratteristiche e con l'intento di supportare una migliore conoscenza e utilizzo delle buone pratiche come strumento guida verso decisioni e comportamenti sostenibili, questa tesi intende discutere gli elementi ed i criteri che possono indirizzare lo sviluppo di 3 aree localizzate all'interno del comune di Cesate, al fine di attivare alcuni progetti di riqualificazione per il consolidamento di una significativa presenza di spazi aperti all'interno della città in grado di affermare la loro funzione ambientale, sociale o funzioni di sostenibilità ecologica.

Gli obiettivi perseguiti dallo studio condotto sulle 3 aree sono:

- riattivare i valori ecologici e paesaggistici;
- mantenere e qualificare aree nello spazio urbano e peri-urbano;
- accrescere gli usi sostenibili;
- recuperare e mantenere l'identità locale;
- ridurre la pressione antropica;
- compattare la forma urbana.

In altre parole, la tesi si focalizza su 3 aree senza alcuna identità che posseggono, però, un alto livello di risorse naturalistiche, ma non riconosciute come tali dalla comunità e dalla forma urbana. La loro "anonimia" le rende deboli nei processi di urbanizzazione e di consumo del suolo. Infatti, gli effetti dello sviluppo urbano incontrollato sono l'inclusione e la riduzione delle aree verdi, con la conseguente mancanza di programmazione urbanistica riguardante le aree verdi, considerate meno importanti rispetto alle aree costruite. Questo fenomeno di espansione dell'ambiente costruito ha condotto ad una frammentazione delle stesse aree verdi e alla loro assenza di riconoscibilità nel paesaggio. (Kaplan & Austin, 2004)

La tesi propone delle linee guida per ridisegnare la forma urbana attraverso l'istituzione di un nuovo dialogo tra lo spazio costruito e la campagna (spazio natural), a partire dagli elementi naturalistici sino agli spazi urbani aperti. La tesi intende suggerire l'importanza del ruolo delle aree di basso valore ambientale, che possono diventare il "caposaldo" e le risorse rigeneratrici di un nuovo modello di "urbanità", questi sono gli elementi assolutamente necessari per ribilanciare le pressioni antropiche derivate dall'attività umana verso le specie naturali (biodiversità).

Parole chiave: pianificazione sostenibile, usi dei suoli, consumo di suolo, frange urbane, rinaturalizzazione aree urbane, sviluppo urbanistico, sostenibilità ambientale

1. Introduction

The thesis is aimed at analyzing and proposing innovative solutions adverse to the processes of intense territorial development model that, actually, produce soil consumption and a reduction of natural areas, in urban contexts and, particularly in the city fringes, where the urbanized and built environment clashes with the still free areas.

The fundamental goal is the preservation and qualification of these open spaces with a demonstration project aimed at spreading the knowledge of the territory and its fundamental features that it can assume for creation of a green system that integrates with the urban context.

To create an "ecological urban area" is necessary to build a range of progression and transition from an urban area and a natural area. A correct relationship between built-up areas and open areas can maintain and preserve the quality of the local environment as a reduction of environmental pressures induced by built-up areas. Therefore it is necessary to implement measures to define the urban form and the reconstruction of a suitable boundary between urban and rural areas. (Basilico, Enriquez, Bevacqua, & Villa, 2013)

In the growth of the cities there is a phenomenon of diffusion of large free intercluse zones or perimetral with respect to the built up area. These areas are examples of the disorder with which the cities have grown up, where the construction processes took place with projects in application, or in the absence, of a planning policy, and today they are lacking in identity and not belonging to a specific design: they are identified as "urban voids", ie essential contributions to the non-viability of the city.

Urban sprawl, diffused city or urban dispersion are terms that indicate a rapid and disorderly growth of an urban area, even in small to medium-sized cities. This phenomenon, in most cases, is affirming itself in the outlying areas, given the connotation of areas of recent expansion and subjected to continuous changes. (Gibelli & Salzano, 2006)

The effects of the diffused city are those of the inclusion and reduction of natural spaces that are considered residual with respect to the urbanized ones. This "dilatatory" phenomenon of the building has led to a fragmentation of the same natural areas and their less pronounced recognizability in the landscape.

The thesis is exemplary for:

- the reactivation of eco-landscape values through landscape redevelopment interventions;
- maintenance and qualification of natural areas in urban and peri-urban areas;
- increasing the sustainable usability of open spaces and their redesign and re-naturalization.

The thesis will discuss the case study of the Municipality of Cesate, located in the Lombardy region, in the north - western portion of the Province of Milan, on the border with the Province of Varese, in the geographical area known as North Milan. Its municipal territory in the northern and eastern part is lapped by the Groane Regional Park, crossed by the Guisa torrent and on which there are several valuable agricultural areas, always on the northern side.

It covers an area of 5.77 square kilometers, presenting a population of about 14,000 inhabitants and has recently completely revised its territorial governance plan, where two significant areas of naturalistic redevelopment bordering the site of Community interest have been identified (SIC) "Pinewood of Cesate" - IT2050001.

The city of Cesate, in this context, is a "city" in the "countryside", placed within a protected natural and territorial system, while maintaining the morphological, economic and social peculiarities of a peripheral city gravitating towards Milan.

The built-up area, on the other hand, is very compact and in continuity with the fabrics along the western and southern slopes (Caronno Pertusella and Garbagnate Milanese). Nevertheless, in peripheral fringes there is a presence of free areas between buildings and natural systems that this work intends to analyze and name as "ecological urban areas". (Basilico, Enriquez, Bevacqua, & Villa, 2013)

An excessive process of densification of urban areas leads to serious problems of internal sustainability in the buildings, in terms of space liveability, perception of temperatures, reduction of the level of living comfort and increase in criticality related to environmental components (air, water, soil and subsoil, etc.). (Bernatzky, 1982) (Oke, 1995)

In the same way, the free areas between buildings and natural systems, are very likely to lose their identity both looking at natural values, and of their contribution to the quality of life of the settled community. In fact, these areas can be carefully revisited in the key of reconciliation between the built environment and the natural environment, thus restoring a particular value in the landscape and environmental insertion, converting compromised surfaces in surfaces with high naturalistic value, landscape and usable by the community.

Cesate is characterized by a growing urban and residential density, a phenomenon that, like in many other municipalities in Lombardy, risks compromising the quality of living and living. The negative effects of excessive urban expansion are twofold: on the one hand, effects the quality of living; on the other, they distort the specific landscape and naturalistic features of the environmental and territorial context of reference.

This theme is more relevant and significant in correspondence with the margins of the city, where the settling tissues lose their ties and their coherences to push themselves and disperse themselves in the matrix of the open territories.

To make the countryside (and farmlands) penetrate into the city means, therefore, within the thesis project, to trigger a limit at the urbanization process: the basic concept is that in which the city is no longer expanding, consuming soil in the surrounding countryside but just the countryside to regain possession of parts of the city. (AA.VV., 1990) (Socco C. , Cavaliere, Guarini, & Montrucchio, 2005)

Moreover, a balanced relationship between built-up areas and free areas, allow to maintain and preserve the quality of the local environment to reduce the environmental pressures induced by the built-up area.

In fact, numerous scientific investigations have shown that the air temperature in the city is usually higher than that of the surrounding countryside. This phenomenon goes under the name of "urban heat island effect" and therefore indicates the greater capacity of the built environment, with respect to the countryside, to retain heat, so that the city is warmer due to the various metabolic activities of the city, such as heating buildings and industrial activities. (Bernatzky, 1982) (Oke, 1995)

The maintenance and relative valorization of green areas appropriately located in the city can have a mitigating effect on the thermal extremes at the macro-climatic level. The presence of vegetation contributes to the protection of both people and building structures from direct solar radiation and from the reverberation of paved surfaces, which is accompanied by the effect that green in residential areas can take in helping to save energy. (Bernatzky, 1982) (Oke, 1995)

We must also consider the problem of noise pollution that has assumed an increasing importance in recent years, the result of the increase in population and the excessive expansion of urbanized areas, as in the specific case of Cesate. Also in this case there is the effectiveness of the vegetation in attenuating the noises related to the urban traffic arteries. The reduction of the anthropic impacts produced by the "living phenomenon" are also objectives of the thesis. (Bettini, 1996) (Wilmers, 1988)

The thesis would develop on some areas of naturalistic reconversion, which today belong to the category of "urban voids": without identity and qualifying destination, scarcely accessible and not usable by the community. Their "anonymity" makes them weak in the face of the

relentless progress of urbanization, which by its nature expands and fills these empty spaces, if not even creating new ones.

The thesis would lay the foundations for the initiation of a process of redesigning the urban form and for establishing a form of dialectic between city, countryside and natural territories, starting from the elements of naturalness present at the territorial level and from the spaces open urban areas renamed "ecological urban areas" as defined above.

And it is precisely on this new definition that derives all the exemplary value of how areas of scarce value, become the founding cornerstones and the regenerative resources of a new model of "urbanity" and of a balance between human presence (anthropic activity) and natural species (biodiversity).

Finally, the thesis also pursues the objective to discuss and go deepen onto the issue of protecting and enhancing the identity of the landscape. The basic principle of this criterion is the protection and enhancement of the identity factors of the places where the project herewith developed is applied, that is to reassign them to the collective imaginary in order to avoid their abandonment.

It is obvius that if the open spaces are correctly inserted into the urbanized, contributes to establish an intimate link between citizens and the urban landscape, favoring a process of community’s identification with the territory, which contrasts the opposite process of rejection, typical of many degraded urban areas.

In short, the thesis will describe and discuss the following issues:

- renew and refurbish the urban fringe fabric.
- report the free and naturalistic territorial areas with the urban fabric.
- reduce human pressures in the urbanized area.
- compact the urban form respecting the natural elements present.
- conserve and improve the overall ecological quality.
- protecting and enhancing the identity characteristics of the landscape.
- mitigating territorial risks (natural and anthropogenic).

2. The typical relationship between built environment and natural environment in common urban transformations

In general, urban transformations trigger mechanisms of environmental fragmentation that can be explained as the process that generates a progressive reduction of the natural environments's surface, increasing their isolation. As a result of these processes, the natural surfaces are thus to form spatially segregated and progressively isolated fragments inserted in a territorial matrix strongly characterized by urban settlements. (Forman, 1995)

The environmental fragmentation also affects the alterations of the landscape structure, from this point of view comes the term "landscape fragmentation" that is used to indicate the structural changes of the landscape. The conditions of landscape fragmentation, due to the environmental fragmentation related to the habitats of animal and plant species, are determined by the landscape modifications induced mainly by the processes of use, management and territory's transformation. (Saunders, Hobbs, & Margules, 1991)

In this sense, the landscape must, first of all, constitute the context in which the transformation falls, taking into account that many of the processes and interactions that take place significantly influence biodiversity and therefore are an essential basis for the identity of the territory itself. Secondly, the cultural and perceptive aspects of the landscape can constitute complementary elements of the transformation itself through the identification of components and relationships aimed at conserving and enhancing the landscape, in order to amplify the role of the natural environment.

Going into the specific case study that will be examined in the following chapters and concerning the interaction between some areas of possible transformation, attention will be focused on areas located within the boundaries of the municipality of Cesate, on the edge of the urbanized environment and in direct contact with the environment natural. In this regard, in order to identify the causes of landscape and environmental fragmentation, historical aerial images were acquired from the Military Geographic Institute, as a cartographic entity of the State, comparing them with the current situation, with photographs taken in 1955, 1962 and 1988.

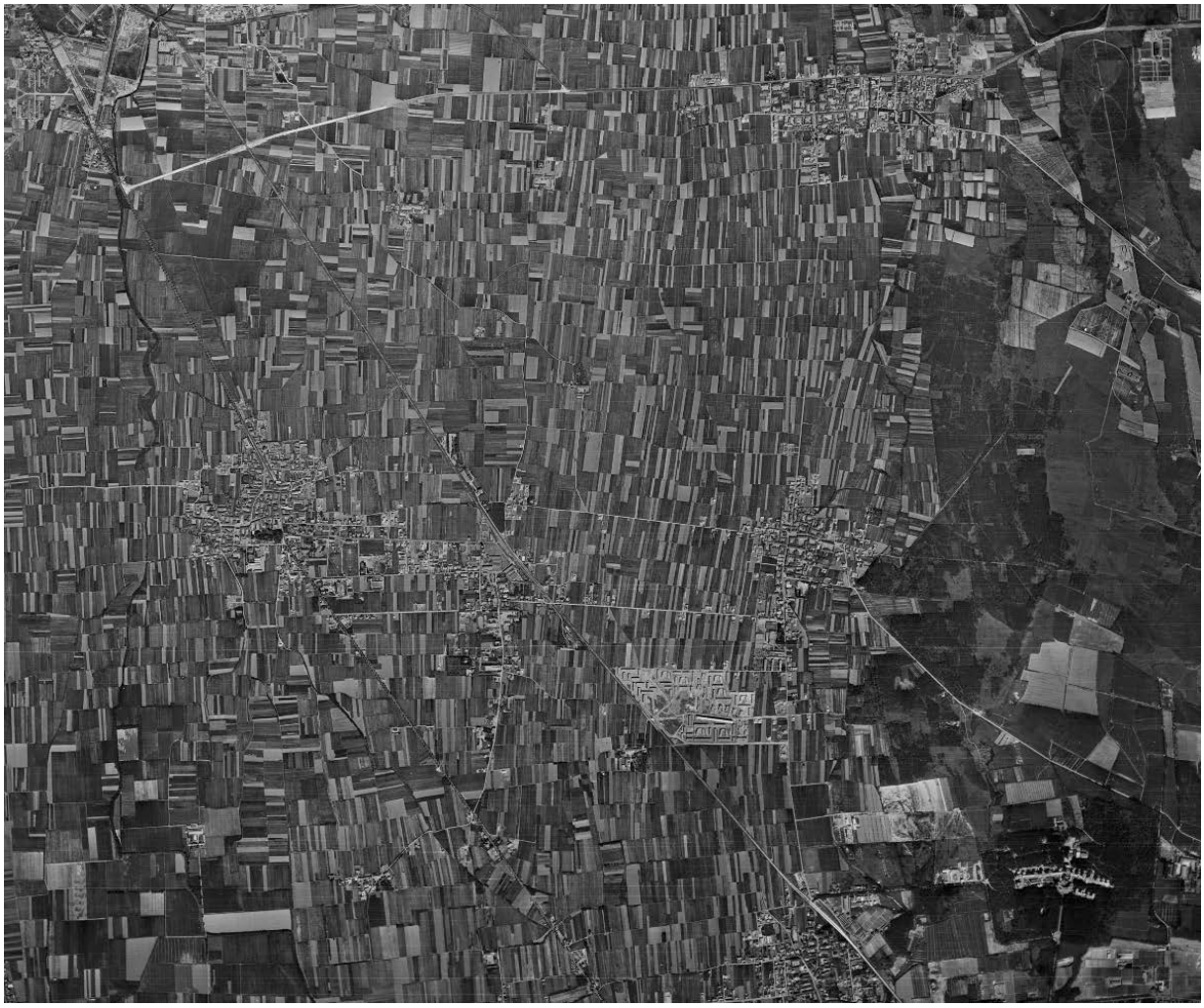


Figure 1 - Istituto Geografico Militare. Photografic shooting of the 9 May 1955 (IGM, Historical photos, 1955)

As you can see, most of the territories appear to have an agricultural vocation, the inhabited centers in the area that will be examined later are small in size.

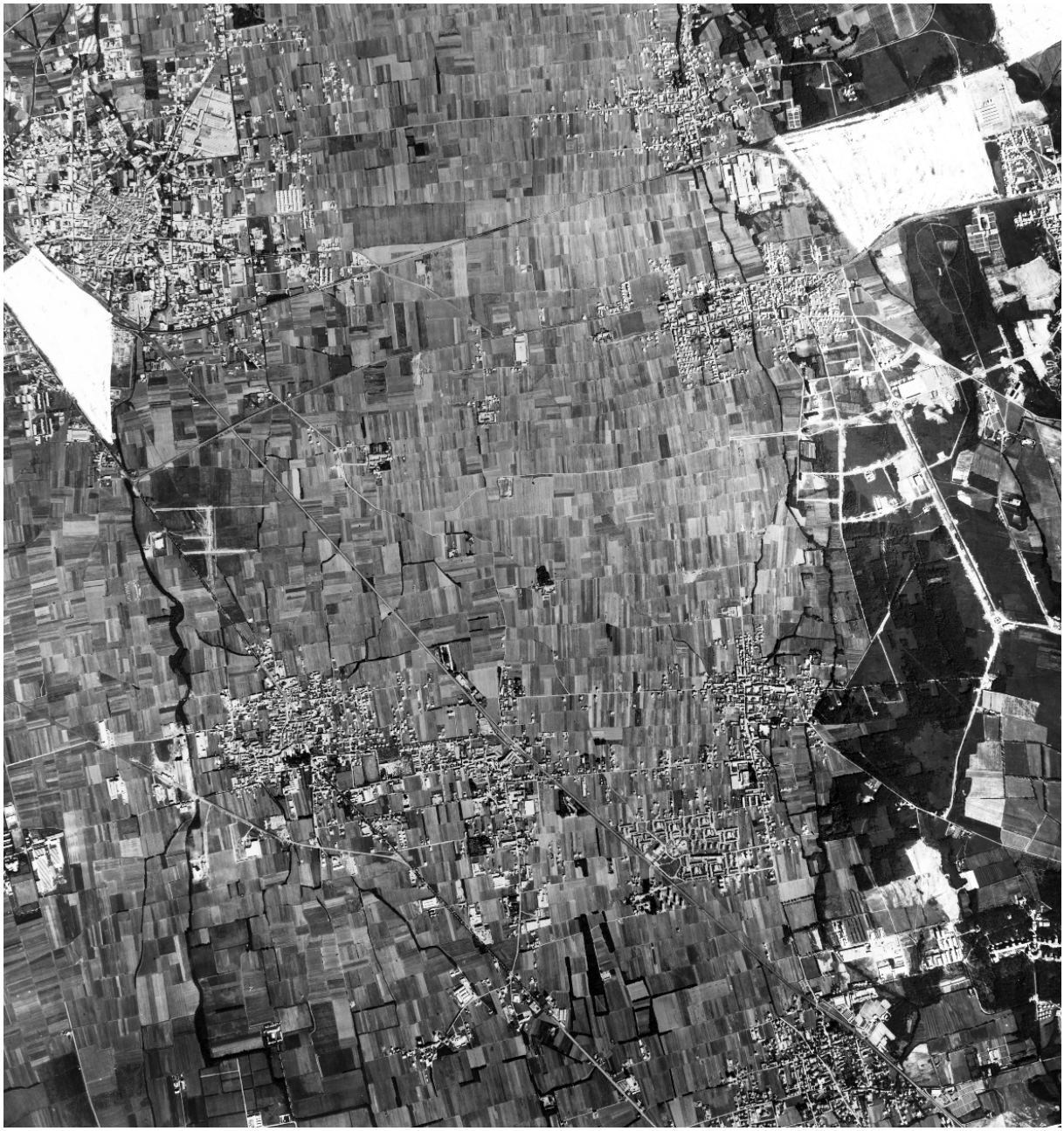


Figure 2 - Istituto Geografico Militare. Photografic shooting of the 18 September 1962 (IGM, Historical photos, 1962)

The increase in urban transformations leads to the first cases of landscape fragmentation, especially in areas located to the east near the Groane Regional Park.

Figure 3 - Istituto Geografico Militare. Photografic shooting of the 19 June 1988 (IGM, Historical photos, 1988)

Urban transformations occupied most of the territories facing east, isolating the agricultural areas facing north between the Groane Regional Park and the urban centers.

Figure 4 - Photografic shooting of the 2017 (Geoportale, 2017)

From the comparison between the various images over the decades and the current state of-the-art it can be seen that from the first aerial survey. A large part of the areas located in the territory of Cesate and those surrounding the municipalities of Solaro and Caronno Pertusella, had a purely agricultural vocation that has gradually been thinned in favor of the urbanized fabric.

In this sense it can be seen that at present the agricultural areas located to the north are reduced, while the filter between the town and the Regional Park of Groane is almost non-existent. Moreover this image shows how over the years the urban transformations have completely modified the identity and the vocation of the territories of the area that will subsequently be analyzed.

In the following chapters some analyzes will be developed regarding these areas and then come to the formulation of some guidelines aimed at addressing the possible transformation of the areas that will subsequently be examined. This in order to develop interactions and processes for the development and improvement of both the urbanized fabric, necessary for the achievement of the program objectives set by the current urban planning tool, and above all for the better integration and enhancement of the natural environment with the aim of

increasing the quality of the marginal natural environments that with the succession of urban transformations have lost identity and are fragmented.

3. Case study: Cesate and his particular environment

The reading of the case study of the territory of the Municipality of Cesate, which is described here, has as its main objective the analysis of the elements useful to trigger the enhancement of the territorial quality of the area. In this sense, the reading operations are not mainly entrusted to a functionalist description, based only on the quantification of data (socioeconomic, demographic, volumetric and intended use, infrastructural works). The analysis of this type of data is however dealt with and allows to configure a profile in its demographic, socio-economic and building transformation forms; as well as the same type of data it allows to frame the case study in the context in relation to the polarities and attractiveness, growth rates, also in relation to the framework of relationships and infrastructures.

But to describe a "place" and enhance it, it is also necessary to read "interpretation" of all its characters, which includes and uses objective data, but reads them on a more complex range of territorial forms: physical forms, landscape, forms environmental, ecology and geology, cultural forms in current and historical terms. All descriptions that arise from the territorial scale up to the local scale.

In particular, the case study will focus on three specific contexts of the territory of Cesate. These are three areas that have been chosen because of the relevance of their naturalistic features, for their strategic position in relation to the local and territorial scale, for their contribution to remodeling the current socio-economic and development structure (defined in the urban plan chosen and approved by the Municipality) and as fundamental elements of the identity of the territory that currently contribute to the identification of the "place" of Cesate.

The three areas on which this study will focus are so named and located in relation to the territory of Cesate (PGT, 2015):

1) Area AP1 – located at north-east between the urbanized territory and the territories of the Regional Park of Groane, as a buffer between the "built" and "the natural environment";
2) Area AP2 - located at southeast of the urban territory and the territories of the Groane Regional Park, as a buffer between the "built" and "the natural environment";
3) Area Ti - located at the north between the urbanized territory and the agricultural territories Park, as a buffer and element of future and defensive delimitation between the "built" and "the natural environment" agricultural

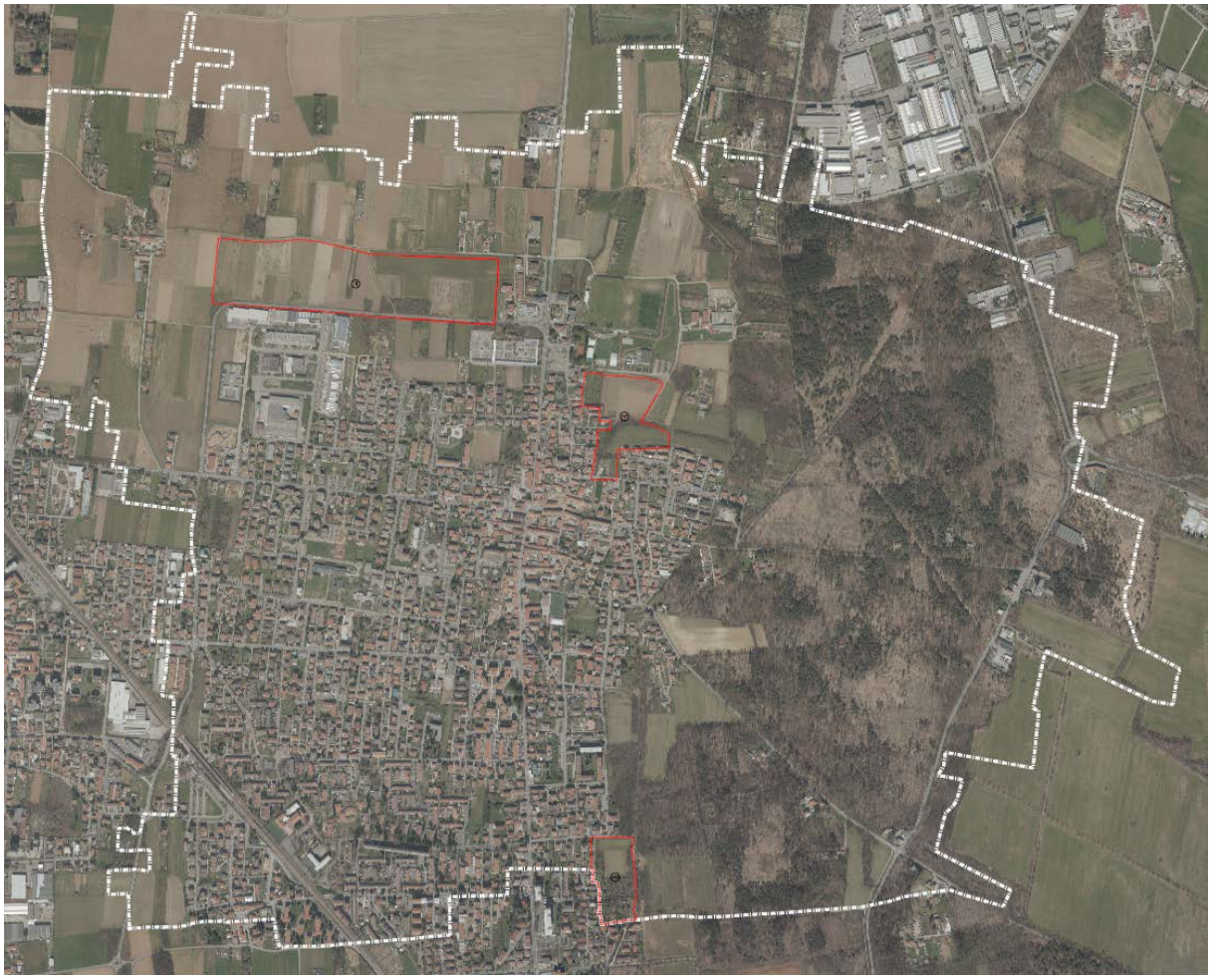


Figure 5 - Aerial photo 2017 with identification of municipal boundary and areas of intervention (PGT, 2015)

3.1 GENERAL ANALYSIS

A first step for the territorial analysis and its description in order to understood the particular framework, places the same in its territorial context of large area, adopting a "territorial" approach with the intent to highlight the essential characteristics of a territory and its structure in which it is inserted Cesate.

Therefore, reference was made in particular to: P.T.R. (Regional Territorial Plan, (PTR, 2017)), P.T.C.P. (Provincial Territorial Coordination Plan, (PTCP, 2014)), the Territorial Plan Coordination of the Groane Regional Park (PTC, 2012), the redevelopment infrastructural plans at the provincial level, with references also to other scientific literature that goes in this direction of the territorial analysis including the historical one.

In the first level of the vast area, a reference framework has therefore been identified which can be defined as the "Metropolitan territorial system of the West sector" as the same P.T.R. frames the Municipality of Cesate, and that has its specification in the terminology of "North-Milan" (PTR, 2017) along the industrial axis of the "North-West".

From this reading, some essential elements are extracted for the purpose of the analysis.

Than are dealing here with a "territorial type" system which concerns above all:

- an historical metropolitan area focused on the traditional industrial triangle Varese-Lecco-Milan, converging on the regional capital, characterized by settlement with very high densities, but also by large green spaces between the conurbations of the various poles. The progressive enlargement of the urban centers of the Metropolitan System, characterized by residential areas, large industries, now often abandoned, services, infrastructures, residual free areas, overlaps the original structure

incorporating old agrarian fabrics, farmhouses and rural centers, once independently identifiable and today become satellites of a single organism;

- the peculiarity of the settlement model of the Sempione axis, based on the dense conurbation Legnano-Busto Arsizio-Gallarate. Various dynamics (transport, economic development, production of hydraulic energy, etc.) have favored the emergence of a zone of intense industrialization, now in decline. With the creation of the new exhibition center in Pero-Rho and Malpensa airport;
- the polycentric structure and network organization of this territory;
- its specific identity that differentiates it from other parts of the metropolitan region;
- its relative but substantial autonomy in terms of high level and massive presence of industrial factories, highlight settlement increases and capacity to attract investments;
- the importance and value (as an attractive capacity and as a quality indicator) of the open space system and ecological networks;

The second level of investigation and reading, has produced a focus of the peculiarities of the local territory. This result has been trasnslated into a territorial model that expresses the different "local settlement environments" or settlement fields structured by the main infrastructural networks. Above all the ecological one, in a scenario of a design type that can identify the elements of the project's territorial strategy.

From this investigation, the network character of this territorial system is evident, in which the structure of the settlements is based on poles, on average equipped each with basic services (education, equipment of the civil organization) proper to the polycentric form; but there are also some internal polarities in the system with higher service endowments (Garbagnate Milanese and Limbiate).

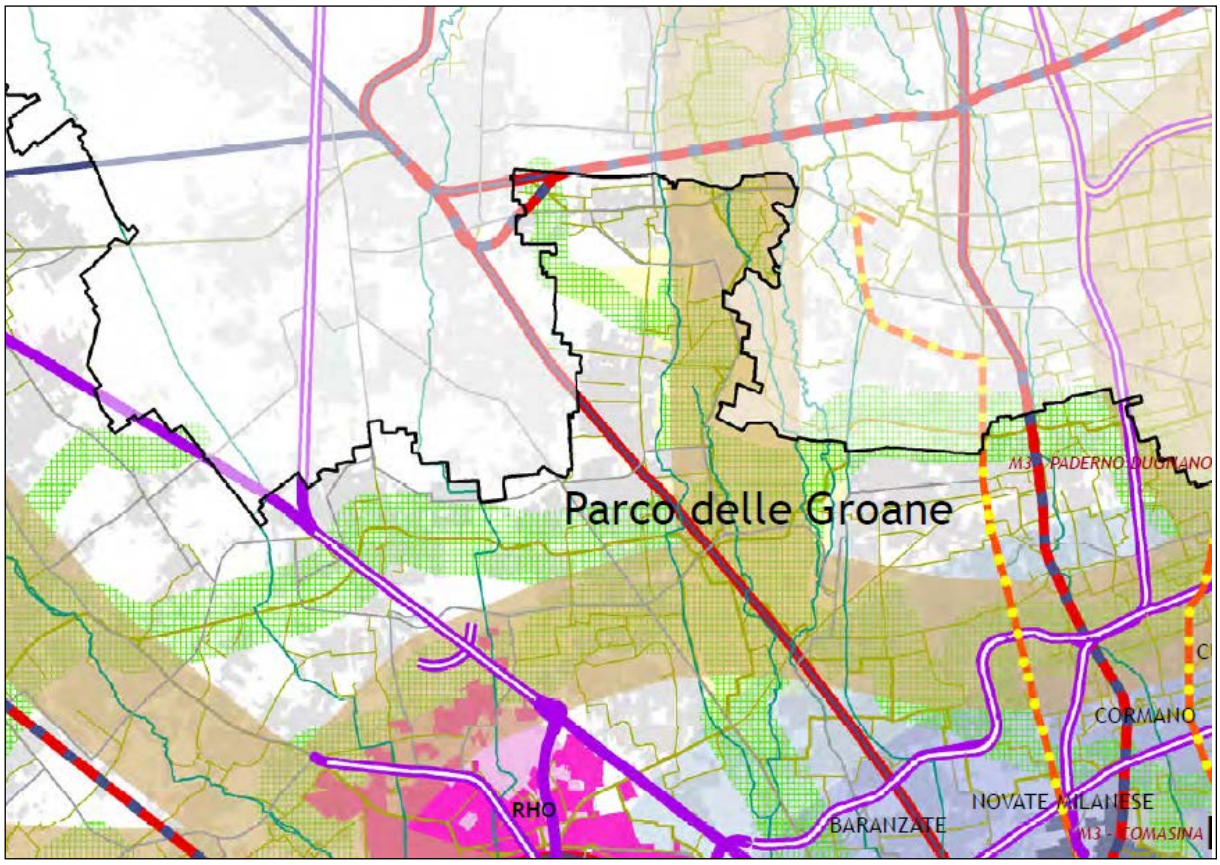


Figure 6 - Plan Strategies - (PTCP, 2014)

In this sense, Cesate can be placed in the range of aggregates with "medium / low settlement dynamics and endowments of services".

At the "model" level, Cesate is adjacent to two settlement environments with more "salient" connotations such as Garbagnate Milanese and Limbiate, placing itself in a network of settlements with a most distinctly polycentric and non-hierarchical character, with distinct and recognizable urban units (even with a tendency to reciprocal welding) and above all with an important structural role of free open spaces in the definition of the model.

In the "scenario" that represents a possible "area metaprogetto" (definition given by the Territorial Government Plan, (PGT, 2015)), Cesate assumes an important role for its strategic centrality of hinge in the model of the settlement environment in which it is also located towards minor centers such as Solaro, Senago and Ceriano Laghetto.

3.2 ANALYSIS OF THE SOCIO-ECONOMIC COMPONENT

The following tables and figures show information on the resident population as of December 2017, the density of the resident population and the demographic trend (from 1861 until 2017 and 2000-2017).

The analysis of demographic development was carried out using ISTAT (ISTAT, 2017) data as well as those coming from the municipal registry office.

The historical series of the censuses from 1861 to 2011 and 2017 is illustrated by the following graphs and tables.

Year	Population	Territorial density ab/Kmq.	Increase	Annual % increase
1861	1.163	204,4	0	0,00
1871	1.378	242,2	215	18,49
1881	1.438	252,7	60	4,35
1901	1.794	315,3	356	24,76
1911	2.096	368,4	302	16,83
1921	2.253	396,0	157	7,49
1931	2.670	469,2	417	18,51
1936	2.700	474,5	30	1,12
1951	3.044	535,0	344	12,74
1961	6.554	1.151,8	3.510	115,31
1971	8.640	1.518,5	2.086	31,83
1981	8.429	1.481,4	-211	-2,44
1991	10.831	1.903,5	2.402	28,50
2001	12.337	2.168,2	1.506	13,90
2011	13.879	2.439,2	1.542	12,50
2017	14.377	2.526,7	498	3,59

Table 1 - Population evolution at the 1861-2011 censuses and 2017 population

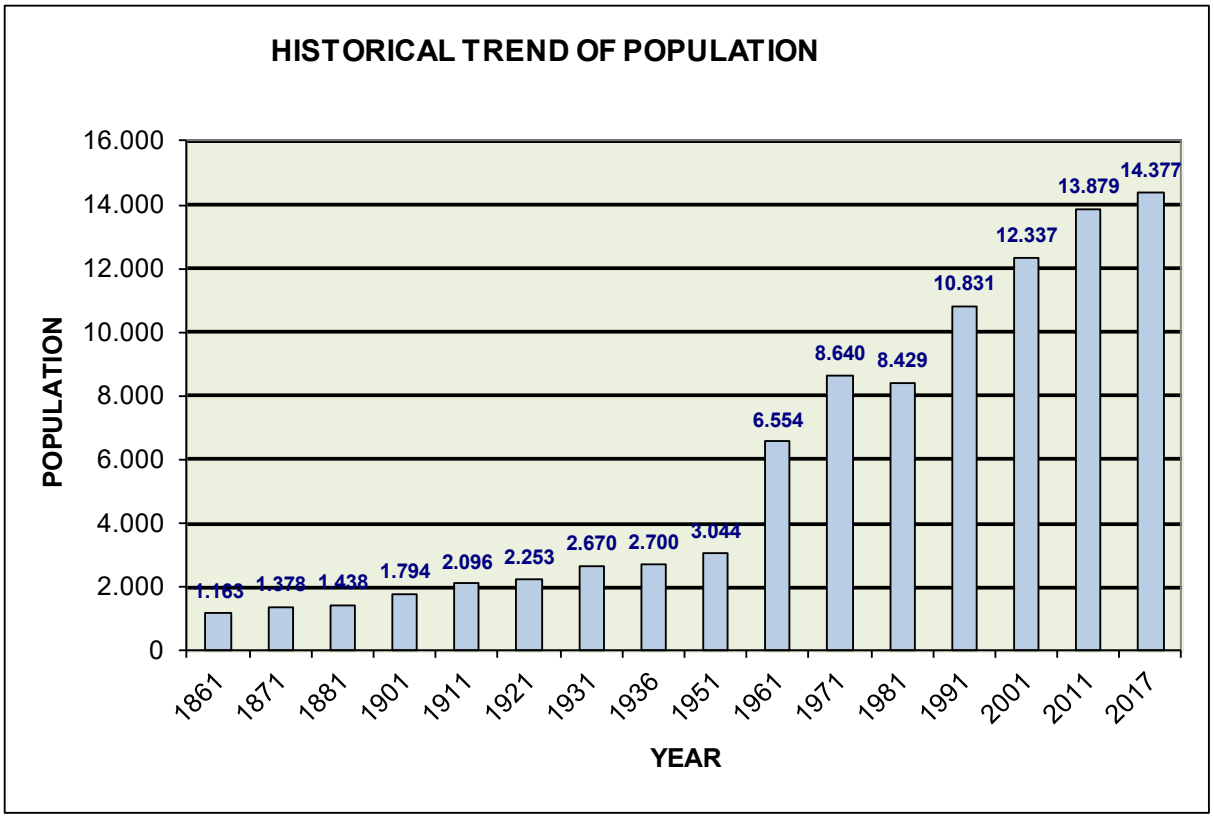


Chart 1 - Population evolution at the 1861-2011 censuses and 2017 population

The analysis of the demographic trend in the interval considered for 150 years shows that between the decades from 1861 to 1951 there is a tendentially constant growth with a significant stop between the 1936 and 1951 decades, which can be explained by the economic recession phase started with the crisis of 1929 and the impacts of the second world war. Conversely, between the decades of 1951-1961 there was an exponential growth of the population that went from the 3,044 inhabitants of 1951 to the 6,554 inhabitants surveyed in 1961, with a net increase of 3,510 units.

During this ten-year period Cesate undergoes an increase equal to almost double that of the previous 90 years. This situation is the result of the birth of the INA Village, as described in the succeeding.

Still until 1955 the Municipality of Cesate seemed insensitive to the migratory flow that was affecting the city of Milan and the surrounding municipalities in the post-war period. In this sense, the INA Village offered itself as an attractive area for a widespread migration phenomenon on northern Milan. Unlike what happened in other neighboring municipalities where immigration was due to free individual initiative in Cesate everything had been planned within the “Plan Fanfani". (Di Biagi, 2001)

Over decades between 1971 and 2001, Cesate restarts to have a tendentially constant growth, except for the survey of 1981 where there is a loss of 211 inhabitants compared to 1971, placing itself in contrast with the evolution of the other municipalities of the province and of the district in the same period.

The data for 2017 confirm the linear trend of growth.

Table 2 - Demographic movements in the years 2002-2017

	Natural movements			Migration movements							
Year	Born	Deceased	Natural balance	Immigrants	Emigrated	Migration balance	Total balance	Total Population	Increase of Residents	N° Families	Increase of Families
2002	139	89	50	335	353	-18	32	**12.369**			
2003	123	94	29	687	396	291	320	**12.689**	**320**	**4.816**	
2004	143	72	71	659	426	233	304	**12.993**	**304**	**5.106**	**290**
2005	134	98	36	590	542	48	84	**13.077**	**84**	**5.197**	**91**
2006	153	86	67	528	515	13	80	**13.157**	**80**	**5.231**	**34**
2007	127	110	17	593	462	131	148	**13.305**	**148**	**5.314**	**83**
2008	136	113	23	531	453	78	101	**13.406**	**101**	**5.422**	**108**
2009	139	98	41	670	465	205	246	**13.652**	**246**	**5.546**	**124**
2010	150	95	55	721	451	270	325	**13.977**	**325**	**5.688**	**142**
2011	146	125	21	637	468	169	190	**13.879**	**-98**	**5.751**	**63**
2012	126	136	-10	726	610	116	106	**13.985**	**106**	**5.762**	**11**
2013	112	118	-6	678	511	167	161	**14.146**	**161**	**5.830**	**68**
2014	134	110	24	501	471	30	54	**14.200**	**54**	**5.860**	**30**
2015	129	136	-7	499	477	22	15	**14.215**	**15**	**5.902**	**42**
2016	123	120	3	515	455	60	63	**14.278**	**63**	**5.908**	**6**
2017	112	112	0	606	507	99	99	**14.377**	**99**	**5.982**	**74**

With regard to the demographic development of the population over the last 10 years, taken at the end of each year, Cesate reports a positive natural balance of the population in each year, with the exception of the 2012, 2013 and 2015, which show a total negative balance of 23 inhabitants. Positive balances in relation to migratory movements, with the exception of the 2002. In particular, the year 2002 is characterized by a negative migratory balance corresponding to a loss of 18 inhabitants, which interrupted a tendentially constant and linear growth, as shown in the table above and the graph connected to it.

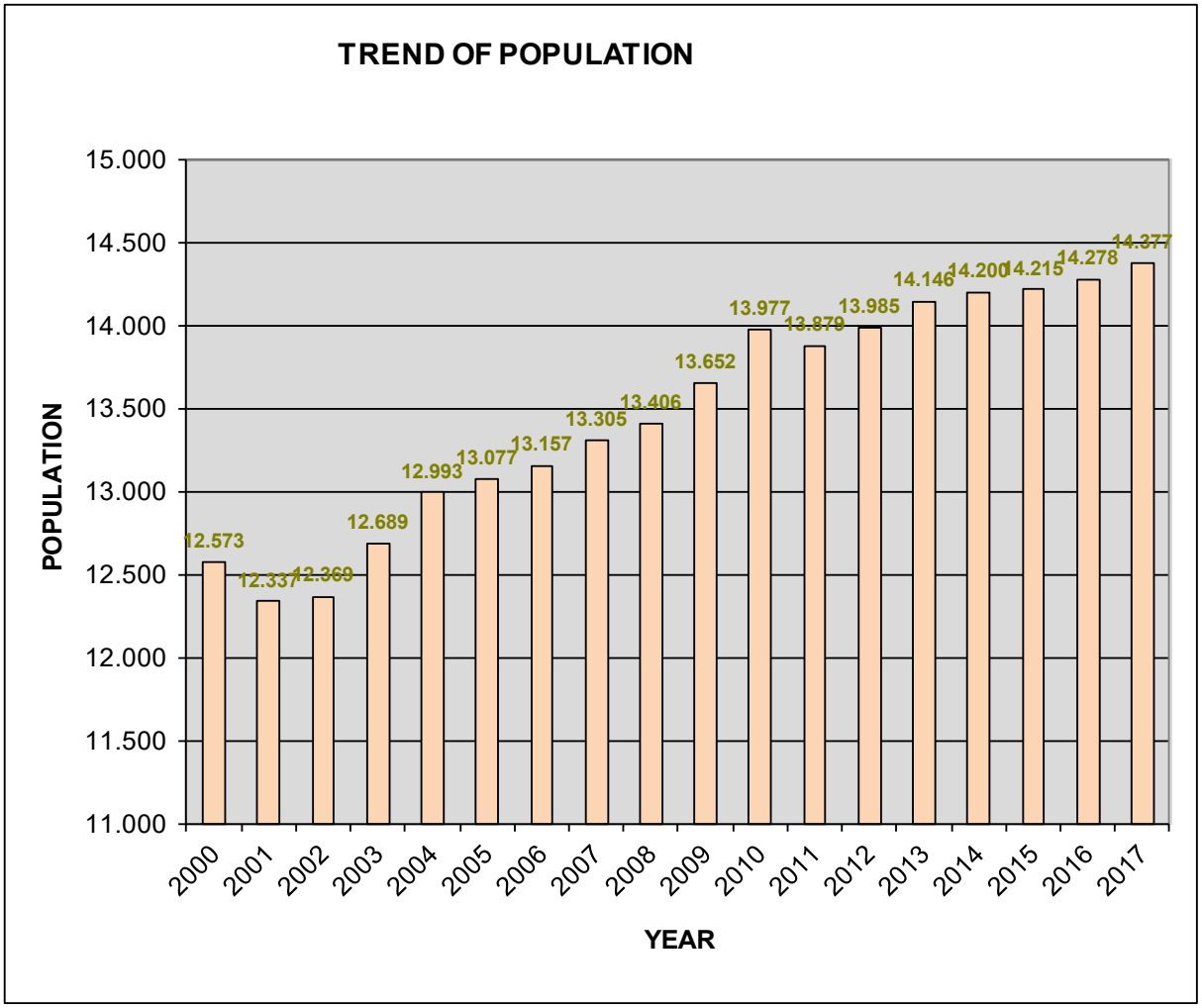


Chart 2 - Graph of population evolution in the years 2000-2017

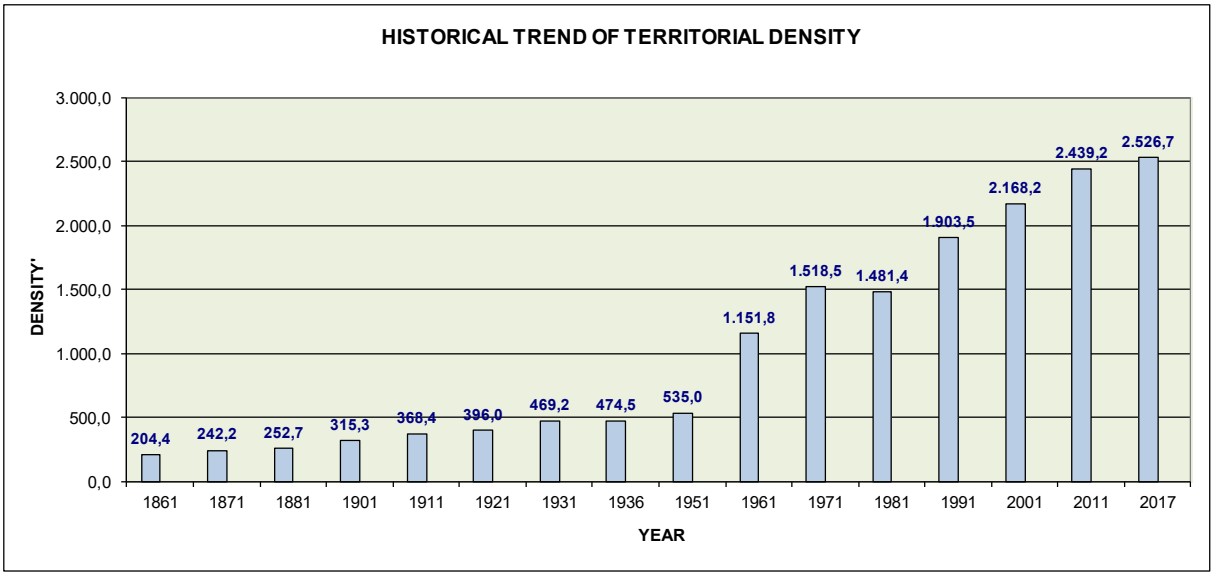


Chart 3 - Graph of the historical evolution of the population density in the 1861-2011 and 2017 censuses

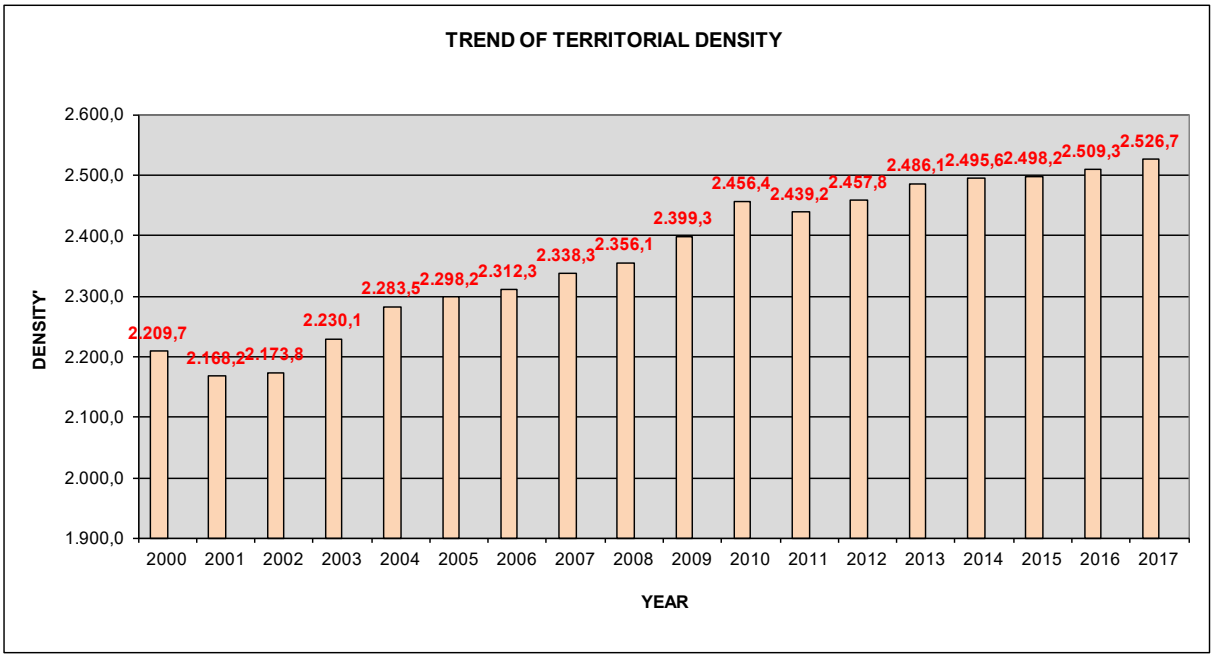


Chart 4 - Graph of the evolution of population density in the years 2000-2017

With regard to population density, the above graphs reconfirm what was previously reported regarding the population trend with the exception of the years 2001 and 2002 where there is a loss of the population which, however, is already compensated in 2003 and the year 2011 where the loss of population is recovered in 2012 and returns to grow steadily in 2013.

Regarding the composition of the population by age groups, defined in the following table, Cesate has a substantial balance between the young population (15% of the population) and the senile population (18% of the population), as about 30% of the total population belongs to these classes, while the remaining 67% belongs to the economically active population.

Age	Number
0-4	636
5-9	739
10-14	728
15-19	715
20-24	729
25-29	731
30-34	861
35-39	950
40-44	1.141
45-49	1.208
50-54	1.278
55-59	1.039
60-64	855
65-69	830
70-74	603
75-79	478
80-84	380
85-89	248
90-94	106
95-99	20
100+	3

Age	Number	%
0-14	2.103	14,7%
15-64	9.507	66,6%
65+	2.668	18,7%
Totale	**14.278**	**100,0%**

Table 3 - Structure of the population by age and subdivision by age groups

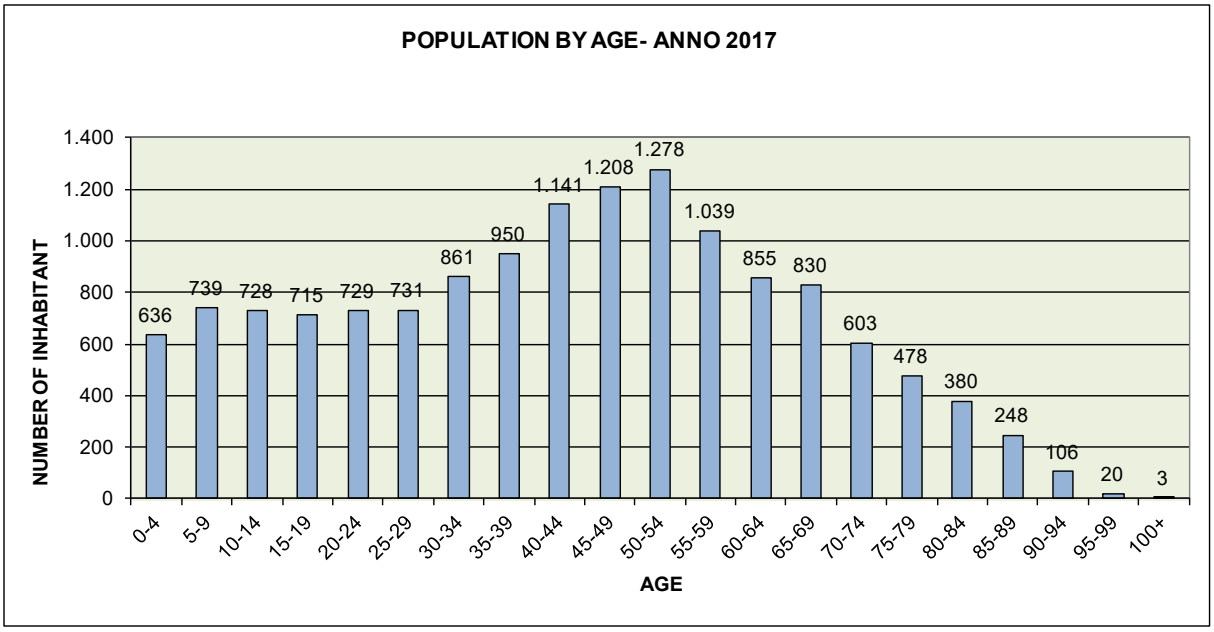


Chart 5 - Graph of the structure of the population by age in December 2017

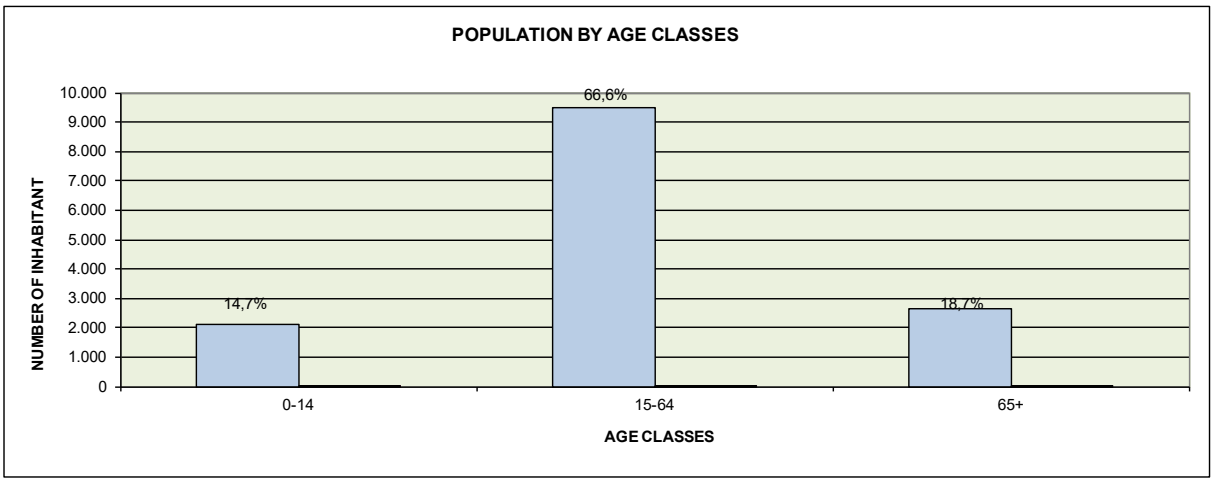


Chart 6 - Graph of the structure of the population by age group in December 2017

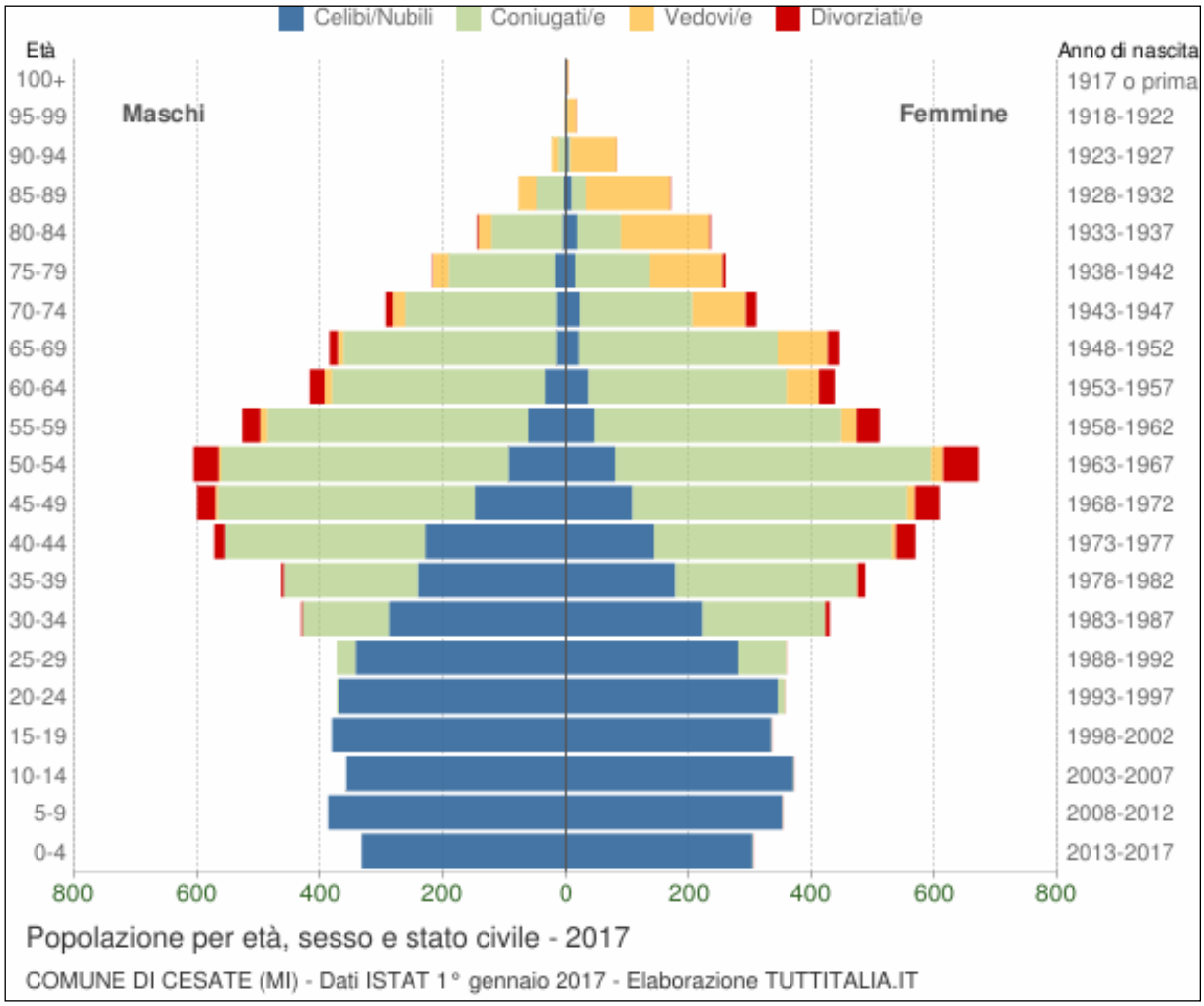


Chart 7 - Graph of population structure by age, sex and marital status in December 2017 (Tuttitalia, 2017)

Another demographic feature to be highlighted, especially in relation to residential needs and the construction market (driven in particular by the housing policies pursued by the central capital of Milan), concerns the change occurred over time with regard to the composition of households. The reduction of the related average amplitude, an indicator of the change processes that characterises the socio-economic characteristics of the population, has in fact led to a significant increase in their quantifiable number with an increase of 1,044 families among the 2014 survey (5,860 families) and that of 2003 (4,816 families), which corresponds to an increase in the population of 1,511 inhabitants, or at an average value of about 1.50 members per family. This corresponds to the data, now consolidated, that in the last few years, families consisting of one or two members have grown; the phenomenon of the progressive reduction of large families is reflected in this phenomenon.

A summary table is provided below with the main status indicators relating to demographic trends at 31/12/2017.

THEME	INDICATOR	VALUE	MEASURE UNIT
DEMOGRAPHIC DYNAMICS 31/12/2017	Population	14.377	inhabitant
	Employed index	50,2%	%
	Natural balance	0	inhabitant
	Birth rate	7,79	born/1000 inhab.
	Territorial density	2.526,71	inhab/kmq

Table 4 - Population data summary as of 31/12/2017 (ISTAT, 2017)

4. Territorial analysis

Cesate is located at northwest from the agglomeration of the City of Milan, placing itself in the immediate territory close to Milan and reflecting the typical characteristics of the hinterland.

Figure 7 - The territory of the Metropolitan City of Milan and the position of the Municipality of Cesate on the border with the Province of Varese and the Province of Monza and Brianza (PTCP, 2014)

To a general territorial vision, the context of Rhodense with its conurbation, to which the Cesate fabric belongs on the western slopes, today represents a comparable reality, by building density and size, to the urban area of Milan.

On the other hand, in this area there is a strong correspondence between the settlement, the presence of a social system with a clear identity with demographic and economic behaviors typical of a mature area and the consolidation of strong components of the socio-identity / cultural heritage. A correspondence that constitutes an undoubted element of wealth for the Milanese region although exposed to the pressures coming from the metropolitan nucleus of Milan, which causes processes of urban decomposition (commuting) typical of all the mature local contexts. (Brenna, 2000)

On the other hand, the same Regional Territorial Plan (PTR) identifies this area along the historical axis of the "Sempione", part of the region with emerging polarities of the "Fiera - Malpensa" system and at the intersection of the historical polarities of the " Brianza "and the" Milan metropolitan area ".

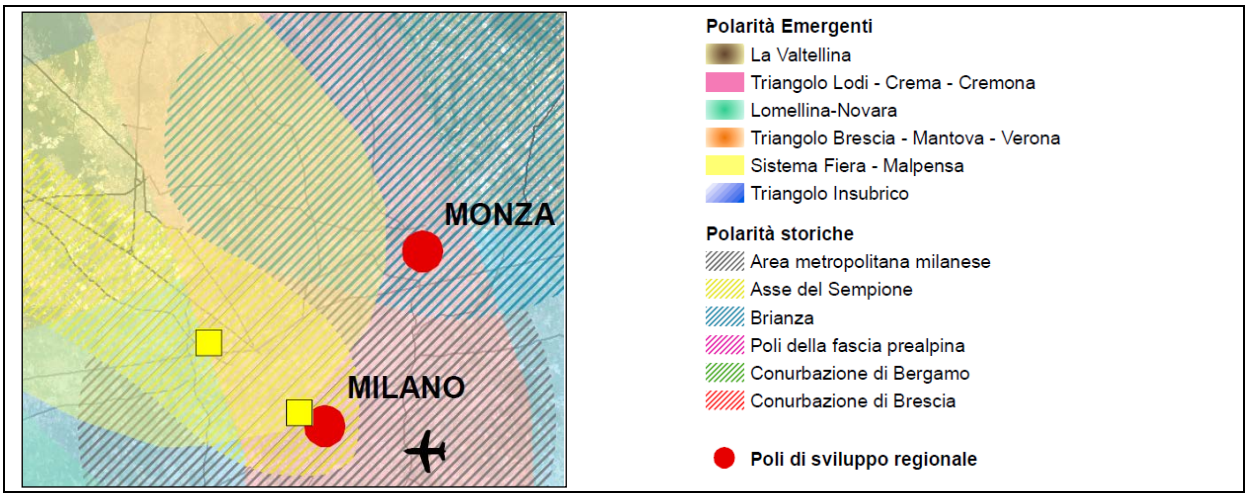


Figure 8 - Polarity and regional development poles (PTR, 2017)

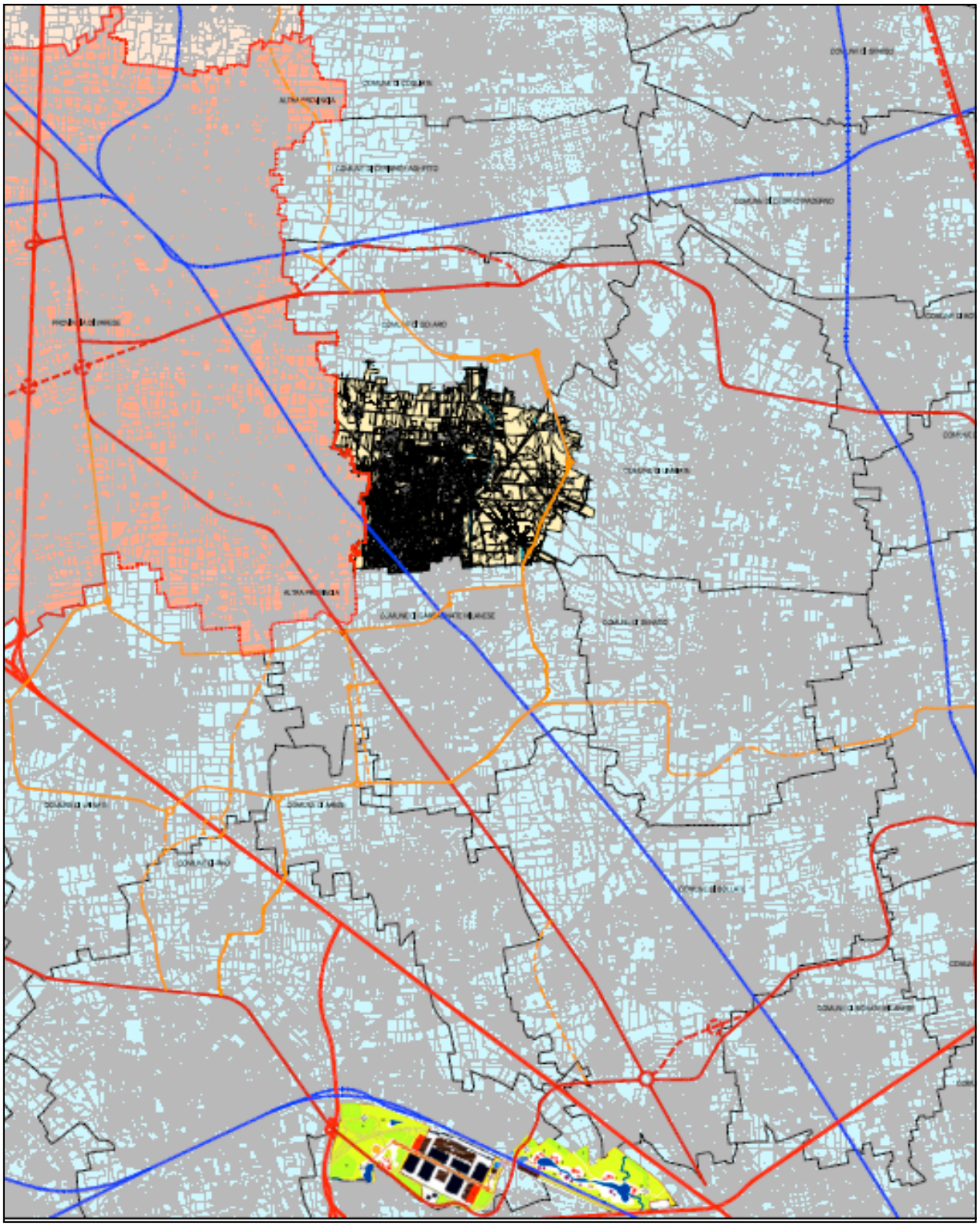


Figure 9 - Territorial classification of the municipality of cesate on the axis of the "North-West" with the existing and planned infrastructural and settlement structure (PTR, 2017)

In this territorial context, the urban fabric of Cesate confirms the above mentioned reasons as it presents a building structure characterized by a wide range of types, in which residential, artisan / industrial and mixed industrial-residential fabrics are flanked and they reveal as heterogeneous components of a complete set that is legible and varied and, in any case, distinct and easily recognizable.

It should be noted that in this context the strong processes of urbanization of the ground have inverted the relationship between built spaces and open spaces in terms now largely favorable to the former.

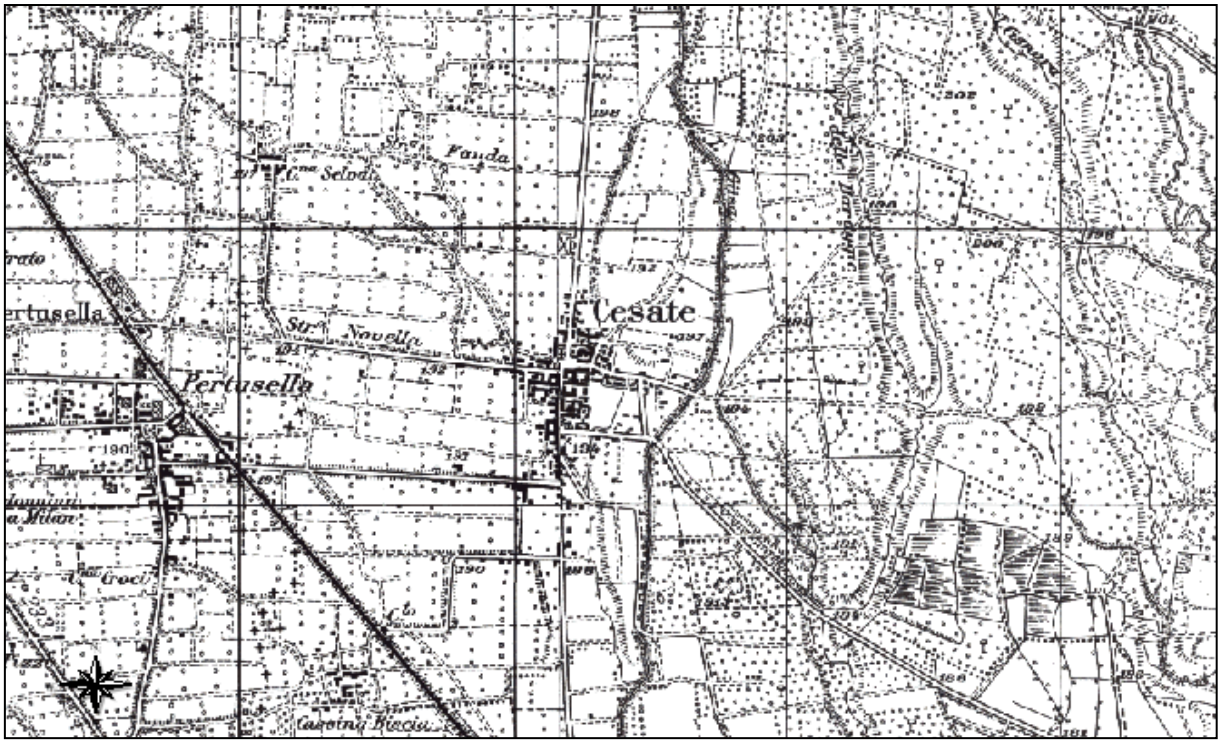


Figure 10 - Military Geographical Institute (IGM). First cartographic elevation dating back to 1888. It is clear from cartographic reading the consolidated historical nuclei of Cesate and Caronno Pertusella completely separate and separated by the railway line (IGM, Historical photos, 1888)

Although still part of the Metropolitan City of Milan, the major infrastructures of its territory place Cesate in direct relation with both the Milanese capital, but above all with the Saronno pole through the main roads of the SP ex SS 233 Milan - Varese and the SP ex SS 527 Monza - Saronno and through the Milan - Saronno railway line (and related branches) managed by the "Trenord" company of Ferrovie Nord Milano.

The municipal territory is spread over a territorial area of 5.69 square kilometers, bordering to the north with the territory of the Municipality of Solaro, to the east with that of the Municipalities of Limbiate in the Province of Monza and Brianza and Senago, to the south with the Municipality of Garbagnate Milanese while in the west with the Municipality of Caronno Pertusella and the Province of Varese.

Like most of the Milanese hinterland settlements, Cesate also suffered a strong demographic expansion after World War II, which consequently led to a decisive urban development, which led to a weld with the building fabrics of Caronno Pertusella and Garbagnate Milanese.

The entire municipal territory is characterized by the presence of the Regional Park of Groane, which crosses the entire municipal territory from north to south, located to the east with respect to the built structure of the municipality and occupying an area of about 3.06 square kilometers, corresponding to approximately 54% of the entire municipal area.

Next to the original nucleus of Cesate, of agricultural formation articulated with the typical Lombard rural courts still recognizable along the old road layout of the SP 133 (via Verdi - via Romanò - via Roma), in the 50s was added the INA Village, an ex-novo settlement built with the INA Case Plan (Plan Fanfani) located adjacent to the Milan-Saronno railway line in a south-west position with respect to the historic center, of which part of the old Cesate court

settlement was conceived and conceived as autonomous and self-sufficient neighborhood connected directly to the Milanese metropolis.

The INA Village was built on the outskirts of Milan as the "Corriere Lombardo" in 1952 named it, able to offer, just 17 kilometers from Piazzale Cadorna, accommodation for 6,000 people. It is not a coincidence that the demographic survey of 1971 reads the Village settlement at its full capacity. (Signori & Altomari, 1990)

Following this intervention, designed and produced in a homogeneous and unitary manner, Cesate has grown in a decidedly more inhomogeneous way up to the physical welding in a single urban structure of the ancient nucleus with the INA Village having as limits the urbanized Groane Park to east, the railway line and the agricultural areas and built towards Garbagnate to the south - south west, the agricultural areas towards Solaro to the north while, to the west, the welding to the inhabited area of Caronno Pertusella is evident.

Moreover, the municipal territory of Cesate is characterized by the crossing, in the north-west direction, from the Milan-Saronno railway line, from which the lines for Como Lago, Varese and Laveno, Malpensa and Novara branch off.

Figure 11 - Aerial photo of the municipal territory of Cesate (flight 2008). It is clear from the photographic survey how the urban structure of Cesate has completely soldered to the urban structures of Caronno Pertusella to the west and partly with those of Garbagnate

The territory, moreover, is characterized by the crossing of the Guise torrent, which flowing in a north-south direction clearly divides the urbanized area with respect to the natural area of the Parco delle Groane.

Finally, it should be noted that Cesate belongs to that part of the territory that has undergone significant and recent changes that are the expression of the crisis process and subsequent restructuring of the Milanese metropolitan system, starting from the 80s, which touched a vast territory and not only the capital city of Lombardy. The part of northern Milan of more ancient industrialization shows signs of this crisis with its disused production areas, with its urban plots without image, aged before becoming mature, heavy congestion indices and population growth. This refers to the abandoned areas of the former Alfa Romeo of Arese, on which construction work was carried out for the construction of the largest shopping center in Europe, which certainly has significant repercussions on this part of the "Northwest" territory,

as well as those that still have to be verified and planned following the closing of the Expo 2015 fair.

Such important phenomena of territorial redrawing risk to lead to an involution after the blockade of urban development, bearing in mind that at this stage, that is starting from the 80s, we are witnessing at the same time the exhaustion on the one hand of a settlement model and another of a productive model, the Fordist and Taylorist one that, incidentally, had conditioned the same settlement model in the definition of the urban instruments dictated by the zoning. (Brenna, 2000)

The following analyses are developed using the data and informations contains inside the:

- Cesate municipality planning instrument (PGT, 2015);
- Lombardia regional planning instrument (PTR, 2017);
- Milano metropolitan planning instrument (PTCP, 2014);
- Groane park planning instrument (PTC, 2012);
- National statistical institute (ISTAT, 2017)

4.1 URBAN SYSTEM ANALYSIS

4.1.1 General data

MUNICIPAL AREA (ST)	5.69 kmq	100%
PARCO DELLE GROANE AREA(SG)	3.06 kmq.	53,78 %

Table 5 - Quantitative data of Cesate Municipality

4.1.2 The non-urbanized territory

The open territory of Cesate is characterized by two large environmental containers: the area of the Parco delle Groane located east and north of the urbanized area, and the free area of agricultural matrix that is articulated on the north-western slope compared to the urbanized one. These are different territories but both part of a single environmental system that are the "respiratory" system of the municipal/over municipal area.

The Parco delle Groane has long been assumed to be in the Park in current legislation and in the minds of the people, as such is the first essential component of the Cesate territorial identity but also Milanese.

The second, "Virtual Park" as continuity of the Parco delle Groane, not properly park for the usual uses of people, but strongly appreciable and strategic for its enormous environmental potential.

These two different levels of collective perception have led to two different levels of impact in the territorial approach on these two areas.

The different historical, landscape and environmental identity, which characterizes the two open territorial areas, leads to the delineation of two distinct approaches. In fact with, the enlargement of the Parco delle Groane intervened recently in the Cesate territory, on the northern side of the territory of Cesate; The aim could be to create the "belt park" that would represent the element of filter between urbanized and free territories, guaranteeing at first a structural delimitation of the city and then the establishment of that necessary dialogue between territories.

As regards the transformation areas inserted to the east and completely within the territory of the Groane Park, in the vicinity of the Natura 2000 protected sites, these must act as attractors towards the Park itself and also act as connecting areas between the urbanized and the natural system.

4.1.3 The landscape

The landscape is mainly characterized by the naturalistic presence of the Parco delle Groane, as well as by the built environment that is part of the broader urban environment of the Milan metropolitan area grown on the high dry plains, characterized by the presence of wetlands and discontinuous forest systems. This is due to the widespread presence of roads and settlements (mainly industrial sites); by the torrent Guisa, whose degradation is the result of the growth of the urban environment in which it is included, and by the agricultural areas, mainly located north-west compared to the urbanized, which do not appear as residual elements of ancient agricultural systems as it happens in other parts of the northern Milan area.

The agricultural landscape

This area is characterized at present by a limited presence of old farm houses (Cascina Selva) and by a series of building structures not related to farm activities.

The flat orographic trend, its location between the town of Cesate, Solaro and Caronno Pertusella make it a strategic area under the profile of the protection of the territory on a over-municipal scale.

The agricultural landscape is characterized by an agricultural structure developed mostly in the cultivation of arable and partly intensive and not very diversified farming, which implies an impoverishment of the soil structure (prevalent crops of corn and hay).

The territory destined to agriculture is also quite organized according to a predominantly north-south structure which gives it a good identity and a still recognizable matrix. Only in frieze with the urbanized contexts is strongly compromised by the presence of improper uses of the soil and by the presence of some urban conurbation phenomena, which in part have surrounded the agricultural activity and parcelled with respect to the neighboring territories. Therefore, a compact and well-defined agricultural system as an organizational structure of the soil is also found at the over-local level.

From a territorial point of view, as mentioned above, the open space system belongs to a dense and conurbated settlement model, typical of the Brianza Milanese area, where urbanization systems prevail, which gradually became welded together and with the densest of external linear urbanizations, through the construction along the main connecting roads and through the expansion of pre-existing intermediate fractions (Caronno-Cesate-Garbagnate built system).

Among the urban weldings, open spaces are currently open to a residual agriculture, which in some partial way still maintains some of the features of the traditional landscape.

The Parco delle Groane landscape

As far as the ample natural system of the Groane Park is concerned, it is firstly noted that this is the main element of natural separation between the built-up fabrics of Cesate, Solaro and Limbiate, carrying out the task of a large green lung and a main ecological corridor.

The area of the Parco delle Groane, extends over 3,200 hectares in an inter-municipal area north of the Lombard capital, starting from the Bollate fountains to reach Lentate sul Seveso. The Park occupies an area of moor of considerable geological interest, currently covered by the so-called "ferretto", a thick layer of acid clay of reddish color. This particular conformation of the territory has allowed the formation of the "heath", a certainly unusual landscape characterized by prairies of bushes, thick grasses, scabs, dwarf willows and birches. The nature reserves that are part of it are a source of considerable interest, lie almost within the city, between traffic and industrial activities, and seem to struggle to defend their borders. For this area, the objective must be to defend and control the use, compatibly with a correct use of the territory to defend its natural features, both in terms of landscape and production, and the protection of its natural emergencies and its " signs "that belong to the history and identity of the territory.

On the Cesate territories inserted inside the perimeter of the Parco regionale delle Groane there is the overlap of a representative site for the conservation of the natural heritage of Community interest of the European Natura 2000 network. This is the Site of Community Importance SIC IT2050001 "Pineta di Cesate" proposed with DGR August 8th 2003 n. 7/14106 and approved by Decision of the European Commission of 7 December 2004, which established, in accordance with the "Habitat" Directive 92/43/CEE, the list of Sites of Community Importance for the continental biogeographical region. The specific analyses on the SIC wille be introduced in the following chapter 4.6.

The built environment

The built landscape, at the local level, is mainly characterized by a purely residential building fabric consisting of houses with 1 or 2 floors above ground, which are accompanied by medium-sized buildings with 4 or 5 floors above ground.

The settlement of the "INA-CASA" village, located on the south-west side of the city center adjacent to the railway line, is of particular importance, both from an architectural and urbanistic point of view, whose design is part of the realization of the INA plan. -CASA for new residential and public housing quarters in Milan during the post-war reconstruction years. The architects of BBPR (Banfi, Belgiojoso, Peresutti and Rogers), Franco Albini, Enrico Castiglioni, Gianni Albricci and Ignazio Gardella participated in the drafting of the urban and architectural project, focusing particularly on the construction of the parish center. (Luoni, 2002)

The element that most contributes to the quality of the planned space of the village is the presence of a significant quantity of green spaces, which at present requires, together with the main urbanization works (roads, lighting, sidewalks and technological networks), an adequate policy of requalification and rehabilitation .

The village is also characterized by a diversified presence of building types, from the building in line, to the terraced houses up to the multi-storey building. The urban planning of the village is still recognizable and represents one of the elements of recognition of the Cesate identity.

Not particularly widespread are the elements of historical-cultural testimony, summarized in the Cesate historical center, consisting essentially of building typologies with rural buildings at court and barns identified in the landscape charter n° DP3 (PGT, 2015), the two parish churches with relative bell towers located in Piazza IV Novembre and on via Romanò (PTCP, Landscape System, 2014), and by some important presences, such as the old Town Hall, the building in via Romanò the professional school (PTCP, Landscape System, 2014), and from two residential buildings bearing witness to the presence of the industrial activity once carried out by the former Cotton mill Poss, located in via Trieste (PTCP, Landscape System, 2014).

As regards, instead, the industrial archeology system identified in the mapping of the existing PTCP landscape system and corresponding to the plants of the former POSS cotton mill, it should be noted that there is no trace of this industrial complex, following the complete demolitions carried out for the construction of private residential projects, consisting of the construction of 6 new buildings.

Of particular importance from the arboreal point of view, are the existing elements on the areas of the former POSS cotton mill and immediately adjacent to via Romanò, where there is the presence of an atlas cedar (cedrus atlantica), as also identified by the current PTCP , among the trees of monumental interest detected in the 1999 campaign. Furthermore, as already mentioned, the existing arboreal system in the INA village, which integrates and completes the architectural and landscape planning design, is an essential element and constituent of the urban landscape. now the village has taken over time.

Finally, again from the point of view of the elements of naturalistic and environmental interest, the arboreal bands identified by the current PTCP are confirmed, mainly along the river banks of the Guisa torrent and on the southern slopes of the Y-shaped sports center, for

which promotes their particular protection through forms of reforestation and protection within the areas for the construction of new urban centers, in particular in the definition of the points of connection and entry to protected natural systems and related intervention criteria.

With regard to the historical presences that can be deduced from the 1888 IGM charter, there are the presences of two rural nuclei identified by the fabrics of Cascina Selva and the Biscia area. The first place on the northern slopes and completely immersed in the agricultural territories, while the second place on the southern slopes is completely surrounded by the building. Lastly, in the Biscia area, there is the presence of the Alfa Romeo residential district, characterized by multi-storey buildings and arranged according to a highly recognizable planimetric design.

4.1.4 The composition of the building heritage

Regarding the composition of the building fabric in terms of housing, Cesate is characterized by a variegated type of buildings due to the different eras in which they were built. Mainly the fabric is made up of the building types corresponding to single-family houses of the center lot, generally arranged on two floors, which in recent years has taken over the type of building arranged on 4/5 levels above ground. (ISTAT, 2017)

The following table shows in detail the number of residential buildings by year of construction.

RESIDENTIAL BUILDINGS FOR CONSTRUCTION YEAR		
Period	**n°**	**%**
ante 1918	29	2,2%
1919 - 1945	48	3,6%
1946 - 1960	281	21,1%
1961 - 1970	291	21,8%
1971 - 1980	261	19,6%
1981 - 1990	216	16,2%
1991 - 2000	118	8,8%
2001 - 2005	45	3,4%
dopo 2006	45	3,4%
TOTALE	1.334	100,0%

Table 6 - Age of building heritage

The data available to the building stock is taken from the ISTAT 2011 census (ISTAT, 2017), which records 1,334 buildings, also detecting the presence of 1,363 buildings used and 11 unused buildings, the latter representing about 0.80% of the total buildings.

BUILDINGS FOR TYPOLOGY OF USE ISTAT 2011				
Used buildings	**%**	**Not used**	**%**	**Total**
1.363	99,20%	11	0,80%	1.374

Table 7 - Use of building heritage

With regard to the production of buildings in different historical periods, it is clear, also in this case, the production of buildings induced by the arrival of the INA Village that between the period 1946-1960 realizes 281 buildings and later between the years 1961-1970 others 291 buildings, representing the most prosperous periods of Cesate's constructive and urban experience. Equally significant is the datum coming from the 1981-1990 vintages, where we witness the construction of no less than 216 buildings, which correspond to the period of demographic regrowth after the period of recession between the decades 1971-1981, as already seen above.

The consistency of these data, compared to the demographic trend in the same time span, shows how the two dynamics are quite dependent on each other, as there has continued to be a significant housing need satisfied through the introduction of new housing in the building market, also induced from the evolution of living standards and the variation and fragmentation of the family structure.

It is also interesting to examine the dynamics of the average number of rooms for dwellings occupied by people living in the municipal territory (table below), in which a total of 5,575 homes, about 40% of homes consists of 4 rooms and 76% of the houses consists of 3 to 5 rooms. (ISTAT, 2017)

HOUSES OCCUOPIED BY RESIDENT PEOPLE BY ISTAT 2011 ROOM NUMBER						
Numero of rooms						
1	2	3	4	5	6 e più	Totale
122	816	1.291	2.075	889	382	5.575

Table 8 - Classification of building heritage with respect to the number of rooms

Also the data concerning the consumption of square meters per occupant in occupied dwellings, also by residents, amounts to about 36,50 square meters, which slightly deviates from the parameter identified by the D.M. 1444/68 on the determination of settlement capacity in urban planning instruments.

SQUARE METERS FOR INHABITANT IN HOUSES OCCUPIED BY RESIDENT PEOPLE - ISTAT 2011
36,50

Table 9 - Surface per occupant

It is evident that there are households that tend to occupy housing made up of a larger number of rooms than the members of the family unit (typology of the town center lot), which is opposed, instead, the recent tendency to occupy a smaller number of rooms with respect to the members of the family unit (typology of the building), not by chance the real estate production, in the recent period, has strongly introduced into the market small housing with the cutting of the two-room apartment. (ISTAT, 2017) This type of juxtaposition therefore tends to offset each other by remodeling the so-called consumption per square meter of the inhabitant.

4.2 SWOT ANALYSIS

The SWOT analysis, introduced in business economy, is a support instrument usefull to define the business strategies from the 80s. In the years this type of analysis has been used and diffused in other fields.

The SWOT analysis is a methodology that allows to represent in a rational and orderly way the influence exerted by the different factors acting in the environmental context on the realization of the projects based on 4 main areas: internal Strenght and Weaknesses, external Threats and Opportunities. (Kotler, 1988) (Wheelen & Hunger, 1995)

The SWOT analysis is a usefull instrument for the territorial planning since it analyse all the question that influence, from the internal and external point of view, a context: It is the base to define altenative scenarios and evaluate different strategies. (Johnson, Scholes, & Sexty, 1989) (Kurttila, Pesonen, Kangas, & Kajanus, 2000)

Applying this approach to the analysis of the territory of Cesate developed in the previous chapters, we can represent a reasoned synthesis of the first analyzes carried out. The strengths, the critical points, the opportunities of the territory and the risks to which it is potentially subjected in its urban-environmental evolution will be summarized

Strenght (S)	Presence of the Groane Park, as an area with a high degree of naturalness, which covers a large portion of the territory. Presence of portions of territory of agricultural type, relatively compact and able to constitute rural landscape. Presence of the railway station. Low levels of danger related to natural events. Positive balance of the population. Consolidated residential vocation of the territory. Presence of the residential village INA as a residential settlement with historical urban significance.
Weaknesses (W)	Historic center still degraded with little valorization both from the residential and commercial point of view. Presence of free green areas not usable. Urban welding with south and west border territories. Division of the urban structure due to the barrier effect of the railway. Lack of relevant historical elements able to contribute to the identity of the territory. Poor environmental quality of surface water bodies (Torrente Guisa).
Opportunities (O)	Redevelopment of the existing building to improve the quality of housing and the municipal identity. Promote the use in transformations and redevelopment of renewable energy sources aimed at greater environmental sustainability. Safeguarding the free areas of the building in favor of urban compacting. Adhesion to projects of a supra-local scale to protect agricultural areas.
Threats	Negative trend of commercial activities. Possibility of industrial accidents in urban areas or near high natural areas

(T)	(Parco delle Groane).

Table 10 - SWOT analysis for the territory of Cesate

The final goal of the SWOT analysis is to maximize strength and system opportunities through the transformation on the weaknesses points in strength points and minimizing external threats in order to gain and advange from the opportunities points, like in short demostratet in the following table. (Johnson, Scholes, & Sexty, 1989)

	Strenght	**Weaknesses**
Opportunities	*S-O Strategies*: Develop new methods able to exploit the strong points of the territory	*W-O Strategies*: Erase weaknesses to activate new opportunities.
Threats	*S-T Strategies*: Take advantages from the strenghts in order to avoid threats.	*W-T Strategies*: Identify defense plans in order to prevent from the external threats that accentuating weaknesses.

Table 11 - Possible action strategies

4.3 MACRO-TERRITORIAL ANALYSIS

4.3.1 The regional planning

The Regional Territorial Plan, already approved by Regional Council resolution no. 951 of 2010, was updated in 2014 with DCR n. 557 of 9/12/2014 and finally in 2017 with the DCR n. 1676 of 28/11/2017.

Al the following data and information are taken from the Lombardia Regional Territorial Plan (PTR, 2017)

As previously mentioned, the P.T.R. identifies the Cesate territory within the "Metropolitan area system of the West sector", which is located at the confluence of important communication routes connecting the east and west of the Po Valley but also Italy with Europe , despite the barrier formed by the Alpine arc surpassed with the Gotthard and Sempione railway tunnels.

The Metropolitan System is part of the wider Metropolitan System of northern Italy, which crosses Piedmont, Lombardy and Veneto and strongly characterizes the relationships between the three regional realities, but "radiates" towards a much wider area, which includes the entire north Italy and the neighboring Swiss Cantons, maintaining strong relationships in an international context.

The Lombard Metropolitan System constitutes only the central section of a continuous urbanization; this system is centered on the cities crossed, which each bring their own cultural and economic specificities. It is therefore a composite but at the same time unitary reality, which must act in a network to face and solve the problems posed by intense development, but not always respectful of environmental and social characteristics.

Figure 12 - Table excerp 4 of P.T.R. – Territorial systems. In a red circle the territory of Cesate (PTR, 2017)

These factors have been and still are crucial for the industrial and commercial development of the area. The scenario envisaged by the construction of the trans-European corridors sees the role of the Lombard Metropolitan System considerably stronger, becoming a hinge between three of the great corridors: the V-Lisbon-Kiev corridor, the I corridor that connects the Mediterranean to northern Europe through the Brenner Genoa-Rotterdam corridor, intended to connect two of the main European ports, such as ports to the Atlantic and the Asian ports. (PTR, 2017)

In infrastructural matters, the PTR in the west quadrant sees at Malpensa airport, in the new Rho-Pero exhibition center and on the areas where the Expo 2015 trade fair has arisen, the attractors of new functions and roles, on which to activate specific regional strategy objectives. In particular the strengthening of the role of the airport itself, as the main reference point in the wider national airport system and, more in general, the strengthening of the interconnections with the other airports of the northern airport system. (PTR, 2017)

Furthermore, the presence of the important Rho-Pero exhibition system presupposes a considerable hotel accommodation capacity and a system of telematic networks, which should become increasingly widespread and contribute to the quality and efficiency of the production fabric.

To this are added the processes of territorial transformation induced by the functional reconversion of the areas of EXPO 2015, which could at the same time have a far wider scope and impact, not only in terms of planning, but above all in terms of further interventions for landscape redevelopment / environmental and the hydrogeological and hydraulic reorganization of Milan and the sub-basins of the Po, Olona and Lambro, to the correct integration between urban functions and open spaces of naturalistic value, also for the realization of green and ecological networks, the completion and reorganization of the mobility, the development of services and accommodation.

P.T.R. from the point of view of the areas to be preserved and safeguarded in the environment, in the Cesate area only the presence of the Parco delle Groane and a site of Community interest (SIC) is identified.

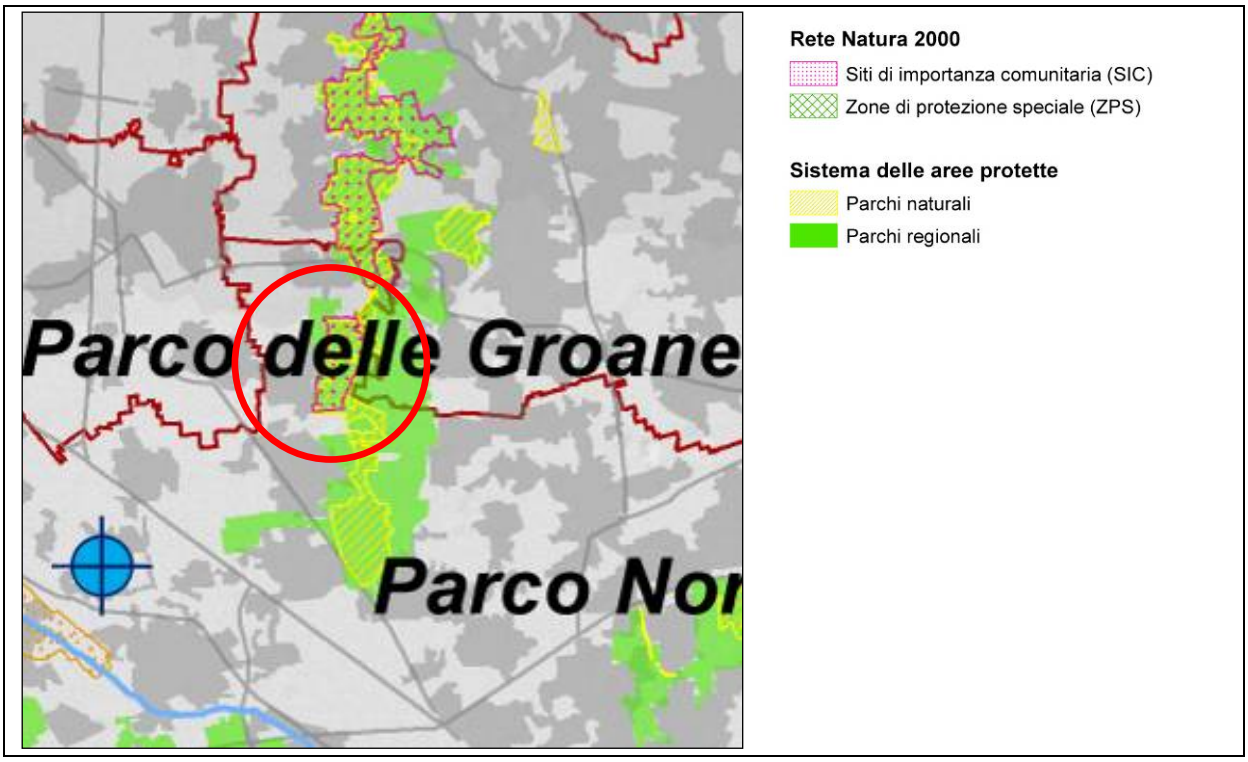


Figure 13 - Table excerpt 2 of P.T.R. – Areas of preservation and environmental protection. In a red circle the territory of Cesate (PTR, 2017).

No priority infrastructure for Lombardy is identified by P.T.R. in the territory of Cesate and not even affected by priority objectives of regional and supra-regional interest according to the art. 13, paragraph 8 of Law 12/2005 and s.m.i

4.3.2 Il Piano Paesistico Regionale (P.P.R)

The PTR (2017), in application of the art. 19 of the l.r. 12/2005, has the nature and effects of the landscape territorial plan according to the national legislation (Dlgs.n.42/2004). In this sense, the PTR acknowledges and updates the Regional Landscape Territorial Plan (PTPR) in force in Lombardy since 2001, integrating and adapting its descriptive and regulatory contents and confirming its overall structure and protection purpose.

The Regional Landscape Plan thus becomes a specific section of the PTR, landscape discipline of the same, while maintaining a complete unity and identity.

Landscaping and prescriptive measures are developed in close and reciprocal relationship with the PTR priorities in order to safeguard and enhance the areas and systems of major regional importance: lakes, rivers, waterways, irrigation and drainage networks, mountains, historical nucleuses, geosites, UNESCO sites, routes and places of scenic value and use of the landscape.

The cesatese territory is part of the Geographical Area called "Milanese" and falls as a typological unit of landscape in the Fascia della Alta Pianura. Specifically, it is part of the Landscapes of the floodplains and of the high dry plain, while the urbanized area is ascribed to the Landscape Typology Unit "Urbanized Landscapes" and in particular to the landscape of the Lombardy metropolitan area with a strong presence of areas of unstructured fringe ".

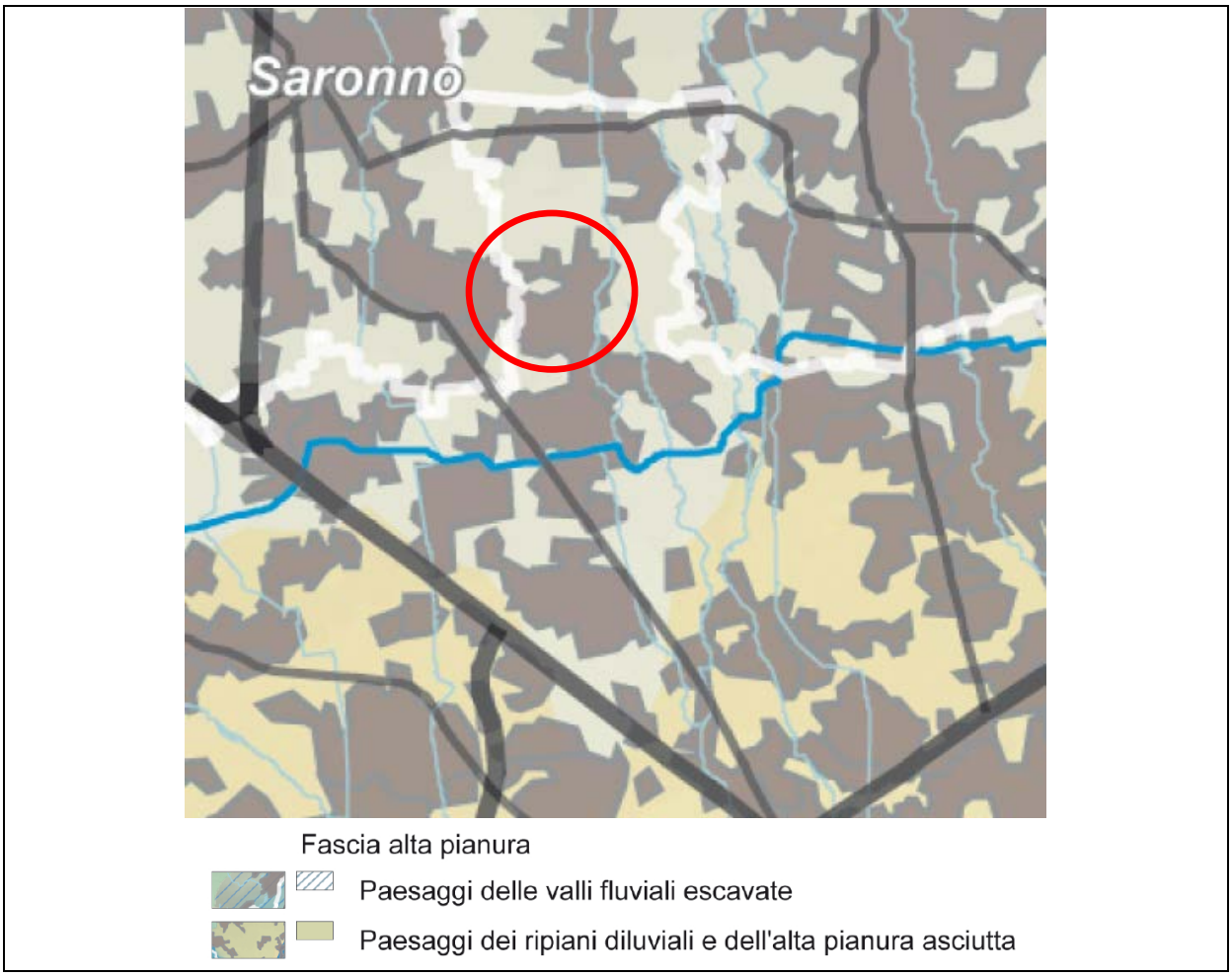


Figure 14 - Table excerpt A of P.P.R. – Geographical areas and typological units of landscape. In a red circle the territory of Cesate (PTR, 2017).

Figure 15 – Table excerpt F of P.P.R. – Landscape redevelopment: Areas and areas of regional attention. In a red circle the territory of Cesate (PTR, 2017).

Consequently, P.P.R. gives the following protection address relating to the high plain belt: "*The remaining nature areas and the continuity of open spaces must be protected. The monumental complexes (villas, parish churches, ancient defensive structures) that often act as fulcrums of an entire agglomeration must be rehabilitated*".

To this protection address it supports other addresses in relation to certain particular aspects that are stated below.

The soil and the waters

The excessive urbanization tends to compromise the natural system of drainage of the water in the subsoil. In this sense, adequate operations must be provided to safeguard the entire system of surface and underground hydrography; the redevelopment and / or territorial enhancement interventions must be directed to the maintenance of the grooves and small depressions determined by the flow of minor watercourses that, with their rip vegetation, are able to vary the fairly uniform trend of the terraced plain.

The historical settlements

The thickened character of the historical centers and nucleuses and their common rural matrix, (in many cases they are cases of the aggregation of courtyards) constitutes an historical sign in the process of dissolution due to the widespread tendency to the welding of the inhabited areas and to the internal transformations to the nuclei themselves. In this sense, criteria of organicity and coherence to be applied in the recovery interventions of the ancient courts should be provided, in fact, the extreme property parceling of the buildings can give rise to highly dissonant isolated interventions with the specific characteristics of the context. The reorganization or territorial redevelopment interventions must also avoid the encirclement and "drowning" of these nuclei and inhabited areas in the magma of recent urbanizations, also by means of an adequate and targeted planning of the system of public spaces and greenery.

The moors

The moors represent elements strongly characterizing the landscape of the high plain and they constitute the original aspect linked to the conformation of the land unsuitable, for its permeability, to an intensive agricultural activity. In this sense, it is necessary to safeguard them in their residual integrity and prevent their aggression and erosion of the margins, encouraging, for example, their reforestation and, in any case, defending them from transformation or urbanization interventions that may compromise their extension and balance.

With regard to the landscape classification of the "areas of the Lombard metropolitan system with a strong presence of deconstructed fringe areas", P. P. ascribes to this phenomenon those parts of the periurban territory consisting of small and medium agglomerations, where open spaces "urbanized" and very heterogeneous architectural objects, without significant spatial relationships, strongly alter the rules of the pre-existing morphological system up to determine its total cancellation and replacement with a new structure without any landscape and ecosystem value, which presents situations in existence or at risk of degradation and / or compromise.

4.3.3 The Regional Ecological Network (RER)

The Regional Ecological Network is recognized as a priority infrastructure of P.T.R. and is a guiding tool for regional and local planning.

The RER, and the criteria for its implementation, provide the P.T.R. the framework of existing naturalistic priority sensitivities, and a design of the supporting elements of the reference ecosystem for the evaluation of strengths and weaknesses, opportunities and threats present on the regional territory; helps P.T.R. to carry out an address function for P.T.C.P. provincial and for the municipal PGT; helps P.T.R. to perform a coordination function with respect to regional sector plans and programs, and to identify priority sensitivities and to set specific targets so that they can take into account the needs of ecological rebalancing.

The territory of Cesate falls within the sector 51 of the RER.

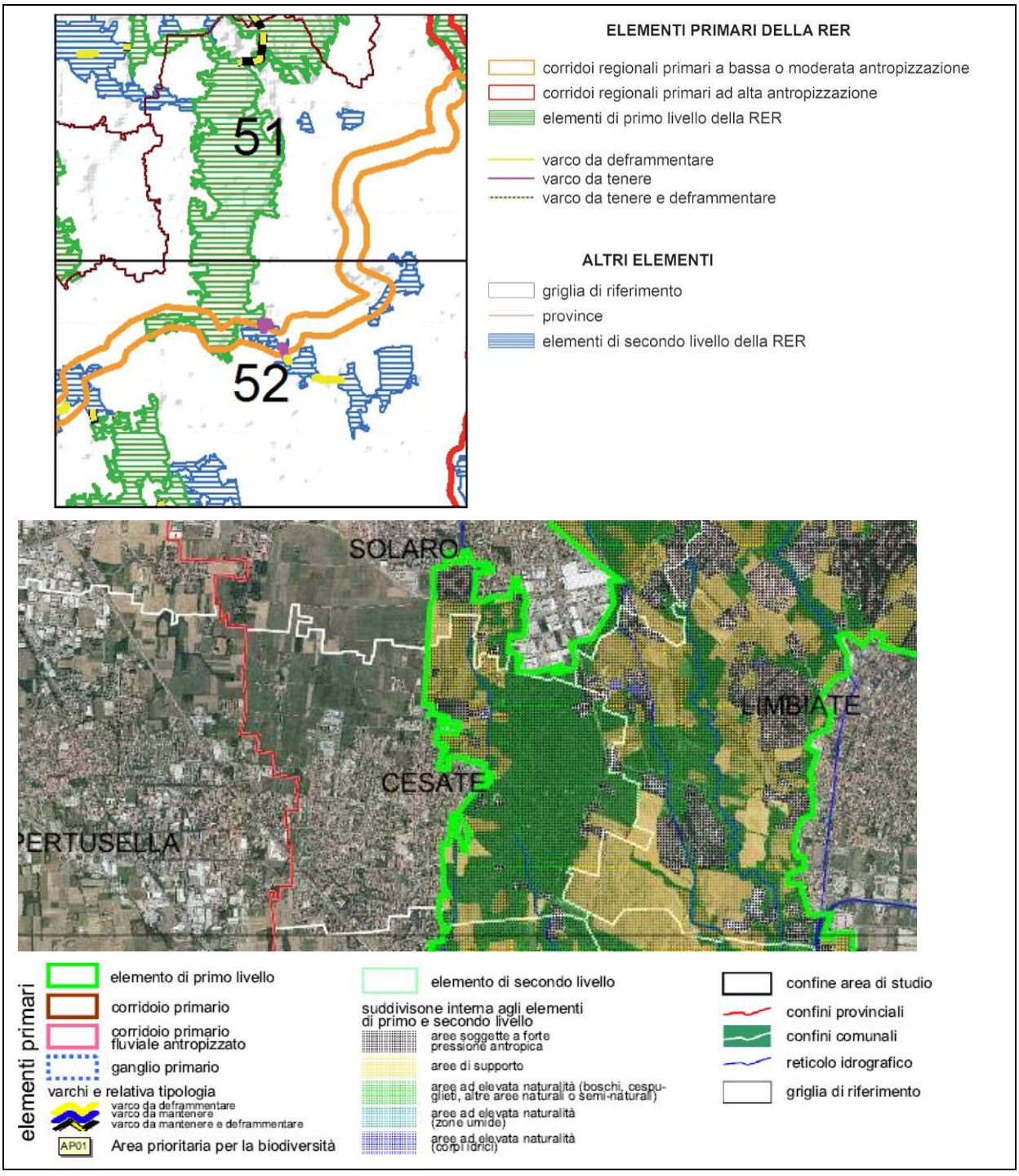


Figure 16 - Excerpt from Rete Ecologica Regionale (PTR, 2017)

The Groane Regional Park, together with the SCI of the Cesate Pinewood and the SIC Boschi delle Groane, is one of the first level elements of the RER and is also identified as the AP5 priority area.

The RER, in the southern part of the protected area, draws a section of the primary regional corridor identified with n. 28 which develops between the Parco del Ticino and the Valle del Lambro, and still, in the northern area of the Park, identifies different "support areas" to constitute lines of connection with the second level elements of the RER.

The following are the regional indications for the implementation of the RER identified for sector 51:

- In general, promote the creation of new ecosystem units and ecological defragmentation interventions that increase connectivity:
  - along the Dorsale Verde Nord Milano;
  - towards the east with the Parco della Valle del Lambro;
  - to the west with the priority area 03 Boschi dell'Olona and del Bozzente.

Furthermore, for the following topics it indicates:

Urbanized surfaces: favor defragmentation operations; keep the connection openings active; improve the passages in critical conditions; avoid urban sprawl.

Linear infrastructures: foresee, for the projects of works that can increase the ecological fragmentation, works of mitigation and environmental insertion.

In general, to provide defragmentation works in particular to promote connectivity with source areas (priority areas) to the north and west of the sector.

4.3.4 The provincial planning – the PTCP of the Città Metropolitana di Milano

The Metropolitan City of Milan and the Province of Varese have approved their Territorial Provincial Coordination Plan (PTCP, 2014), as a reference document for the "connection" between regional strategies and urban planning.

The Provincial Territorial Coordination Plans define the strategic spatial planning of the territory at the supra-municipal level, with reference to the infrastructure framework, the landscape-environmental protection aspects, the water, hydrogeological and hydraulic-forest structure, in order to allow the integration of environmental and protection issues with general settlement and transformation choices, combining the objectives of sustainable development with those of competitiveness of the socio-economic context.

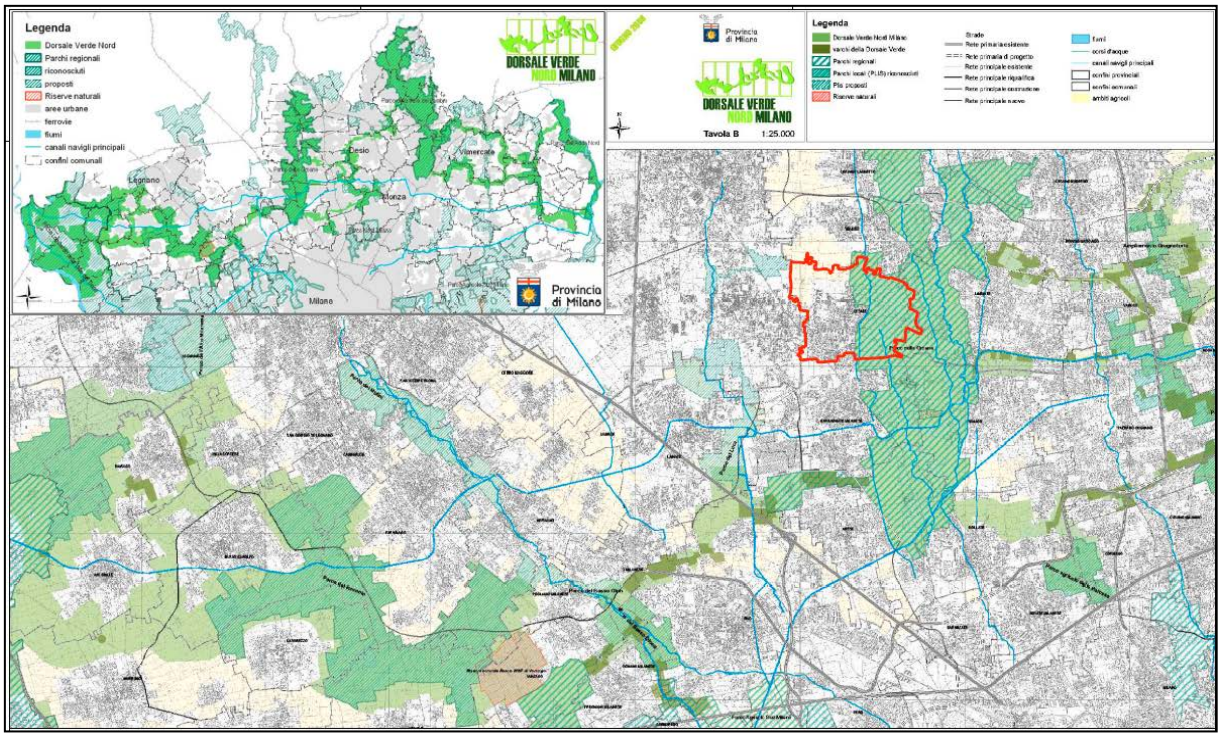


Figure 17 - The northern green backbone (PTCP, Piano Territoriale di Coordinamento Provinciale, 2014)

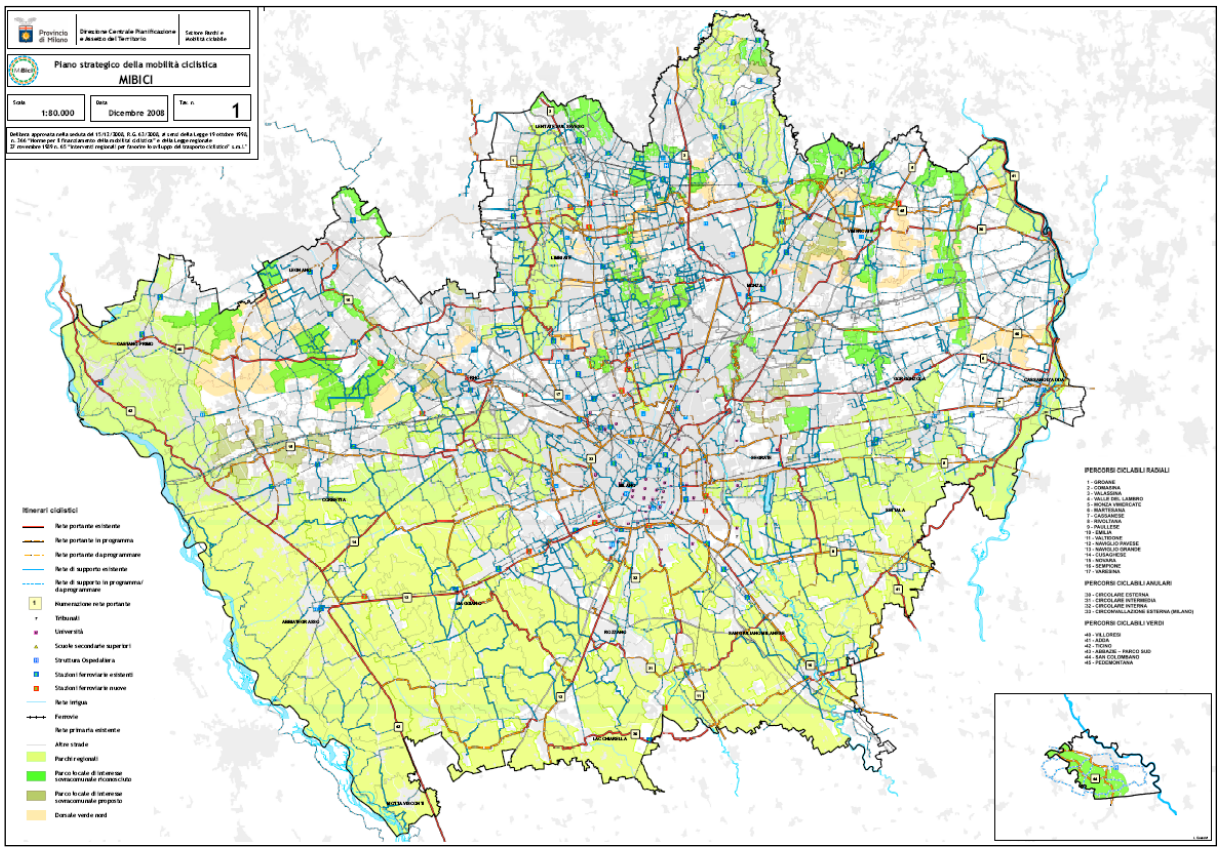


Figure 18 - "MiBici" provincial cycle network (PTCP, Piano Territoriale di Coordinamento Provinciale, 2014)

Significant and binding are the areas for agricultural activity of strategic interest that the PTCP identifies and which must be protected.

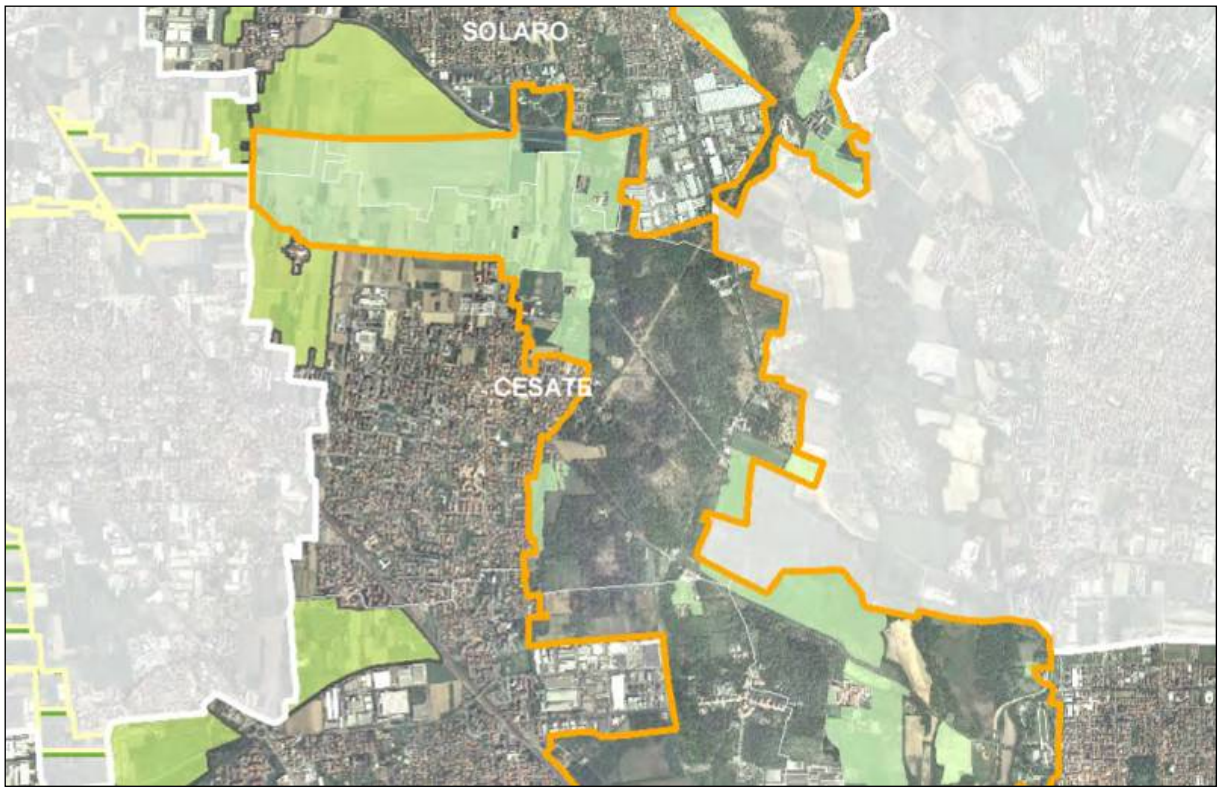


Figure 19 - The system of strategic agricultural areas (PTCP, Landscape System, 2014)

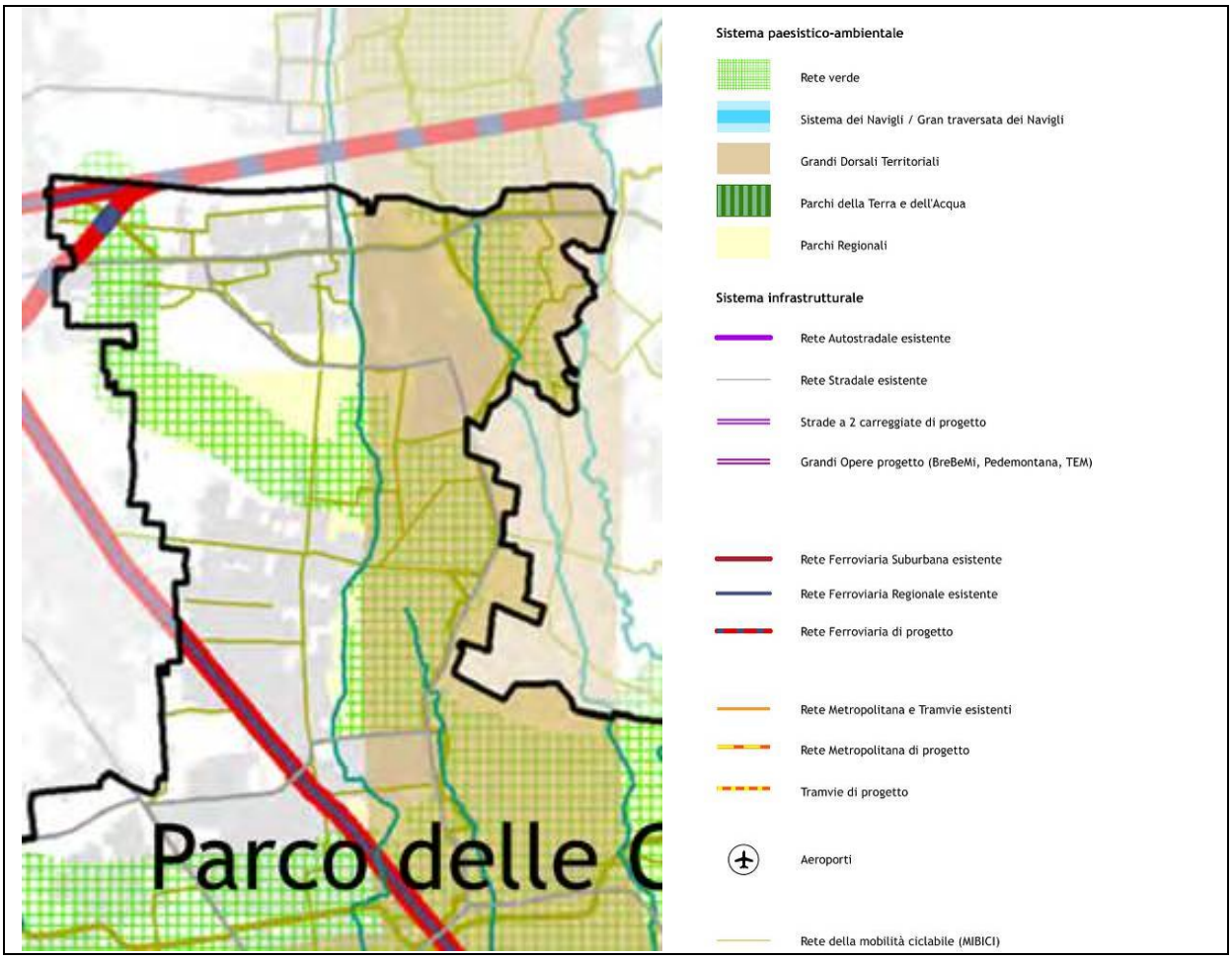


Figure 20 - The PTCP Plan strategies (PTCP, Piano Territoriale di Coordinamento Provinciale, 2014)

The PTCP also identifies a series of areas, systems and elements considered to be of landscape importance:

- areas and elements of prevailing natural value;
- areas and elements of prevailing historical and cultural value;
- areas and elements of prevailing fruitive and visual-perceptive social symbolic value.

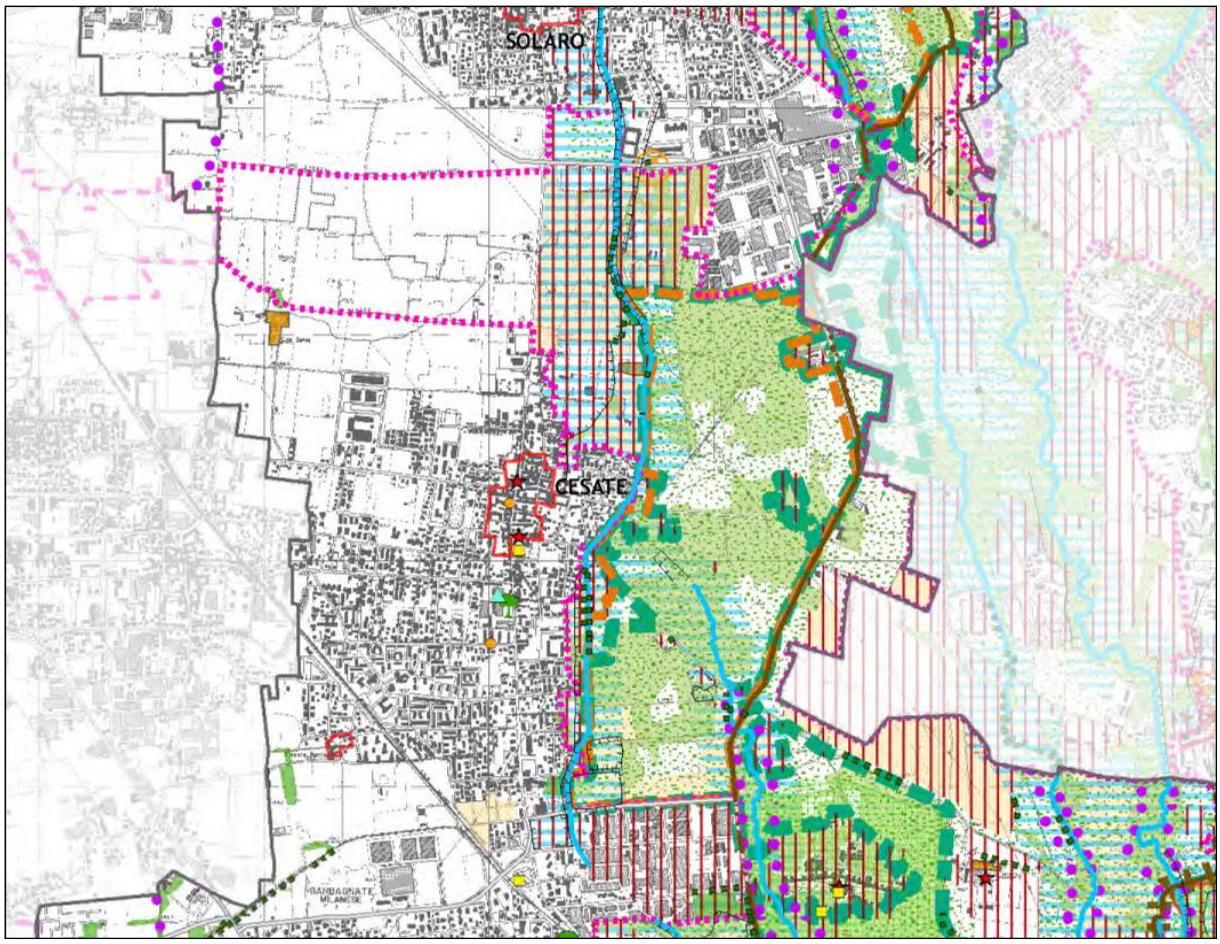


Figure 21 - Weighing systems and elements identified by the PTCP in the Cesate area (PTCP, Piano Territoriale di Coordinamento Provinciale, 2014)

As already indicated above, the PTCP identifies its own ecological network. Table 4 shows the different elements that make up the REP (Rete Ecologica Provinciale); where there is a secondary ecological corridor that develops, with north-south axis, parallel to the Parco delle Groane, allowing the connection of several secondary ganglia, now mostly falling into the Province of Monza and Brianza, whose southern part is based on agricultural area between the municipalities of Cesate and Solaro.

In the area between the municipalities of Cesate and Solaro, the REP proceeds to the identification of details of two gates, n. 12 and 13, both falling within the territory of the municipality of Solaro but whose functionality depends and can be strengthened by the methods of territorial management and ecological upgrading of the aforementioned agricultural area that extends between Solaro, Cesate and Caronno Pertusella.

As regards the secondary ecological corridors and permeability guidelines, the PTCP assumes as its objective "the maintenance of a continuous band of sufficiently wide territory and with vegetation equipment that allows the movement of the fauna from one natural area to another, making accessible areas of foraging, shelter and nesting otherwise precluded ". With reference to these elements of the REP, the PTCP foresees that the Municipalities

identify any specific interventions of ecological requalification and strengthening and additional areas of ecological connection at the local level to complete the provincial project.

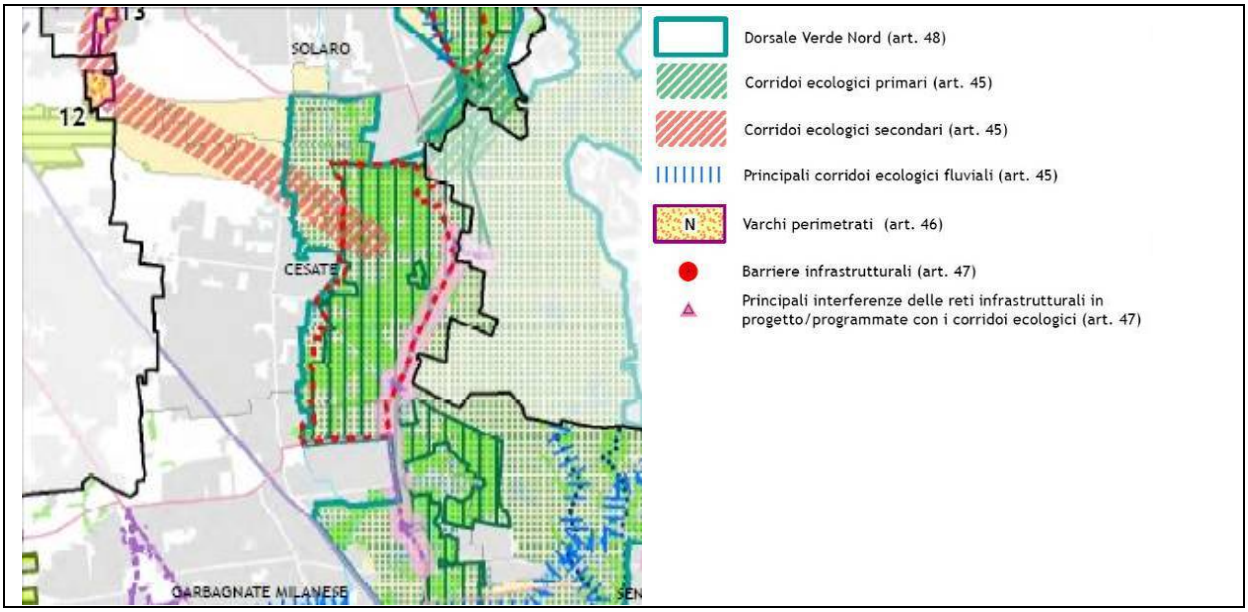


Figure 22 - The ecological network of the PTCP in the Cesate territory

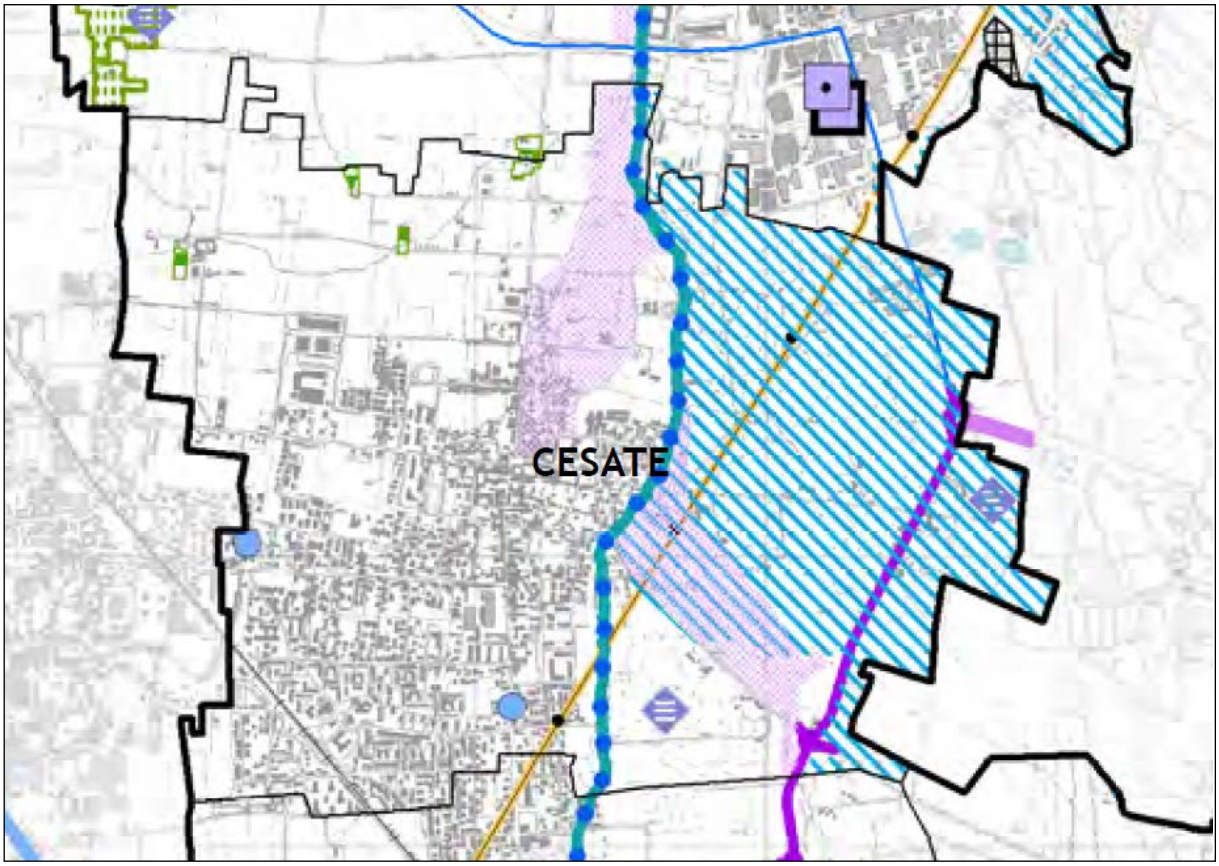


Figure 23 - Areas, systems and elements of landscape degradation or compromise identified by the PTCP in the Cesate territory

4.4 MICRO-TERRITORIAL ANALYSIS

4.4.1 Local territorial plan (PGT)

The urban plan of Cesate is based on the pursuit of some strategies articulated on two major themes: the urban environment (the built) and the natural environment.

To each strategy, the same plan associates the specific objectives of territorial development and consequent safeguard of the existing natural environment, as summarized below.

TOPICS	STRATEGY	TARGET
URBAN ENVIRONMENT	ADJUSTMENT OF LOCAL AND BALANCED DEVELOPMENT NEEDS GOVERNMENT OF THE TERRITORY - BUILDING REQUALIFICATION	Preserve non-urbanized soil and qualify the remaining green
		Redevelopment of the fabric of the historic center
		Encouragement of urban regeneration
	REVIEW TRANSFORMATION AREAS	Containment of land consumption
		Limitation of expansion in favor of building close to already urbanized areas
		Expansion consistent with existing building features - do not induce high urbanization phenomena
	SERVICES SYSTEM	Commissioning of services
		Improvement of overall environmental conditions and adaptation of public spaces
NATURAL ENVIRONMENT	FREE AREAS AND PROTECTED AREAS	Safeguard agricultural areas
		Protection and enhancement of protected natural and regional areas

Table 12 - Topics, strategies and target of the urban plan

4.4.2 Relationship between urban functions and road network

In this analysis the urban functions present in the municipal area of Cesate have been identified and have been placed in relation to the urban road network.

This type of analysis has highlighted the way in which each urban function relates to the road network and underlines the capacity of the function itself to act as a pole attracting traffic.

The major urban functions are distributed equally within the two consolidated urban areas of Cesate, the historical center itself and the INA Village, and located adjacent to the main road axes of the urban network: on the axis of via Verdi - via Romanò - via Roma for “Cesate vecchia” and on the axis of via Papa Giovanni XXIII - via Concordia for the village.

Commercial activities also followed this distribution logic. Constituted almost entirely by retail activities, they also settled near the two centers that characterize the urban structure of Cesate and looking out their windows on the historical axis of via Romanò, between Piazza IV Novembre and via Puccini, on via of the Thousand and Via Papa Giovanni XXIII at the INA Village building cue.

From this analysis it results that the location in the municipal territory of the major urban functions and commercial activities is distributed in a rational manner adjacent to the main urban road axes. Although the road sections are not particularly wide, there is a good possibility of parking almost everywhere and chaotic situations are difficult to create due to traffic congestion.

4.4.3 Hydrogeological structure

In recent decades, alluvial events that have strongly affected the area with flooding phenomena and hydrogeological instability, mainly caused by the increase in soil sealing, have increasingly been mentioned.

In this sense, the Lombardy Region with the recent L.r. 4/2016 promotes the coordination of local authorities and subjects territorially involved in the defense of the soil and the management of watercourses, in order to ensure a more incisive prevention of hydrogeological disasters, also in the light of current climate change.

Therefore, the new regional law introduces the basic concepts of sustainable urban runoff, to reduce urban flooding phenomena, to contain the supply of rainwater to the water bodies of receptors by controlling the source of rainwater and to reduce the degradation of water quality.

The device of the law also introduces two fundamental concepts: hydraulic invariance and hydrological invariance.

By hydraulic invariance we mean the principle according to which the meteoric discharge flows discharged from the urbanized areas into the natural or artificial receptors of the valley are not greater than those pre-existing urbanization. (L.r. 4/2016)

By hydrological invariance we mean the principle according to which not only the flow rates, but also the volumes of meteoric discharge discharged from the urbanized areas are not greater than those existing before the transformation. (L.r. 4/2016)

Synthetically, the concept of hydraulic invariance means that compared to the starting conditions, the flow of water towards the rivers should not be increased in the construction of new civil and industrial buildings, parking lots and roads and redevelopment interventions. All this, progressively introducing technologies and design solutions (flywheel tanks, filtering wells, green roofs, etc.) to help absorb water into the soil.

From the current geological study that is part of the urban planning tool, it should be noted that the Caesarea territory in relation to vulnerable areas from the geological point of view is characterized by a degree of intrinsic vulnerability of the average aquifer throughout the western part of the territory (urbanized part). all the eastern part (corresponding with the territory of the Parco delle Groane) from the presence of low-lying suspended slopes with drainage problems.

Instead from the point of view of hydraulic vulnerability, the same geological study punctually identifies floodable areas for flood events with return times of 10, 100 and 500 years. These areas are located along the fluvial route of the Guisa torrent.

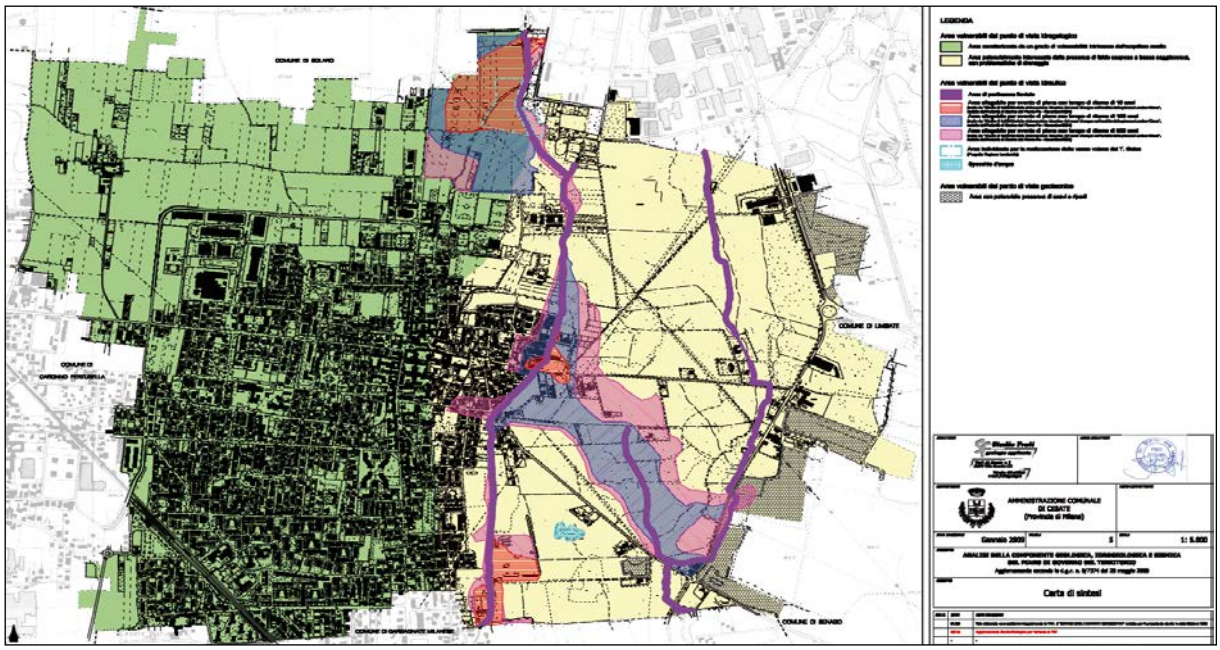


Figure 24 - Table n. 5 Carta di Sintesi Componente Geologica of the Pgt (PGT, 2015)

4.4.4 The urban centralities system

Moreover, the local urban planning tool already identifies a series of areas that through their development must be the fulcrum of the future urban structure, in this sense they are identified and named as "new urban centralities" (PGT, 2015).

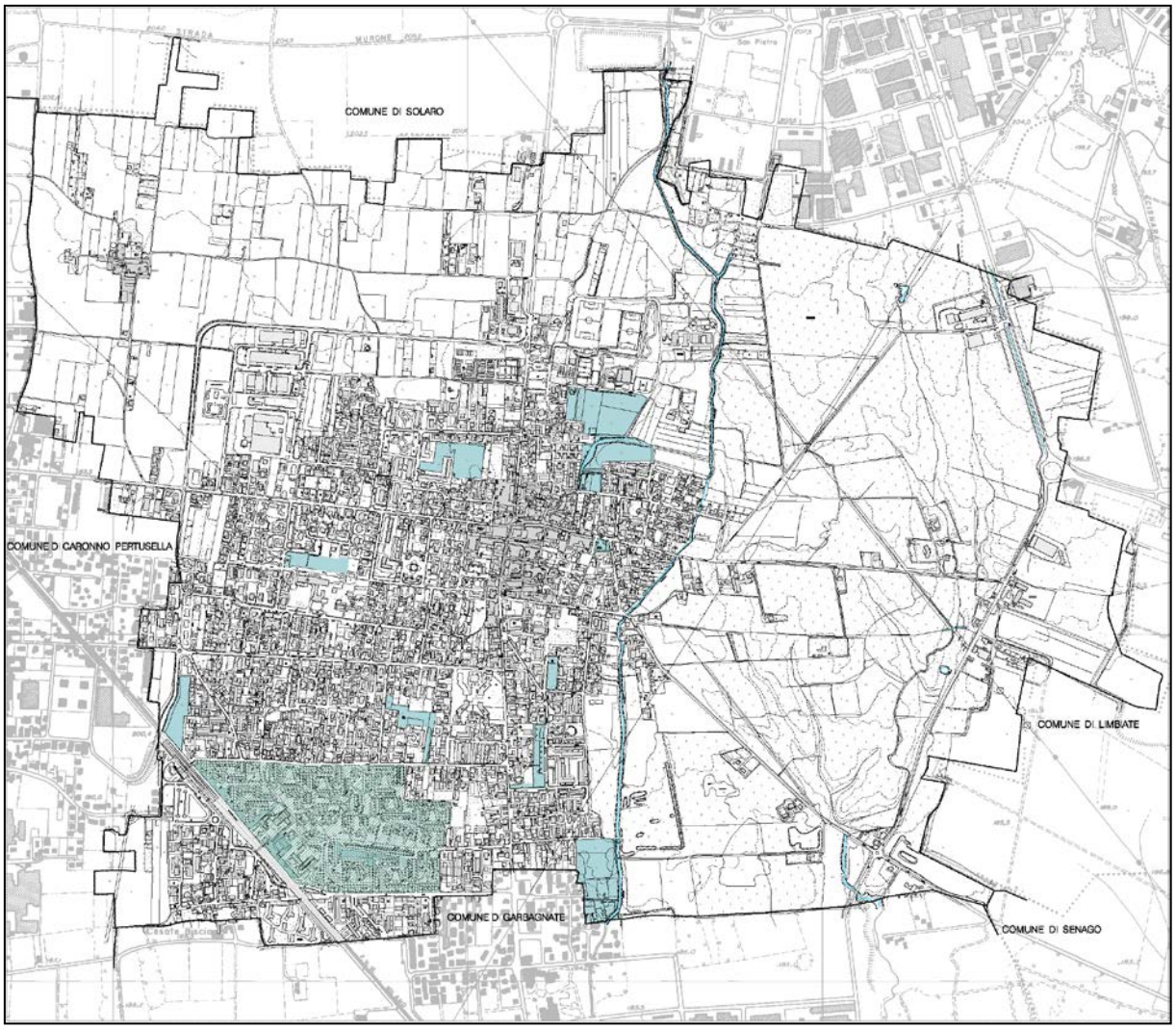


Figure 25 - Identification of the areas to be upgraded and requalified by PGT

It is made up of the nodal areas of the equipment of public or general interest on which the reorganization and implementation of the service system is envisaged.

These areas include those previously identified as attraction points for entry to the naturalness of the Park located in the North-East and South-East.

4.5 EXISTING INFRASTRUCTURES ANALYSIS

4.5.1 The infrastructure system at service of existing structure mobility

The intense urbanization process of the urban fabric of Cesate, which today manifests itself with a purely residential vocation and a wide range and density of building types, has not been supported by the construction of an adequate road network designed in a hierarchical and rational manner. This has determined over the years, following the phenomenon of the exponential growth of the use of private cars, the development of a series of problems related to vehicular mobility and to which, only since the beginning of this decade, both Cesate that the neighboring municipalities have tried to remedy with structural interventions on the municipal and supra-municipal scale.

This existing infrastructure network made Cesate an attractive pole in the North Milan for this reason is important the analyses of these dynamics that involte the cesate municipality.

4.5.2 Road network analysis

The existing road network of the inhabited area of Cesate and its neighboring area has been improved starting from the implementation of the Urban Traffic Plan of 2001 at the municipal level and some measures taken on the extra-urban secondary network at the over-municipal level.

From the analysis of the current layout of the road network of Cesate and its more immediate surrounding it can be seen that most of the objectives that the Plan had set were achieved, both those of an infrastructural nature in the short and medium term and those of a character. organization on the regulation of circulation. Firstly, the completion of extra-urban roads around Cesate has configured a real tangential flow system that guarantees the fluidity of transit and penetration traffic without affecting the urban core and its road network, which is used for the type of traffic. traffic that competes with them.

The completion of this tangential system has allowed the redevelopment of some road axes within the urban network of Cesate, which previously "suffered" a misguided use of both transit and local traffic.

Lastly, all the interchanges between the external ring road and the consolidated urban network have been recently completed or upgraded.

4.5.3 Railways

FNM Milano - Saronno Line

The municipal territory of Cesate is crossed in a north-west-southeast direction, parallel to the extra-urban road axis of the SP ex SS 233 (Varesina), from the Milan - Saronno railway line that laps the administrative boundary in its north-western part.

It is a suburban connection line with regional extension starting from Saronno station to centers such as Como, Varese, Laveno, Malpensa, Novara and Seregno. It has characteristics suitable for low commercial speeds and rhythmic and continuous traffic frequencies, carrying out a fundamental service for commuting movements towards the Milanese capital. Intersect the road network of Cesate in two points already resolved with a vehicular overpass on the extraurban axis of via Scarlatti - via Vecchia Comasina - new inter-municipal road and with a vehicular underpass on the urban one of via Virgilio - via del Sottopasso - via dei Mille. There are also two cycle-pedestrian underpasses, one at the station and the second at the turn of the railway between via Italia and via Papa Giovanni XXIII.

The Cesate stop is affected by two lines of the Milan suburban railway system (lines S1 and S3).

Lines S1: connects the station of Milan Rogoredo with that one of Saronno.

Lines S3: connects the Milan Cadorna station with that of Saronno along the oldest line of the entire FNM network (year 1879).

Both lines provide the strong commuting movements with a service with high and constant frequencies that provides pairs of trains every half an hour in both directions, throughout the day and every day of the week, starting at six in the morning and up at nine o'clock in the evening and with the possibility, until almost midnight, to interchange at the Bovisa station with the trains of the railway passing.

4.5.4 Bus lines

The bus lines are organized by two operators: Groane Trasporti e Mobilità (GTM) and Ferrovie Nord Milano (FNM). The first crosses the municipal territory with an itinerary and six stops, two of which are fixed and four on request. The second with an itinerary and two stops. Generally speaking, they offer a service with a constant hourly rate, but modest frequencies in a sufficiently wide arc: a run every half hour in both directions from 6.00am to

around 8.30pm. It is little known by the citizens and the stops are poorly equipped, often only with the pole that signals the line. In detail the lines are as follows:

Line GTM H 306 Cesate – Garbagnate FNM – Senago – Palazzolo FNM: it develops with a prevalent north - south track at via Verdi - Romanò (southbound), Battisti - Trento - dei Martiri (northbound) - Piave - Kennedy - Trieste - Concordia - Papa Giovanni XXIII - Rome and stops in via Verdi (cemetery), via Romanò, piazza I ° Maggio, via Puccini ang. Kennedy, via Papa Giovanni XXIII (INA village church) and via Roma (Garbagnate M. border).

Line FNM H 202 Saronno – Solaro – Città Satellite: it develops with a prevalent north - south route at via Verdi - Romanò (southbound), Battisti - Trento - dei Martiri (northbound) - via Senago - via XIV strada and stops in via dei Martiri, 1 and Romanò, 6.

4.5.5 The parking system

The offer of the stop in the territory of Cesate has been formed by free-time zones with indefinite duration and temporary limited-time parking areas (with clockwise rotation). The latter are present in correspondence with the historical core of Cesate where the presence of the various attractors such as public services and commercial activities is greater. More precisely, they are located on the urban axes of via Verdi - via Romanò - via Roma, via dei Mille and via Trieste. The most important areas dedicated to the parking of motor vehicles are adjacent to the FNM station and in the settlement fabric located to the north - east of the railway line.

Currently there are not pay parking areas.

The possibility of interchange between the different transport carriers is a modality not widely practiced in the Cesanese territory. At present, in fact, it is only possible between rail and private car / bicycle at the FNM station; on the south-west side of the railway line there is a large parking with free parking while on both sides there are two small unattended parking lots for bicycles. There is no interchange between railway and bus near the station, a possibility that should be immediately operational to try to move ever more significant shares on public transport. The parking areas identified inside the colored circles placed on the stops of the H 306 line of the G.T.M. lend themselves to be used as parking lots between private cars / bicycles and buses. This interchange requires the use of funds to improve the service quality of the bus service, promote an adequate service information campaign, redevelop the stops with the installation of waiting areas, adequate evening lighting and horizontal and vertical signage and racks for bicycles.

4.5.6 Sidewalks and pedestrian area

The curtain building that characterizes the historic core of Cesate, but also the most recent of the INA Village built in the 50s and that of the expansion areas of the '60s and' 70s has often adopted road sections with reduced caliber and in which pedestrian sidewalls were not always provided, also considering a very modest or non-existent vehicle traffic at the time. So much of the town of Cesate inherited a situation of poor endowment of sidewalks or pedestrian areas. In the last decade a new phase of building expansion has allowed the various municipal administrations that have succeeded to fill in part this lack with the construction of new sections of sidewalks and the completion / redevelopment of the existing partial sections.

4.5.7 Cycle paths

The only episode of bike path inside the town of Cesate consists of a track in its own on Via Puccini in the stretch between Via Paganini and the traffic light intersection of Via Vecchia Comasina. Other sections of cycle paths are under construction / completion according to the provisions of the current Pgt and carried out by the transformation areas still underway. The remaining cycle paths in the municipal area are located outside the town and consist of those included in the cycle system of the Parco delle Groane. They are mainly used on weekends and for sport and recreational activities.

If the goal is to promote the use of the bicycle for ordinary home-school and home-work travel within the town and to consolidate leisure time travels, then it becomes essential to guarantee the cycling circulation an adequate level of paths through the creation of at least two cycle ridges with a prevalent north - south and east - west orientation that touches the main urban functions of Cesate and that connect them with the existing system of the cycle paths of the Parco delle Groane.

4.5.8 The system of public services and services of public interest

In this sense, the Service Plan has identified the "catalog" of services of public and general interest in the municipal reality of Cesate, summarized in a table that contains the fundamental elements.

For a correct reading of the framework is appropriate to specify some terminological indications used: (PGT, 2015)

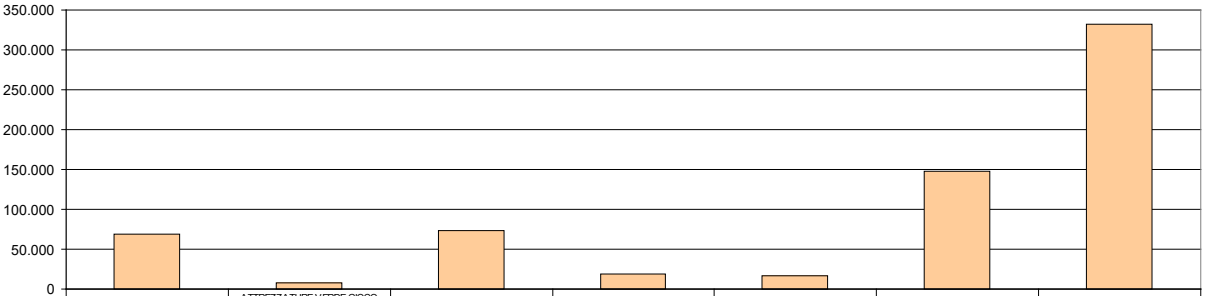
- **services:** all the elements necessary to guarantee a specific service (location, personnel, management regulations, financing methods).
- **equipment:** physical structures in which the service takes place.
- **infrastructures:** the physical "network" structures necessary to regulate traffic, energy, water, gas, etc.
- **services of local interest:** services directly accessible by users belonging to a small catchment area, usually referred to administrative districts at municipal or lower level.
- **services of general or territorial interest:** services which, due to their nature or functional dimension, have wider catchment areas, usually referred to administrative districts at over-municipal, provincial or regional level.

Below is the summary table and related analysis graph on distribution and quantification.

EXISTING SERVICES IMPEMENTED	sq
GREEN EQUIPMENT GAME SPORT AND PUBLIC SPACES	68.875
GREEN EQUIPMENT GAME SPORT AND PRIVATE SPACES FOR PUBLIC USE	7.303
PUBLIC PARKING EXISTING ACTIVITIES	73.134
RELIGIOUS EQUIPMENT	19.071
EQUIPMENT GENERAL INTEREST PRIVATE PUBLIC USE	16.212
EQUIPMENT OF GENERAL PUBLIC INTEREST	148.115
TOTAL (sq)	**332.710**
Population at 31/12/2017	14.337
Total existing services (sq)	332.710
Services for inhabitant=tot.services/inhabitant (sq/inhab)	**23,21**

Table 13 - Quantitative analysis of existing infrastructures and public facilities (PGT, 2015)

SERVIZI ESISTENTI



	ATTREZZATURE VERDE GIOCO SPORT E SPAZI PUBBLICI	ATTREZZATURE VERDE GIOCO SPORT E SPAZI PUBBLICI PRIVATE AD USO PUBBLICO	PARCHEGGI PUBBLICI ESISTENTI ATTUATI	ATTREZZATURE RELIGIOSE	ATTREZ. INTERESSE GEN. PRIV. USO PUB.	ATTREZZATURE DI INTERESSE GENERALE PUB.	TOTALE (mq.)
servizi (mq.)	68.875	7.303	73.134	19.071	16.212	148.115	332.710
%	20,70	2,20	21,98	5,73	4,87	44,52	

Chart 8 - Subdivision of existing services (PGT, 2015)

These data highlight the amount of areas destined to host public services, or public use, and largely exceed the minimum thresholds set by national legislation (18sq / ab) allowing the public city to achieve high levels of quality, abandoning the desperate achievement of standards verified exclusively in terms of quality;

4.6 NATURAL SYSTEM ANALYSIS

4.6.1 Territorial classification

The Cesate's municipality, as already extensively described, is occupied for about half of its area by the Parco delle Groane in the eastern area, while the northern belt is characterized by a predominantly agricultural territory. The rest of the territory is urbanized.

The presence of the Park guarantees, also in the context of the implementation of the urban transformations, the environmental protection, both in the areas belonging to the Park Authority and, consequently, also in the surrounding areas.

Within the Parco delle Groane's portion that falls within the Cesate's area there is also an area classified as a Site of Community Importance (SIC): it is the Cesate Pine Forest, identified following the implementation of the European "Habitat" directive of 1992 and identified with the code IT2050001 and its relative 2 habitats of community interest:

1. **Habitat 4030** - European dry lands
2. **Habitat 9190** - Old acidophilous oak woods of Quercus robur.

The Metropolitan City of Milan, has also identified a network of ecological corridors to be protected, to ensure environmental continuity, that a large scale analysis, such as that relating to supra-municipal planning does not allow adequate identification. The following figure shows the areas of protection (Parco delle Groane and SIC) and the primary and secondary ecological corridors identified by the Province of Milan; as you can see, all the corridors converge and depart from the node represented by the Park.

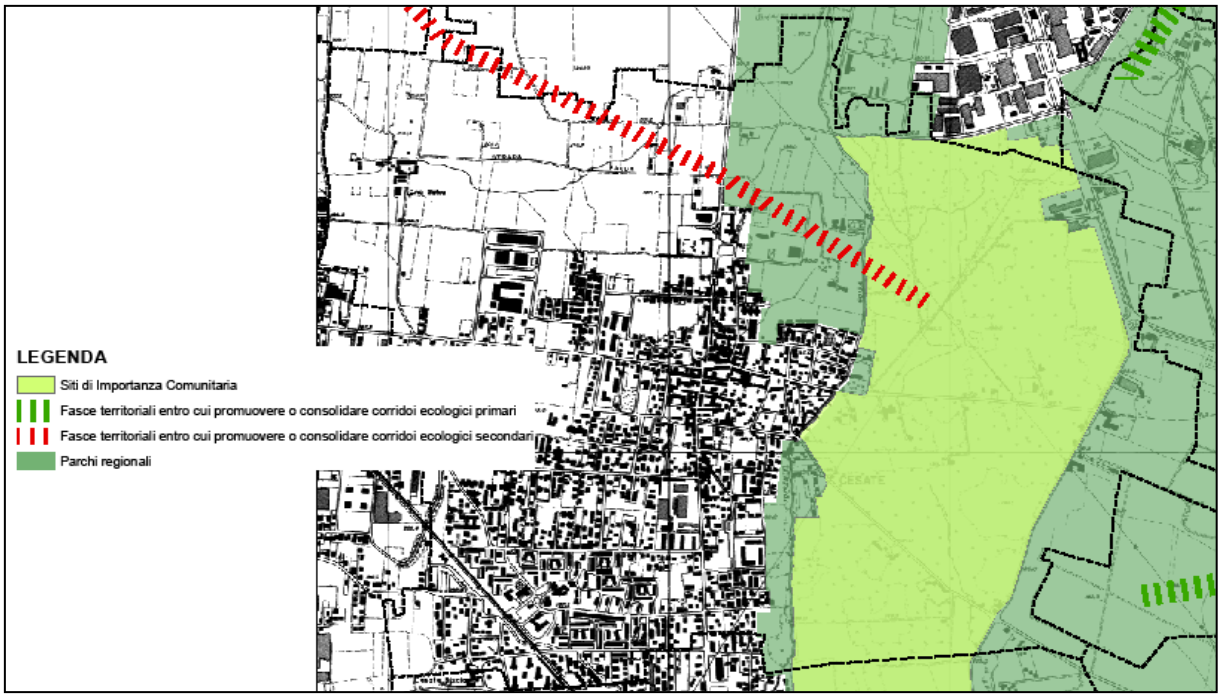
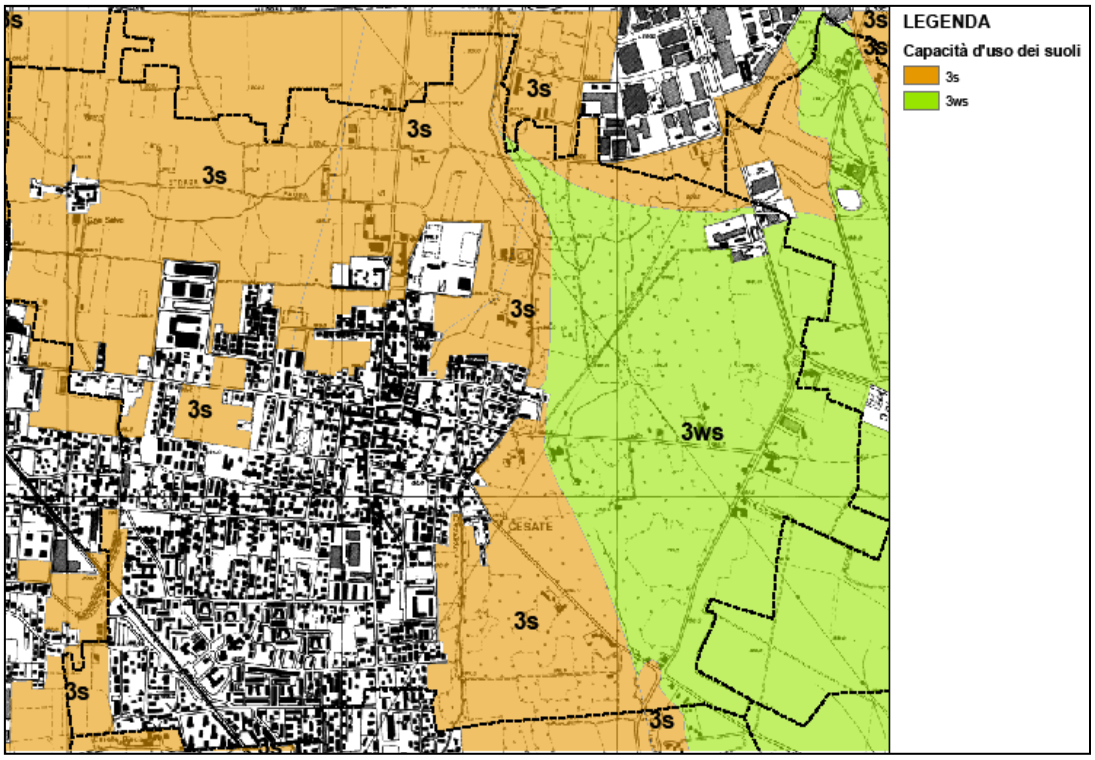


Figure 26 - Protection areas (Parco delle Groane, SIC) and ecological corridors (Città Metropolitana, 2015)

An analysis was also carried out for the land use capacity (Land Capability Classification, abbreviated as "LCC"), a classification aimed at assessing its production potential for agro-forestry-pastoral uses based on sustainable management. of the soil resource. (Città Metropolitana, 2015)

The cartography related to this evaluation is a useful document to address future planning choices of the territory as it allows to make the choices that are more in keeping with the characteristics of the soils and the environment in which they are inserted. The soils are classified essentially for the purpose of highlighting the risks of degradation deriving from inappropriate uses.

This interpretation is carried out on the basis of both the intrinsic characteristics of the soil (depth, stonyness, fertility), and those of the environment (slope, risk of erosion, flooding, climatic limitations), and its objective is the individuation of agronomically more valuable areas, therefore more suitable for agricultural activity, allowing the territorial planning, where possible and convenient, to preserve them from other uses. The land use capacity classes are listed below and the relative figure shows the mapping of the Cesate's territory classification.



Suoli adatti all'agricoltura

1	Suoli che presentano pochissimi fattori limitanti il loro uso e che sono quindi utilizzabili per tutte le colture.
2	Suoli che presentano moderate limitazioni che richiedono una opportuna scelta delle colture e/o moderate pratiche conservative.
3	Suoli che presentano severe limitazioni, tali da ridurre la scelta delle colture e da richiedere speciali pratiche conservative.
4	Suoli che presentano limitazioni molto severe, tali da ridurre drasticamente la scelta delle colture e da richiedere accurate pratiche di coltivazione.

Suoli adatti al pascolo ed alla forestazione

5	Suoli che pur non mostrando fenomeni di erosione, presentano tuttavia altre limitazioni difficilmente eliminabili tali da restringere l'uso al pascolo o alla forestazione o come habitat naturale.
6	Suoli che presentano limitazioni severe, tali da renderli inadatti alla coltivazione e da restringere l'uso, seppur con qualche ostacolo, al pascolo, alla forestazione o come habitat naturale.
7	Suoli che presentano limitazioni severissime, tali da mostrare difficoltà anche per l'uso silvo pastorale.

Suoli inadatti ad utilizzazioni agro-silvo-pastorali

8	Suoli che presentano limitazioni tali da precludere qualsiasi uso agro-silvo-pastorale e che, pertanto, possono venire adibiti a fini creativi, estetici, naturalistici, o come zona di raccolta delle acque. In questa classe rientrano anche zone calanchive e gli affioramenti di roccia,

Figure 27 - Map of land use capacity in the Caesate area (Geoportale R. L., 2017)

As can be seen from the map, the soils of the Cesate's municipality fall into class 3, in particular in the 3s and 3ws subclasses; the letters next to the number identifying the class identify the types of limitations identified in that area; in this case the letter s identifies limiting factors related to the characteristics of the soil (useful depth, texture, skeleton, stone), while the letter w refers to limiting factors related to water (drainage, flooding, hydromorph horizons, etc.) .

Moreover, in the territory, there are no landfill areas.

The agricultural landscape is characterized by an agricultural structure developed mostly in the cultivation of arable crops and partly intensive and not very diversified, which leads to an impoverishment of the soil structure (prevalent crops of corn and hay).

The territory destined to agriculture is also fairly organized according to a predominantly north-south structure that gives it a good identity and a still recognizable supporting matrix. Only in the margins with the urbanized contexts is strongly compromised by the presence of

improper uses of the soil and by the presence of strong urban conurbation phenomena, which partly surround the agricultural activity and is parcellized with respect to the neighboring territories; the over-local agricultural system as a compact and well-defined organizational structure of the soil.

From a territorial point of view, as mentioned above, the open space system belongs to a dense and conurbated settlement model, typical of the Milanese Brianza area, where urbanization systems prevail, which gradually became welded together and with the densest of external linear urbanizations. This situation is amplified by the construction of buildings along the main connecting roads and through the expansion of pre-existing intermediate fractions (Caronno-Cesate-Garbagnate built system), producing a sprawl effect.

Among the urban weldings, open spaces are currently open to a residual agriculture, which in some partial way still maintains some of the features of the traditional landscape.

An additional and useful parameter that is used to guide planning decisions towards sustainability and conservation criteria for areas with high ecological and environmental value is the naturalness index. This cartographic indicator classifies the territory by associating to each area a value of naturalness (minimum for urbanized areas, maximum for areas with natural vegetation close to the climax); carrying out this type of classification is useful for the purpose of favoring the planning choices that increase, or decrease in a less consistent way, the total naturalness value of the territory. (Socco, Cavaliere, & Guarini, 2002)

The following table describes the classification used for structuring this indicator.

NATURALITY CLASS	DESCRIPTION
1	Urbanized areas or high anthropogenic intervention
2	Equipped green areas, green areas of urban furniture
3	Agricultural areas
4	Areas with mainly herbaceous vegetation, naturalistic green areas far from the vegetational climax
5	Areas with mainly arboreal vegetation (woods), naturalistic green areas close to the climax.

Table 14 - Classification used to calculate the naturalness index (Socco, Cavaliere, & Guarini, 2002)

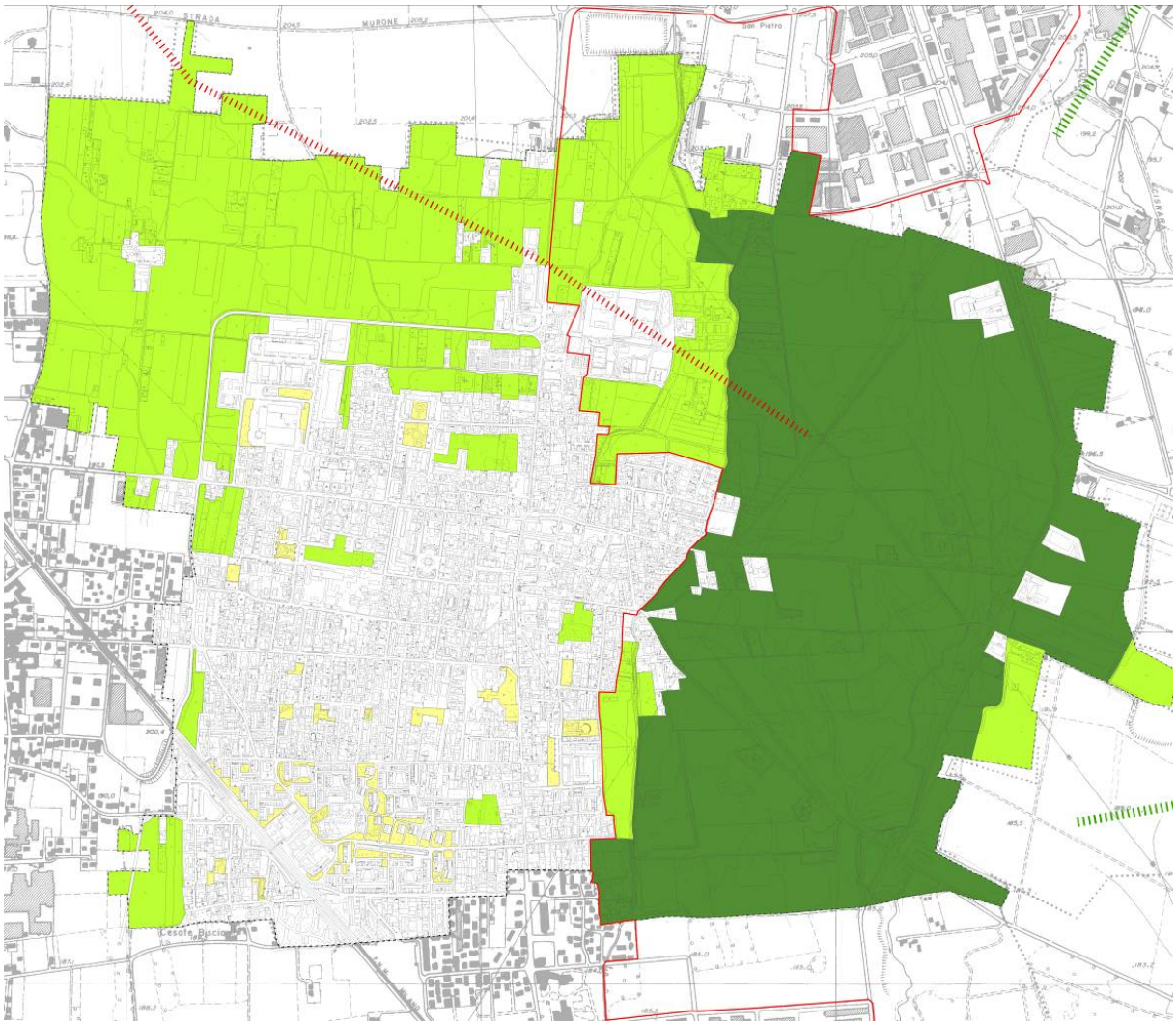
To this end, a comparative analysis was developed using this indicator. This analysis considered two scenarios: the current state of the territory and that generated by the prevision of the current urban planning instrument (PGT, 2015). Figure 25 shows the distribution of the naturalness index in the current state, while in Figure 26 the distribution of the future naturality index is shown.

In short, the naturalness index of the green areas was developed in the local planning instrument as follow. (PGT, 2015)

This processing was carried out by assigning to each free area belonging to the municipal area an index of naturalness based on the function that the area itself plays, multiplying this index by the area itself and then dividing this product by the total municipal area .

For free areas, all public or private areas free of construction were considered, excluding non-restricted private green areas.

The objective of this elaboration is the quantification of the free areas and the evaluation of their quality in naturalistic terms.



LEGENDA

CORRIDOI ECOLOGICI

Fasce territoriali entro cui promuovere o consolidare corridoi ecologici primari

Fasce territoriali entro cui promuovere o consolidare corridoi ecologici secondari

CLASSI DI NATURALITA'

CLASSE 1

CLASSE 2

CLASSE 3

CLASSE 4

CLASSE 5

AREE PROTETTE

CONFINE COMUNALE

Figure 28 - Naturalness index in the actual state

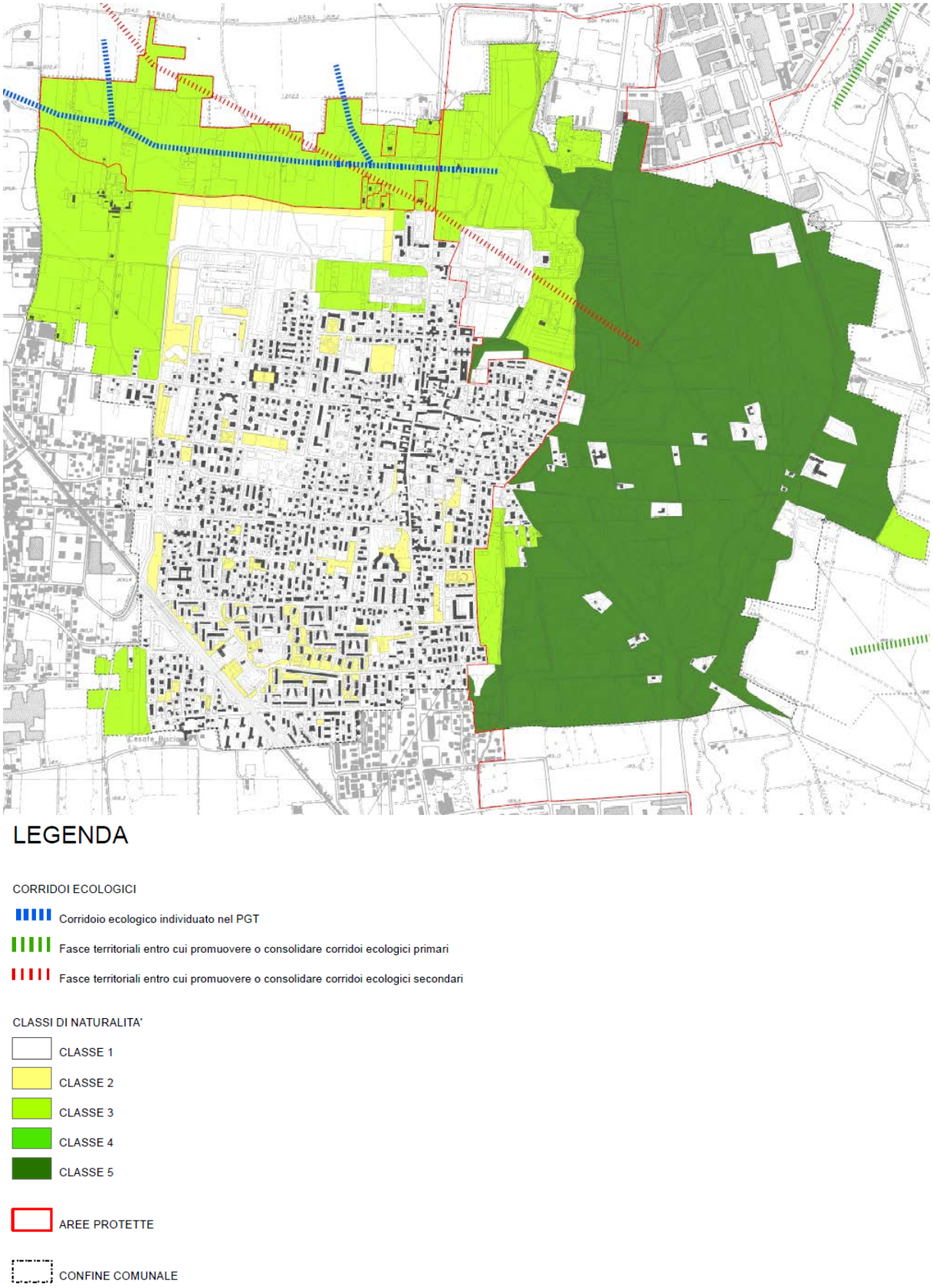


Figure 29 - Naturalness index with all implementation of the PGT provisions

The percentage distribution in the territory of the classes of naturalness is shown in the Chart 9. As you can see, the differences are not great, on the other hand, with the provision of the

two areas "AP1" and "AP2" the PGT goes to include in the "urbanized" class some areas classified in class 5 in the current state.

The naturalness value of the two development scenarios considered was calculated by multiplying each area by the coefficient associated with its class, then dividing the whole by the municipal area and multiplying by 100, so as to normalize the result to values between 0 and 100.

CURRENT STATUS = 48.98

NEW MUNICIPAL URBAN FORECASTS = 45.50

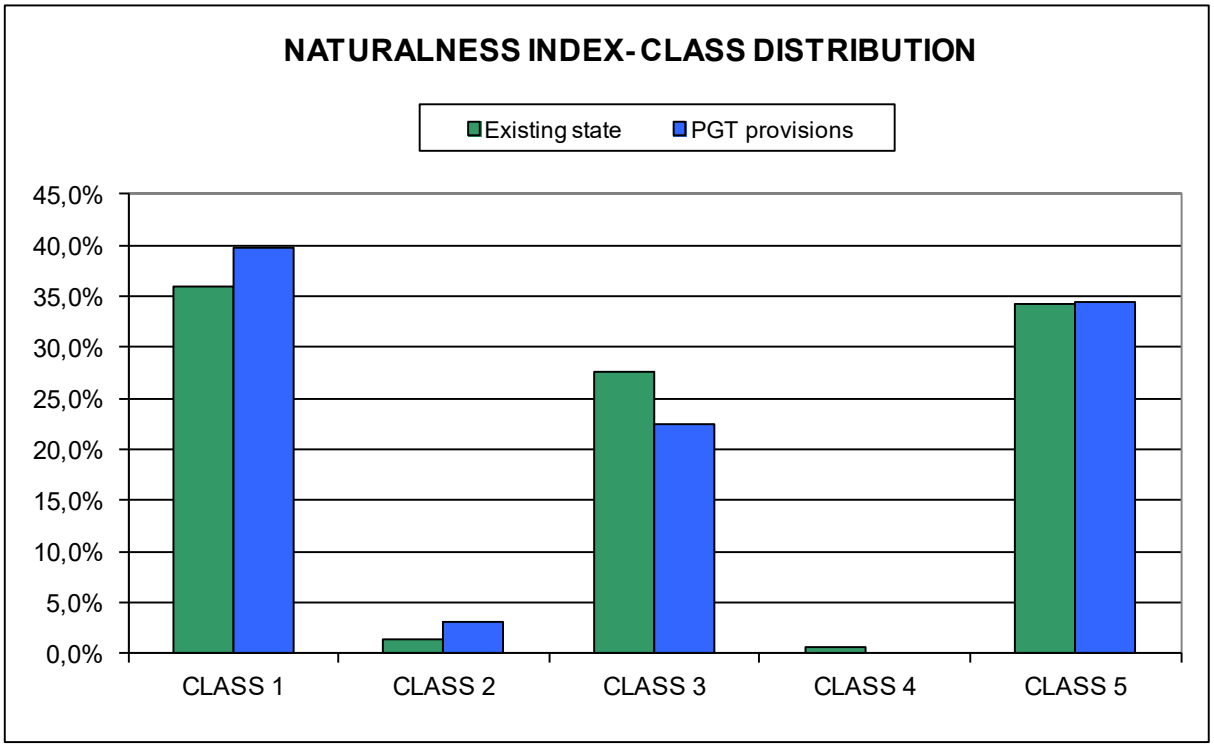


Chart 9 - Percentage distribution of the naturalness classes in the development alternatives considered in the analysis.

The following Chart 10 shows the natural values calculated in the two scenarios: the forecasts of the current PGT lower the value to 45.50.

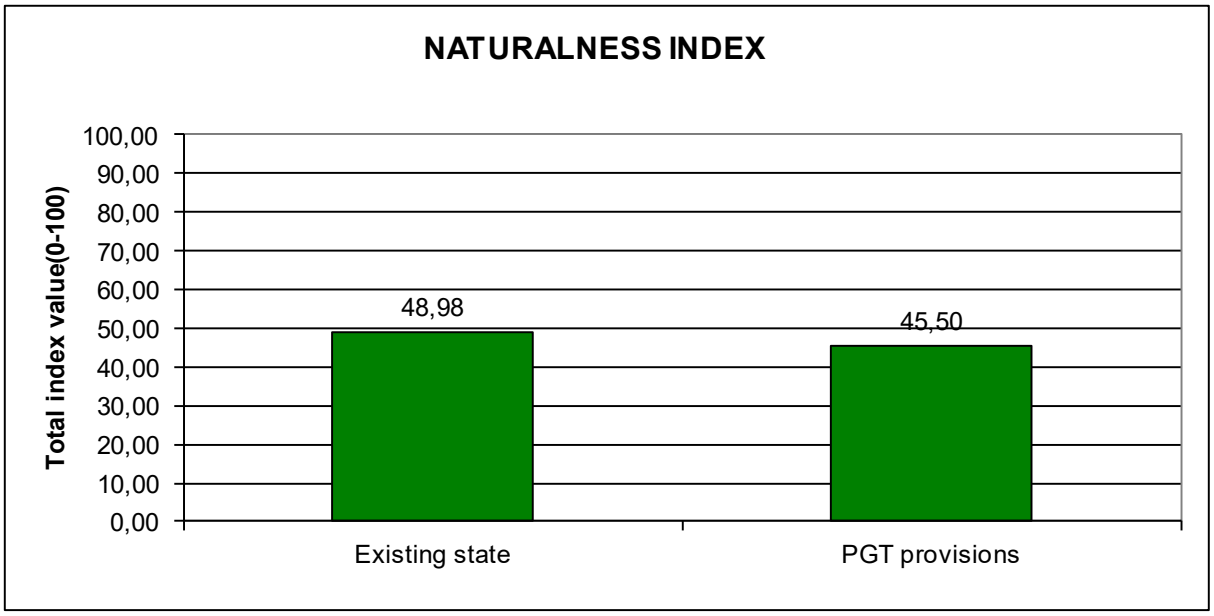


Chart 10 - Comparison of the naturalness indices calculated in the analyzed alternatives

4.6.2 The NATURA 2000 site

The area in question is totally within the Parco Regionale delle Groane and is the main green lung and ecological corridor.

The area of the Parco delle Groane, extends over 3,200 hectares in an inter-municipal area north of the Lombard capital, starting from the Bollate fountains to reach Lentate sul Seveso. The Park occupies an area of moor of considerable geological interest, currently covered by the so-called "ferretto", a thick layer of acid clay of reddish color. This particular conformation of the territory has allowed the formation of the "heath", a certainly unusual landscape characterized by prairies of bushes, thick grasses, scabs, dwarf willows and birches. The nature reserves that are part of it are a source of considerable interest, lie almost within the city, between traffic and industrial activities, and seem to struggle to defend their borders. For this area, the objective must be to defend and control the use, compatibly with a correct use of the territory to defend its natural features, both in terms of landscape and production, and the protection of its natural emergencies and its "signs" that belong to the history and identity of the territory.

The presence of a representative site for the conservation of the natural heritage of Community interest of the European Natura 2000 network, ie the Site of Community Importance SIC IT2050001 "Pineta di Cesate", is highlighted on the Cesate's territories located within the perimeter of the Parco Regionale delle Groane.

As already indicated in the 4.6.1 chapter, within the same SIC were identified following the monitoring campaign carried out in 2003-2004 (Gariboldi, 2004), the identification of 2 habitats of community interest:

1. **Habitat 4030** - European dry lands

This habitat has been attributed to the Ticino callunets dominated by *Calluna vulgaris* and with the presence of *genista* species.

2. **Habitat 9190** - Old acidophilous oaks of the sandy plains with Quercus robur

This habitat has been attributed to forest coenoses dominated by *Pinus sylvestris, Quercus robur, Populus tremula, Frangula alnus, Molinia arundinacea*, attributable to the Order *Quercetalia robori-petraeae*. The formations in which the allochthonous component is

dominant or codominant (high coverage of *Robinia pseudacacia, Prunus serotina, Quercus rubra*) are not included in this category.

The area of the SIC is enclosed in a landscape fabric of agricultural matrix (eastern border) and urban-industrial (north, south, west borders). About half of the natural ecosystems present are highland woods of Pino Silvestre and mixed broad-leaved trees (in particular oaks such as oaks and oaks, white hornbeams, birches, aspen poplars). The remaining surface of the SIC is made up of heaths and uncultivated herbaceous-shrubby areas.

The site is basically characterized by wooded areas, low shrubland heath areas, hygrophilous meadows, with growth above all of *Molinia arundinacea*, cultivated fields, a small wetland (the Stagno Manuè) and areas undergoing reforestation.

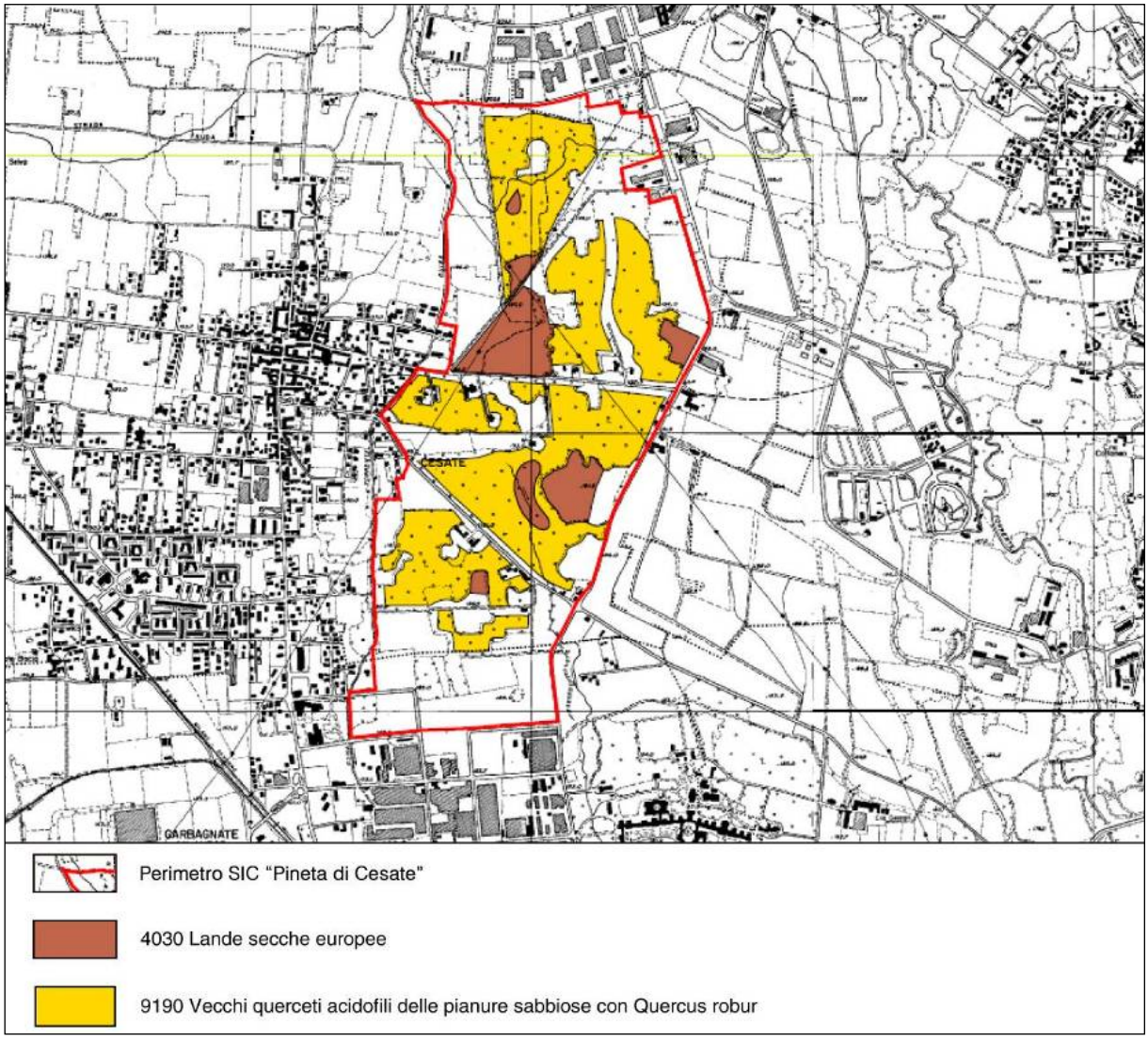


Figure 30 - Distribution of protected habitats within the "Pineta di Cesate" SIC

Vegetation and fauna aspects

The SIC card, with reference to the habitat types, distinguishes the wooded areas (Broad leavel deciduous woodland) that have an incidence of 70.49%, the cultivated areas (Estensive cereal cultures) with the 14.16%, the zones herbaceous and dry shrubs (Health, Scrub, Maquis and Garrigue, Phygrana) for an 8.37%, the areas occupied by buildings and roads (Other land) for a 5.82% and finally, for the remaining 1.16%, meadows and ponds (Humid grassland, Mesophile grassland).

As for the avifauna, as reported in the cataloging card, are the Little Bittern (*Ixobrychus minutus*), the Night Heron (*Nycticorax nycticorax*), the Little Egret (*Egretta garzetta*), the Hawk Pecchiaiolo (*Pernis apivorus*) and the Little Averla (*Lanius collurio*). To these, on the basis of the additional checks carried out (data up to 2004), whose results are reported in the technical management report for the SIC fauna, we add the white heron (*Egretta alba*), the brown kite (*Milvus migrans*) , the Marsh Harrier (*Circus aeruginosus*), the Royal Albanella (*Circus cyaneus*), the Lesser Albanella (*Circus pygargus*), the Osprey (*Pandion haliaetus*), the Emery (*Falco colombarius*), the Peregrine Falcon (*Falco peregrinus*) , the Averla major (*Lanius excubitor*).

The habitual migratory birds and the other birds that frequent the SIC, according to the list of the aforementioned card and technical management report for the fauna, are numerous and considering only the nesting ones, it is the Gray Heron (*Ardea cinerea*), Sparrowhawk (*Accipiter nisus*), Buzzard (*Buteo buteo*), Kestrel (*Falco tinnunculus*), Starna (*Perdix perdix*), Quail (*Coturnix coturnix*), Pheasant (*Phasianus colchicus*), Gallinella (*Gallinula chloropus*) , of the Coot (*Fulica atra*), of the Colombaccio (*Columba palumbus*), of the Collared Dove (*Streptopelia decaocto*), of the Tortora (*Sterptopelia turtur*), of the Cuculus (*Cuculus canorus*), of the Civetta (*Athene noctua*), of the Allocco (*Strix aluco*), of the common owl (*Asio otus*),

As far as the fauna is concerned, on the card there are, for amphibians, the crested newt (*Triturus carnifex*) and the frog of Lataste (*Rana latastei*), and for the invertebrates, the *Cerambyx cerdo* and the *Lucanus cervus*.

In merito alla presenza di altre specie importanti della fauna, nella scheda si cita, per gli anfibi, la Raganella italiana (*Hyla intermedia*), sottospecie endemica, la Rana agile (*Rana dalmatina*), la Rana esculenta (*Rana* synklepton *esculenta*) ed il Tritone punteggiato (*Triturus vulgaris*) e per i rettili, il Colubro liscio (*Coronella austriaca*), la Vipera (*Vipera aspis*), il Biacco (*Hierophis viridiflavus*), il Ramarro occidentale (*Lacerta viridis*) e la Lucertola muraiola (*Podarcis muralis*). Nel caso dei mammiferi si elenca la Crocidura minore (*Crocidura suaveolens*), lo Scoiattolo (*Sciurus vulgaris*), il Riccio (*Erinaceus europaeus*), il Ghiro (*Myoxus glis*), la Faina (*Martes foina*), il Moscardino (*Muscardinus avellanarius*), la Donnola (*Mustela nivalis*), il Pipistello di Savi (*Hypsugo savii*), il Pipistrello albolimbato (*Pipistrellus kuhli*) ed il Pipistrello nano (*Pipistrellus pipistrellus*).

Regarding the presence of other important species of fauna, in the card is cited, for amphibians, the Italian Raganella (*Hyla intermedia*), endemic subspecies, the Agile frog (*Rana dalmatina*), the Rana esculenta (*Rana synklepton esculenta*) and the Tritone dotted (*Triturus vulgaris*) and for reptiles, the smooth Colubro (*Coronella austriaca*), the Vipera (*Vipera aspis*), the Biacco (*Hierophis viridiflavus*), the Western ramarro (*Lacerta viridis*) and the wall lizard (*Podarcis muralis*). In the case of mammals, we find the Lesser Crocidura (*Crocidura suaveolens*), the Squirrel (*Sciurus vulgaris*), the Hedgehog (*Erinaceus europaeus*), the Dormouse (*Myoxus glis*), the Faina (*Martes foina*), the Moscardino (*Muscardinus avellanarius*), the Weasel (*Mustela nivalis*), Pipistello di Savi (*Hypsugo savii*), Bat albolimbato (*Pipistrellus kuhli*) and Pipistrello nano (*Pipistrellus pipistrellus*).

The following are the species of animals listed in Annexes II and IV to Directive 92/43/CEE

Mammiferi

Specie	*Allegato direttiva habitat*
Vespertilio maggiore (Myotis myotis)	II
Pipistrello di Savi (Hypsugo savii)	IV
Pipistrello albolimbato (Pipistrellus kuhlii)	IV
Pipistrello nano (Pipistrellus pipistrellus)	IV

Figure 31 - Types of mammals present

Anfibi

Specie	*Allegato direttiva habitat*
Tritone crestato (Triturus carnifex)	II
Tritone punteggiato (Triturus vulgaris)	IV
Rana di lataste (Rana latastei)	II
Rana agile (Rana dalmatina)	IV
Rana esculenta (Rana synklepton esculenta)	IV
Raganella (Hyla intermedia)	IV

Figure 32 - Types of amphibians present

Rettili

Specie	*Allegato direttiva habitat*
Ramarro (Lacerta viridis)	IV
Lucertola muraiola (Podarcis muralis)	IV
Colubro liscio (Coronella austriaca)	IV
Biacco (Coluber viridiflavus)	IV
Natrice dal collare (Natrix natrix)	IV
Vipera comune (Vipera aspis)	IV

Figure 33 - Types of reptiles present

Species of birds present listed in the Directive 79/409/CEE:

- Tarabuso (Botaurus stellaris)
- Tarabusino (Ixobrychus minutus)
- Nitticora (Nycticorax nycticorax)
- Garzetta (Egretta garzetta)
- Airone rosso (Ardea purpurea)
- Cicogna bianca (Ciconia ciconia)
- Falco pecchiaiolo (Pernis apivorus)
- Nibbio bruno (Milvus migrans)
- Falco di palude (Circus aeruginosus)
- Albanella reale (Circus cyaneus)
- Albanella minore (Circus pygargus)
- Falco pescatore (Pandion haliaetus)
- Pellegrino (Falco peregrinus)
- Voltolino (Porzana porzana)
- Schiribilla (Porzana parva)
- Gru (Grus grus)
- Assiolo (Otus scops)
- Gufo di palude (Asio flammeus)
- Succiacapre (Caprimulgus europaeus)
- Martin pescatore (Alcedo atthis)
- Calandro (Anthus campestris)
- Averla piccola (Lanius collurio)
- Ortolano (Emberiza hortulana)

This area in relation to the existing biodiversity, represents a delicate point of the Parco Regionale delle Groane, which is strongly influenced by the anthropic pressure linked to the expansion of the urban area of the Milan metropolitan area.

The main threats to the conservation of the site are associated with fires and anthropogenic fruition, linked to leisure activities, and in the alternative to the spread of exotic species.

The SIC standard forms, updated to October 2013 (Ministero dell'Ambiente e della tutela del territorio e del mare, 2017), provide the complete list of the species present, as well as other and appropriate evaluations for the habitats present, attributing to them:

- a degree of representativeness of the type of natural Habitat on the site:

  A: excellent representativeness;

  B: good representativeness;

  C: significant representativeness;

  D: non significant representation;
- a degree of conservation of the structure and functions of the type of natural habitat in question and the possibility of restoration:

  A: excellent conservation;

  B: good conservation;

  C: medium or reduced conservation;
- an overall assessment of the site's value for the conservation of the type of natural habitat in question:

  A: excellent value;

  B: good value;

  C: significant value.

Habitat	Rapresentativeness	Conservation	Global Evaluation
4030	B	B	B
9190	B	C	B

Table 15 - Qualitative analysis SIC

It is emphasized that there is an area of particular naturalistic interest within the SIC, represented by the area of the Manuè pond which is then accounted for on the basis of surveys and inspections carried out by various authors (Buffagni, Crosa, & Marchetti, 1995); (Scali & Zuffi, Preliminary report on a reptile community ecology in a suburban habitat of northern Italy, 1993); (Scali, 1995); (Lanza, 1983)).

The Manuè pond is a large, irregularly shaped wetland with abundant hygrophilous vegetation. During the works within the "Life Natura 96" project (Ministero dell'Ambiente e della tutela del territorio e del mare, 2006), the fund was excavated to deepen the reservoir. The external portions have shallow waters, slightly degrading and rich in vegetation. Thanks to these interventions the permanence of water in any season is guaranteed, with considerable benefit for all the typical fauna of the wetlands. The same works have also guaranteed a considerable environmental diversity of the area, with different types of wetlands thanks to the different depths, vegetation and insolation of the various portions of the pond. This allows the colonization or increase of pre-existing populations of species with very different ecological needs. Furthermore, the larval stages of amphibians have many different microhabitats at their disposal where they can find shelter, food and different water

temperatures that can be exploited according to contingent development needs. The choice to build a canal in the woods to control the overflow of the pond has proved to be excellent, as it favors some species that appreciate not too deep and shady waters, such as newts and red frogs.

Controls were also carried out in two portions of wood located north and southwest of the pond, respectively, where the presence of depressions of the soil, even large, allows the stagnation of water in the most rainy periods, creating alternative reproductive sites for the amphibians.

The Manuè pond was also analyzed from the zoological point of view by the Section of Ecology of the Department of Biology of the University of Milan (Buffagni, Crosa, & Marchetti, 1995). The remarkable interest of this site was highlighted, both from the botanical and zoological point of view. During the inspections some species of animals were observed, among those described in the previous chapter; of these observations a brief description is given.

Mammals

The discovery of a roost of common owl and the wads that accumulate under it can provide information on the population in the area of micro mammals, whose bones are found inside the bullets regurgitated by birds of prey. The remains of the following species were found:

- Toporagno comune *(Sorex areneus)*
- Crocidura minore *(Crocidura suaveolens)*
- Pipistrello *(Chiroptera n.d.)*
- Arvicola di *Savi (Microtus savii)*
- Arvicola *(Microtidae n.d.)*
- Topo selvatico *(Apodemus sylvaticus)*
- Topo *(Apodemus sp.)*
- Topolino delle risaie *(Micromys minutus)*
- Topolino delle case *(Mus domesticus)*
- Uccelli passeriformi *(famiglia Passeriformes)*

Most of the micro mammals found belong to the species *Microtus savii* that, like most of the species found, is typical of the wooded areas. Occasionally appear also species that frequent open areas, such as *Crocidura suaveolens* and *Micromys minutus*, which may have been captured by the owl in the meadows and fields that surround the forest of the Manuè lake. The species are quite common, however they indicate the good quality of the wooded areas of the area.

Amphibians

They were observed:

- Triturus carnifex
- Hyla intermedia
- Rana dalmatina
- Rana latastei
- Rana synklepton esculenta

T. carnifex was observed along the southern side of the pond, but its presence is probably underestimated, due to the small size and difficult accessibility of some areas of the pond.

For the same reasons, individuals of *Triturus vulgaris meridionalis* were not observed, however probably present. The populations of all the anuri are particularly abundant: the Raganella (*Hyla intermedia*) has often been heard since the end of March, with a large number of males singing. The ovations are laid in shallow portions of water, rich in vegetation, preferably in well-sun-drenched areas; The agile frog (*Rana dalmatina*) is one of

the most abundant species: during the surveys, up to 158 ovates were counted, so that a reproductive population of about 350 individuals was estimated, besides the ovations in the flooded forest area were not counted to the south - west, where numerous tadpoles have been observed. The presence of shallow, vegetation-rich waters and the location within a forest favor the reproduction of this species and of the Rana di Lataste (*Rana latastei*) and the subsequent post-reproductive migrations, when both species mainly use woodland environments. The Lataste frog, however, is present with smaller populations than the agile frog: there were a maximum of 40 ovations, for a reproductive population estimated in a hundred individuals. All species of amphibians are favored by the presence of other surrounding wetlands, which guarantee the survival of meta - population structures, with a greater probability of long - term conservation.

The green frog (*Rana synklepton esculenta*) is present with a large number of individuals: the presence of at least 100 males in the song has been estimated. Like the Raganella, it is a thermophilous species and tends to use above all the sunniest and warmest portions of the pond.

Reptiles

The only reptile observed during the surveys was the wall lizard (*Podarcis muralis*), present both in the entrance area to the area, and at the pond where there are the warmest and sunniest areas. It is also probable the presence of the Collared Natrice (*Natrix natrix*), which often frequents also the humid areas located inside the woods, where it finds abundant prey.

Birds

During the inspections, they were observed:

- Tarabusino (Ixobrychus minutus)
- Germano reale (Anas platyrhyncos)
- Gallinella d'acqua (Galinula chloropus)
- Piccione selvatico (Columba livia)
- Colombaccio (Columba palumbus)
- Cuculo (Cuculus canorus)
- Gufo comune (Asio otus)
- Rondone (Apus apus)
- Picchio verde (Picus viridis)
- Picchio rosso maggiore (Picoides major)
- Rondine (Hirundo rustica)
- Balestruccio (Delichon urbica)
- Cornacchia grigia (Corvus corone cornix)
- Luì piccolo (Phylloscopus collybita)
- Pettirosso (Erithacus rubecula)
- Merlo (Turdus merula)
- Cincia mora (Parus ater)
- Cinciallegra (Parus major)
- Cinciarella (Parus caeruleus)
- Codibugnolo (Aegithalus caudatus)
- Passera d'Italia (Passer domesticus italiae)
- Fringuello (Fringilla coelebs)

The species present reflect the dual nature of the habitat: on the one hand the wood, with the typical species, such as the different Paridi, the Peaks, the Cuckoo and the Owl, and on the other the wetland with some waterfowl like the Germano real, the Moorhen and the Little

Bittern. The latter constitutes, with the common owl, one of the most valuable faunal elements: the Little Bittern is in fact a typical species of reeds and considered sensitive to decay, so its presence is a sign of the good environmental quality of the area; the same species can also be found in other areas of the Park, such as the Oasis of Lentate.

Invertebrates

Reference is made to the work carried out by Buffagni (Buffagni, Crosa, & Marchetti, 1995): this study highlighted the considerable interest that this site has, both from a botanical and a zoological point of view; in particular, some rather rare species in Italy were found, such as Dittero *Chironomide Xenopelopia falcigera*, or associated with relict environments in the Po Valley, such as the Isopode *Androniscus dentiger*, normally linked to the sludge, one of the last examples of the Pianura Padana right in the Manue pond. It should also be added the most recent discovery of the presence of the *Maculinea alcon* Lepidopteron which seems extremely rare and inextricably linked to a particular ecological cycle that revolves around the Gentian pneumonanthe and the ant *Myrmica ruginodis* or *tulinae*: the life cycle of the caterpillar lives exclusively in the predation relationship with the ant.

Figure 34 - Aerial view of the Manue lake

Overall environmental value

The habitats and the species listed above are elements of value and naturalistic value, in relation to the remarkable specific biodiversity and ecosystem that determine in the area in question.

The quality and importance of the site is linked to the presence of a last flap of acidophilous broad-leaved woodland and the characteristic elements of the cenosis present are traced back to oak, Scots pine, English oak and birch (Ministero dell'Ambiente e della tutela del territorio e del mare, 2017). Another element of naturalistic interest is that of the Atlantic moor, an environment that is now very rare and maintained only for cutting the shrubs. Regarding the fauna, it is worth noting the presence of 163 species, including the presence in the puddles of the Rana latastei endemic species of the Po and in general significant is the ornithic population, with the presence of many migratory species.

As already indicated, SIC plays an important biological corridor function, an important "source" function for the irradiation and colonization of external sites by many of the most mobile species and the maintenance of discrete species populations. threatened at the European level.

Criticalities emerged

The main critical issues emerged (Ministero dell'Ambiente e della tutela del territorio e del mare, 2017) are the following:

- entry of external species and formation of groupings with ruderal and synatropic species in the forest formations, due to the anthropic disturbance;
- inputtings of civil waste and untreated waste water on the adjacent Guisa stream;
- biocenotic evolution of moorland formations;
- conservation of small but valuable wetlands;
- fires, which periodically damage both the heath and the woods;
- the presence of scattered houses and the widespread anthropization within the site that take away space from semi-natural vegetation and contribute to the spread of exotic species, already abundant in the area. Among them, the robinia and the American red oak are particularly widespread. In the shrub and herbaceous layer there are instead the late cherry tree and, more rarely, the American phytolacca.

The most degraded wooded areas are the bands that border the site: the perimeter corresponds to the exact term of the forest, cut by roads and the fence of buildings. In this context, the intrusion of exotic trees such as locust trees, red oaks and late cherry trees is plausible.

The existence of a power line that cuts in the N-S direction the Cesate Forest is a further source of disturbance, although the poles are not positioned in particularly sensitive areas and the cutting of vegetation for the safety of the cables is limited to a few meters of width.

4.6.3 The anthropic green system "equipped green areas"

With the intent of reading the characteristics of the "place" as stated above, has been proceeded to carry out further processing, using an indicator that has called "accessibility to green areas".

With this indicator the intention is to identify how the green areas that can be used for recreational purposes are distributed throughout the territory, which is determined by identifying the coverage of the municipal area that has access to the green areas equipped. The coverage was calculated by defining a radius of 250 m. from the perimeter of the green areas, considering the distance of 250 m. which can be walked in 5 minutes on foot and therefore accessible to all citizens who live in that radius.

In this sense, the elaboration, also in this case carried out on the two scenarios of the current state and the prevision of the current urban planning tool (PGT, 2015), is shown in the following figures where the degree of accessibility is represented on a gradual scale of colors.

The percentages of area served in the two scenarios taken into consideration are 36.6% for the current situation (actual situation) and 53% for the PGT forecasts. The values, at first sight low, represent an almost total coverage of the urbanized area of the country; this effect can be clearly seen from the analysis of cartography.

The forecasts of the PGT plan will significantly increase the value of the indicator, even if most of the increase falls in the agricultural part north of the country, in relation to the objective pursued by the plan itself to definitively define the building to the north with the creation of a "green belt" that also serves to relate the salient features of the agricultural territories with those of urbanization in a feasible and correct landscape dialectic.

In short, accessibility to green areas has been developed according to the following.

Regarding the subsequent elaboration regarding the accessibility to green areas for public use, reference has been made to the percentage of municipal territory subject to planning that is served by at least 1 green area within a radius of 250 m.

For green areas were intended:

- public parks, gardens or open spaces exclusively for cycling and pedestrian use, except for green islands or traffic dividers;
- outdoor sports equipment, accessible to the public free of charge;
- private areas (agricultural areas, private parks) accessible to the public free of charge.

The indicator does not take into account the quality of these areas, but assumes that they are able to perform the functions for which they were made.

Moreover, all the areas considered in the elaboration are not areas with significant naturalistic value, but they have only a recreational, useful and essential to the quality of life of citizens.

The objective of this elaboration is the recognition of the importance of accessibility to the recreational areas in the different scenarios for the purpose of assessing the quality of life and local sustainability.

LEGENDA

AREE VERDI ATTREZZATE

DENSITA' DI ACCESSIBILITA' ALLE AREE VERDI

BASSA

MEDIO-BASSA

MEDIA

ALTA

MOLTO ALTA

CONFINE COMUNALE

Figure 35 - Accessibility to the green areas in the actual state

LEGENDA

AREE VERDI ATTREZZATE

DENSITA' DI ACCESSIBILITA' ALLE AREE VERDI

BASSA

MEDIO-BASSA

MEDIA

ALTA

MOLTO ALTA

CONFINE COMUNALE

Figure 36 - Accessibility to the green areas with the implementation of all th PGT provisions

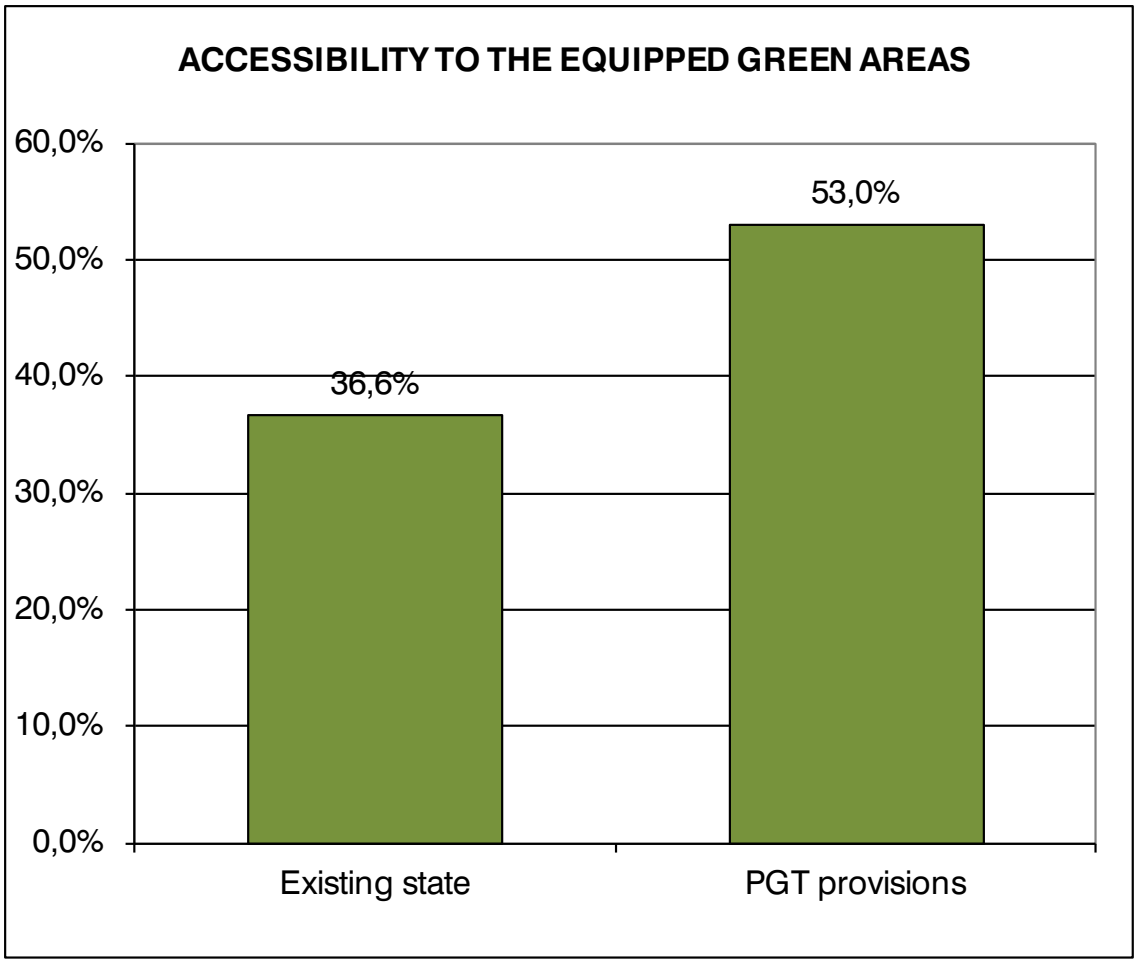


Chart 11 - Comparison of the accessibility values to the green areas equipped for the development alternatives considered in the analysis: the current status and the provisions of the PGT

5. Similar cases

In the chapter some examples will be offered regarding the implementation of some areas with similar characteristics or that can introduce some concepts that will be subsequently deepened in the exposure of the guidelines for the implementation of the areas examined and falling within the municipal territory. of Cesate.

In the identification of similar cases to those under examination, a distinction was made based on the functions that can be installed within the examined areas provided by the municipal planning tool. In this regard, therefore, examples of industrial and productive transformations were identified for the areas located north of the Cesate municipal territory, identified by the abbreviation Ti, for which the PGT provides the establishment of an industrial settlement divided into different sectors.

Instead, for the identification of similar cases regarding the areas located to the north-east, AP1, and those located to the south-east, AP2, for which the local planning instrument provides the settlement of recreational functions, examples of environment sustainable settlement were identified. This areas falling inside the Groane Regional Park area and located near the protected areas of the SIC. In this regard, the examination used not only the criterion of the established function, but also the environmental characteristics that these areas must hold in relation to their position, therefore a research on two levels was carried out, the first level that concerns the appearance more territorial, the second that enters more in merit of the characteristics of the buildings that it will be possible to build within these examined areas. This double level of research makes it possible to integrate both the general aspect and the more specific one in the formulation of the guidelines, this considering the particular position of these study areas.

Actually in Italy examples of industrial areas developed with sustainable criteria are limited and rare, even if the so-called "Bassanini Decree", Legislative Decree 112/98, is in force since 20 years ago.In fact in that decree, the article 26 introduces the concept of ecologically equipped industrial areas, assigning to the regions and to the provinces their implementation. The article 26 provides: "*The regions and the autonomous provinces of Trento and Bolzano govern, with their own laws, the industrial areas and the ecologically equipped areas, equipped with the necessary infrastructures and systems to guarantee the protection of health, safety and the environment. The same laws also regulate the forms of unitary management of infrastructures and services in ecologically equipped areas by public or private entities ... as well as the methods of acquisition of land included in industrial areas, where necessary also through expropriation. The production facilities located in the ecologically equipped areas are exempted from the acquisition of the authorizations concerning the use of the services present there.*

The regions and the autonomous provinces identify the areas referred to in paragraph 1 by choosing them as a priority among the areas, zones or already existing nucleuses, even if totally or partially abandoned. The local authorities involved participate in the identification process."

In this regard, please note that actually only some regions such as Liguria, Tuscany, Emilia Romagna and Marche had set detailed provisions on the requirements of the aforementioned art. 26 of Legislative Decree 112/98. Other regions have also recalled when it is part of the aforementioned article, but without identifying its characteristic elements.

5.1 PRODUCTION AREAS LOCATED TO THE NORTH (TI):

***Ecopark Hartberg – Austria*:** (Ecopark)

The Herteberg Ecopark is a complex integrated with the surrounding context and which aims to demonstrate and promote environmental technologies, hosting reception areas and exhibition spaces, and proposing several demonstration projects.

Figure 37 - Aerial view of the area surrounding the Hartberg Ecopark in Austria

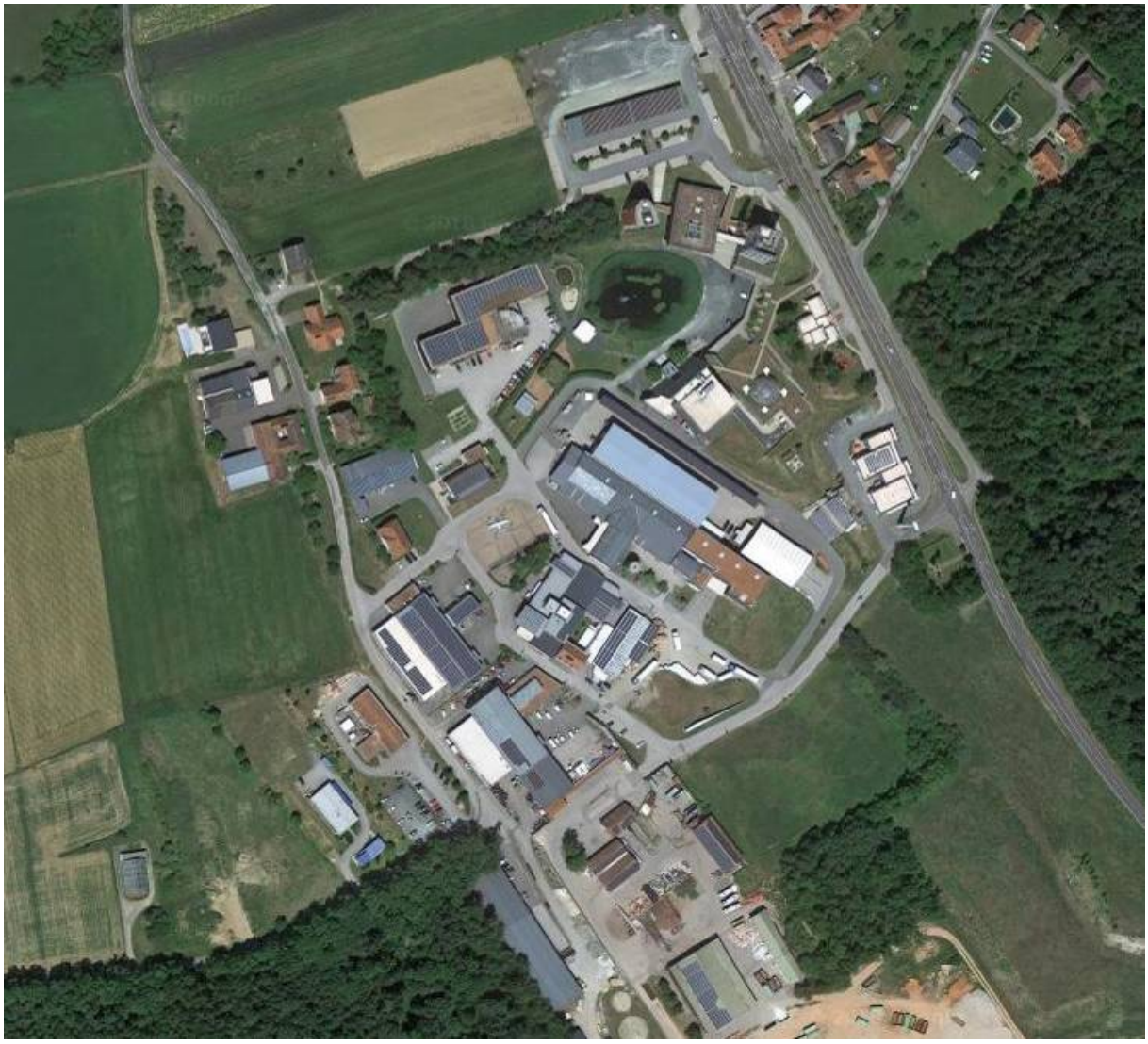


Figure 38 - Aerial view of the Ecopark

Figure 39 - Wide angle view of some buildings belonging to the Hartberg Ecopark

Figure 40 - Perspective view of the Hartberg Ecopark

Environmental Park Torino: (Envipark)

The Environmental Park project is born as a complex realized with green building technologies and sustainable architectures. Today the Environment Park, home to 60 companies and about 6,000 operators, is an accelerator of the innovation business throughout the Italian territory and an en-plein air laboratory where you can experiment on the field demonstrators of sustainable construction.

The site is positioned between the city and the railway network and also includes an equipped green area.

Figure 41 - Aerial view of the area surrounding the Environmental Park of Turin

Figure 42 - Aerial view of the buildings that make up the Environmental park

Figure 43 - Perspective view of some buildings that make up the Environmental park in Turin

Figure 44 - View of the service center, main building of the Environmental park of Turin

Europole Mediterraneen de l'Arbois – Francia: (l'Arbois)

The complex is located in a highly naturalized area and houses the Techopolis technology park for the promotion of environmental techniques through the creation of a network between the various producers present in it.

Figure 45 - Aerial view of the Europole Mediterraneen de l'Arbois

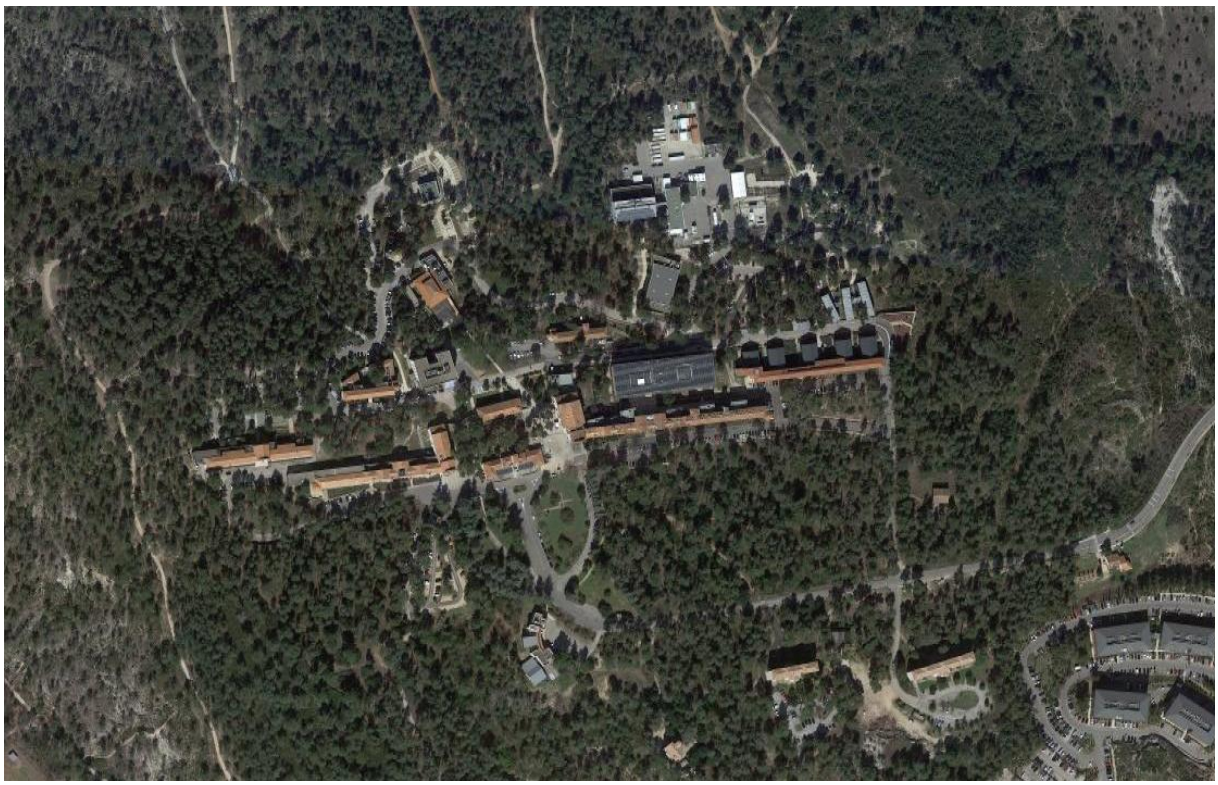


Figure 46 - Aerial view of the buildings that make up the Europole Mediterraneen de l'Arbois

Figure 47 - View of some buildings of the Europole Mediterraneen de l'Arbois

Figure 48 - Perspective view of a building of the Europole Mediterraneen de l'Arbois

Parc Industriel Plaine de l'Ain – Francia: (l'Ain)

The site hosts an industrial park that sets different objectives such as the optimization of the resources necessary for all the companies within it, the formation of programs for environmental improvement, the management of green areas and environmental monitoring.

Figure 49 - Aerial view of the Parc Industriel Plaine de l'Ain

Figure 50 - Aerial view of the buildings that make up the Parc Industriel Plaine de l'Ain

Figure 51 - Perspective view of some buildings of the Parc Industriel Plaine de l'Ain

Figure 52 - View of the Parc Industriel Plaine de l'Ain from the airplane

Parco eco-industriale de Santa Perpetua de Mogoda (Barcellona) – Spagna, Catalogna:
(Mogoda)

The complex is located between the town and the motorway, which mainly includes waste collection services, but also offers cycle paths, refreshment points and collective mobility systems with the aim of reducing the use of private transport.

Figure 53 - Aerial view of the sorrounding of the industrial park

Figure 54 - Aerial view of the buildings that make up the industrial park

Figure 55 - perspective view of the industrial park entrance

Figure 56 - View from the buondary road system

Kalundborg eco industrial park – Danimarca: (Symbiosis)

The network created within the Danish town is formed by a group of companies that are complementary to each other in order to generate an exchange of materials, the site also provides environmental information services

Figure 57 - Aerial view of the Kalundborg village

Figure 58 - Aerial view of the Kalundborg industrial park's buildings

Figure 59 - View of Kalundborg bay

Figure 60 - View of the kalundborg industrial park

5.2 AREAS OF SCENIC INTEREST LOCATED TO THE NORTH-EAST (AP1) AND SOUTH-EAST (AP2):

5.2.1 Territorial scale:

Project "La campagna entra in città" – Vigevano: (Enriquez, Ferrari, Villa, & Massimiliano, 2012)

Through this project, the city of Vigevano wanted to redevelop some empty areas within its territory through their reconnection with the agricultural-environmental context of the surrounding Ticino Park, to counteract urban expansion that compromises the quality of living and distancing the specific nature and landscape of the area where Vigevano is located.

Figure 61 - "La campagna entra in città" project

Project "La cerniera verde del Nord-Ovest" – Caronno Pertusella, Cesate e Solaro:
(Enriquez P. E., 2014)

The intervention implemented by the 3 common promoters (Caronno Pertusella, Cesate and Solaro) was aimed at strengthening biodiversity and strengthening the identity of agricultural areas (in the case of the Cesate case study those placed immediately north of the study areas Ti, bordering the territory of Solaro), this in order to create an ecological connection between the Parco Regionale delle Groane and the Parco Sovracomunale del Lura, in order to enhance the peripheral natural areas located beyond the urbanized territory.

Figure 62 - Areas of interventions of "La cerniera verde del Nord-Ovest" project

Project "Vie di contatto" – Bovisio Masciago, Cesano Maderno e Desio: (Enriquez & Villa, 2015)

The interventions proposed by the project "Vie di contatto" are aimed at enhancing the natural elements isolated within the urbanized territories of the affected municipalities in order to create an ecological connection to safeguard biodiversity and strengthen a system of interchange between areas and elements natural isolates, thus counteracting environmental fragmentation.

Figure 63 - Areas of intervention of "Vie di contatto" project

5.2.2 Local scale:

Casa Levene – San Lorenzo de El Escorial - Spain: (Levene)

In this case is interesting how the project is placed into a naturalistic context. It is very peculiar the dialogue between natural context (the forest) and the built context (the building).

The example describes an autonomous familiar house developed in 3 floors, located within a forest, far from other buildings and urban context.

For its construction no tree among those existing has been removed, as through the study of the foliage of trees the architect has traced the roots in order to use them as a limit for the realization of the home itself. This is why it has several very narrow angles, a design choice which allows the integration between the building and the surrounding context.

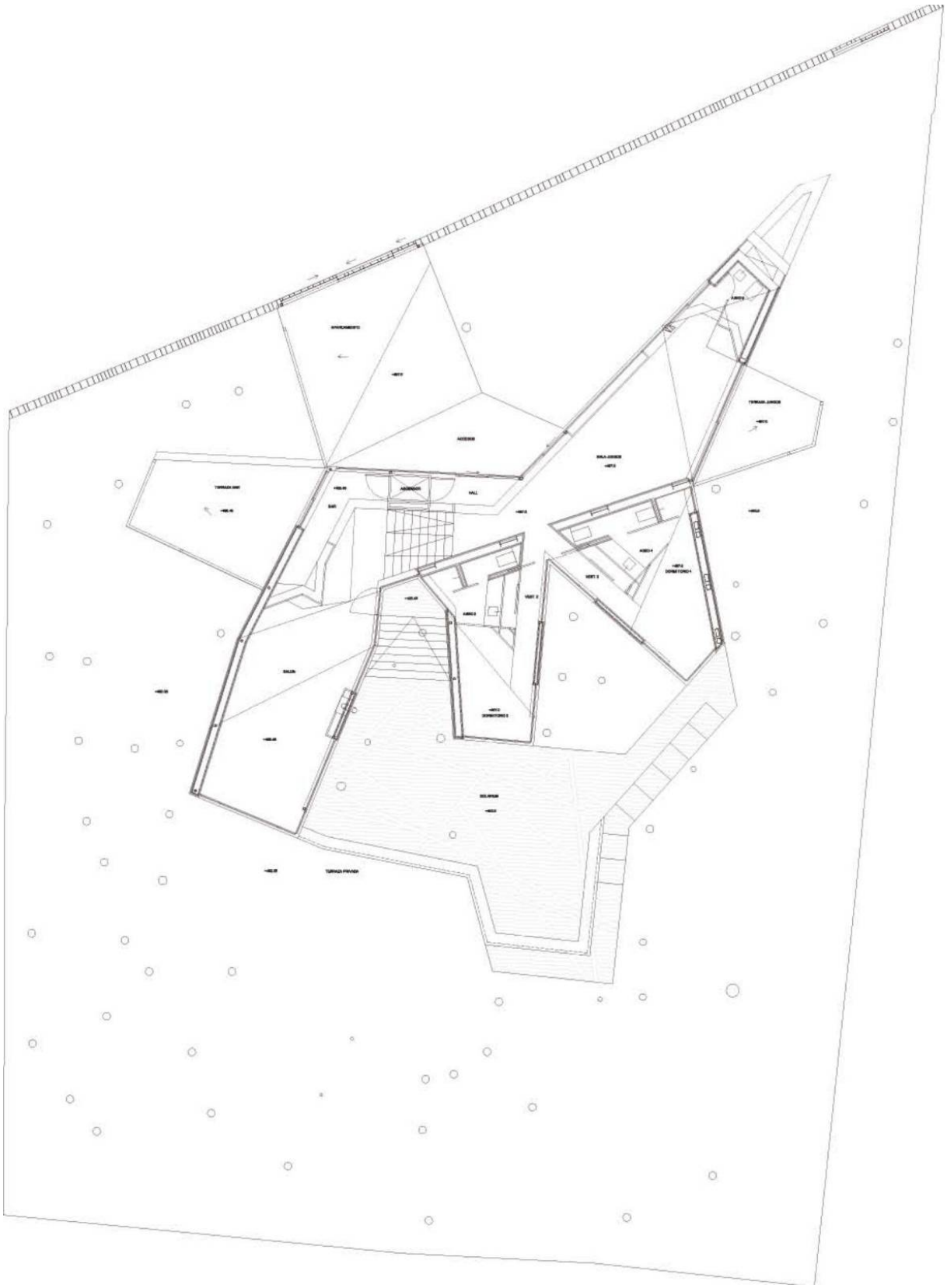


Figure 64 - Casa Levene floor plan

Figure 65 - Casa Levene perspective view

Figure 66 - Casa Levene and its context

Figure 67 - Casa Levene front view

Casa Plana – Porto Feliz – Brazil: (Plana)

The fundamental idea that led to the realization of this project is the full integration between the surrounding context and the building artefact bringing the latter to blend in completely with the natural environment that surrounds it.

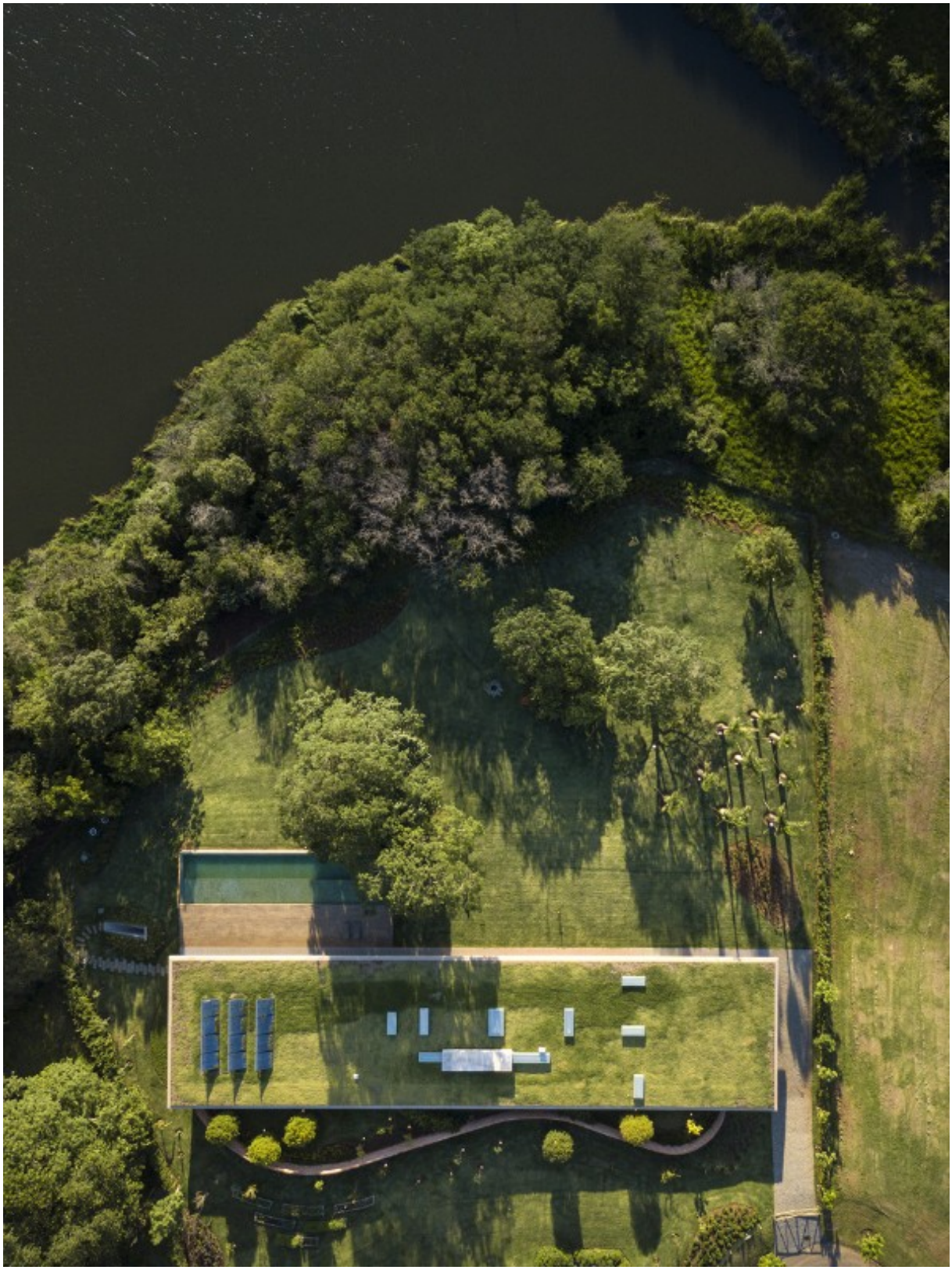


Figure 68 - Casa Plana aerial view

Figure 69 - Casa Plana perspective view

Figure 70 - Casa Plana lateral view

Figure 71 - Casa Plana frontal view

Tucson mountain retreat – Tucson – USA: (Tucson)

The house is located within the Sonora desert, has been carefully positioned taking into account the migration routes of animals, winds, sun exposure and views. Mainly the project consists of raw earth, material that has no side effects towards the environment.

Figure 72 - Tucson retreat entrance view

Figure 73 - Tucson retreat sorrounding view

Figure 74 - Tucson retreat and its insertion in the context

Figure 75 - Tucson retreat lateral view

Farnswoth house – Plano – USA: (Farnsworth)

The house designed by Mies van der Rohe intends to be conceived as an element in harmony with its context, in which the house seems to float above the ground that houses it, reducing only to the pillars bearing its footprint and characterizing itself for the plates horizontal connected by glazed paraments that, even inside, reduce to a minimum the visual encumbrance generated by the building.

Figure 76 - Farnswoth house frontal view

Figure 77 - Farnswoth house entrance

Figure 78 - Farnswoth house and its sorrounding

Figure 79 - Farnswoth house perspective view

6. Guidelines for the possible implementation of the plan forecasts

In this chapter, following the previous analyzes, a series of guidelines will proposed for the achievement of an organic transformation of the territory in the specific peri-urban areas object of this study and placed in contexts that require the placing of particular attention to the landscape features and identity of the territory.

The guidelines that are proposed here are actions that must be undertaken by the building transformations that will intervene on the areas in question both in the design, construction and operation phase.

The identified guidelines have the purpose to reduce the negative factors that any building transformation introduces in the modification of the natural environment. In this sense, the actions indicated in the guidelines must be understood.

In this sense, on the basis of the drafting of these guidelines, the landscape was considered as a non-negotiable territorial "capital". This is a fundament for a sustainable territorial development. Therefore the high quality of the landscape - intended not only as a visual quality, but also as a resource of local identity, historical-cultural and environmental heritage of the places – is considered as a fundamental quality and supply for the growth of the competitiveness of urban areas, for the improvement of territorial cohesion and environmental sustainability.

These characteristics are taken as elements able to increase both the potential attractiveness to new forms of tourism and leisure activities, and useful to contain the expansion of residential areas or production sites.

The project has focused its attention on peri-urban landscapes in two different contexts - the one in the north affected by the Ti areas with an agricultural vocation, those to the east affected by the AP1 and AP2 areas with a naturalistic vocation - which however perform the same function of filtering and containment, in this sense, for the drafting of the guidelines, several issues have been taken into consideration such as:

- the adequate planning of periurban open spaces, with particular attention to the functions of peri-urban agriculture, to favor the establishment of companies belonging to new economic sectors;
- the organic design of high quality landscape areas;
- the improvement of the perceptive-visual qualities of access to urban centers;
- landscape integration of new urbanized areas in the peri-uran context;
- improvement of the visual and environmental quality of urban margins;
- landscape redevelopment and recovery of marginal areas;
- the protection and enhancement of morphology and urban identity with particular reference to the image perceived from the outside.

The image below shows, in general terms and through the vision of the entire municipal territory, the application of what is indicated in the subsequent specific guidelines for each of the areas concerned.

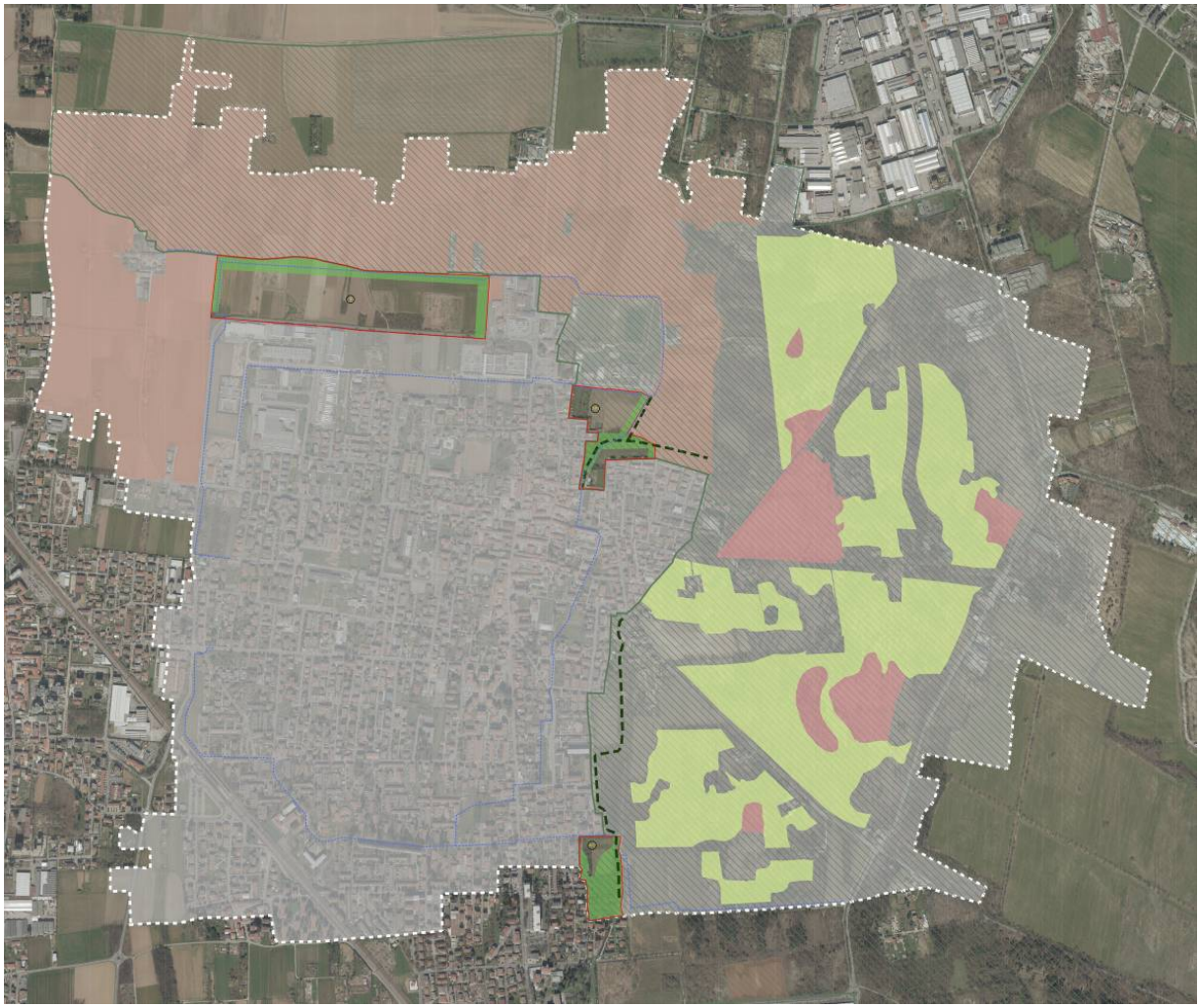


Figure 80 - General preview of the guidelines's implementation

6.1 "Ti" AREAS

The areas identified with the abbreviation Ti, as described several times, are those located along the northern boundary of the urbanized area of the city of Cesate.

These areas are interposed between the urban center and the agricultural area, the current planning instrument provides for the establishment of productive and tertiary functions, excluding the possibility of carrying out residential and commercial functions.

Within the sector there are no hydro-geological constraints therefore we proceed to the identification of the guidelines useful for the organic and sustainable realization of the production area identified in the image below.

Intervention localization

Figure 81 - "Ti" intervention area localization

Allowed land uses

Production uses such as:

- industrial and craft activities;
- warehousing and road transport activities;
- craft service activities;

Tertiary uses such as:

- medium-sized tertiary activities;
- large tertiary activities.

Not allowed land uses

Residential uses.

Production uses at risk of a major accident;

Business uses such as:

- medium sales structures
- large sales structures
- fuel distribution facilities;
- accommodation.

Guidelines

The intervention area must:

- preferably be the object of design in its entirety rather than for individual lots;
- provide for a single third entity responsible for infrastructure management;
- provide for the environmental improvement of the area through reforestation works, environmental and landscape enhancement with high trunk plantations - arranged in a double row of trees - in direct contact with the existing road network;
- provide naturalistic mitigation against the construction effects;
- the insistent settlements in the sector will have to adopt design solutions that address the issues of the relationship between architecture, road infrastructure, built and natural landscape in order to obtain a better definition of the landscape and a better landscape-environmental integration;
- the settlements will have to provide for the realization of the primary urbanization works that are absent today;
- provide for areas of collection, storage and management of specially sized waste, common to the entire sector whose management will be managed by the "Manager";
- create technological networks common to the entire sector and managed by the "Manager" subject;
- insert all the distribution networks on special routes that do not include destructive works in case of maintenance;
- draw up and update an Emergency Management Plan common to the entire production sector;
- perform and periodically update a risk analysis of the entire area;
- design and manage a territorial information system for environmental monitoring and management of the services provided;
- size the main and secondary roads according to the minimum dimensions allowed for the double flow of heavy vehicles;
- create cycle-pedestrian routes in a protected continuous area, with safe, tree-lined, illuminated crossings, with parking spaces and near the settlements to realize covered and illuminated parking and cycle-pedestrian parking;
- merge parking areas and concentrate entry and exit areas;
- organize the road system in order to avoid the transit of heavy vehicles inside the inhabited center;
- guarantee the maximum possible surface permeability compatible with the characteristics of vulnerability of the aquifers present in the area in order to maintain a function of recharging the water table;
- renaturalize existing ditches and canals;
- provide for a second rain water treatment system, foreseeing its synergic use within the sector;
- provide a system for the recovery and storage of rainwater for their re-use;
- create networks for differential supply according to use - a drinking supply network for food and personal hygiene uses, a supply of other civil uses - allowing the reuse of previously recovered rainwater;
- adopt systems for reducing drinking water consumption;
- create separate sewage systems for white water and sewage;
- create an area treatment plant;
- draw up a plan for monitoring surface and ground water;

- create a centralized cogeneration plant for the production of thermal and electrical energy using high efficiency modular generators integrated with generators powered by renewable sources;
- install solar collector systems and photovoltaic systems integrated with the settlement structures;
- define the correct orientation of the buildings according to the solar characteristics of the area;
- adopt devices to control the consumption of electricity and lighting such as sensors and time switches.

Containment areas and naturalistic filter's localization

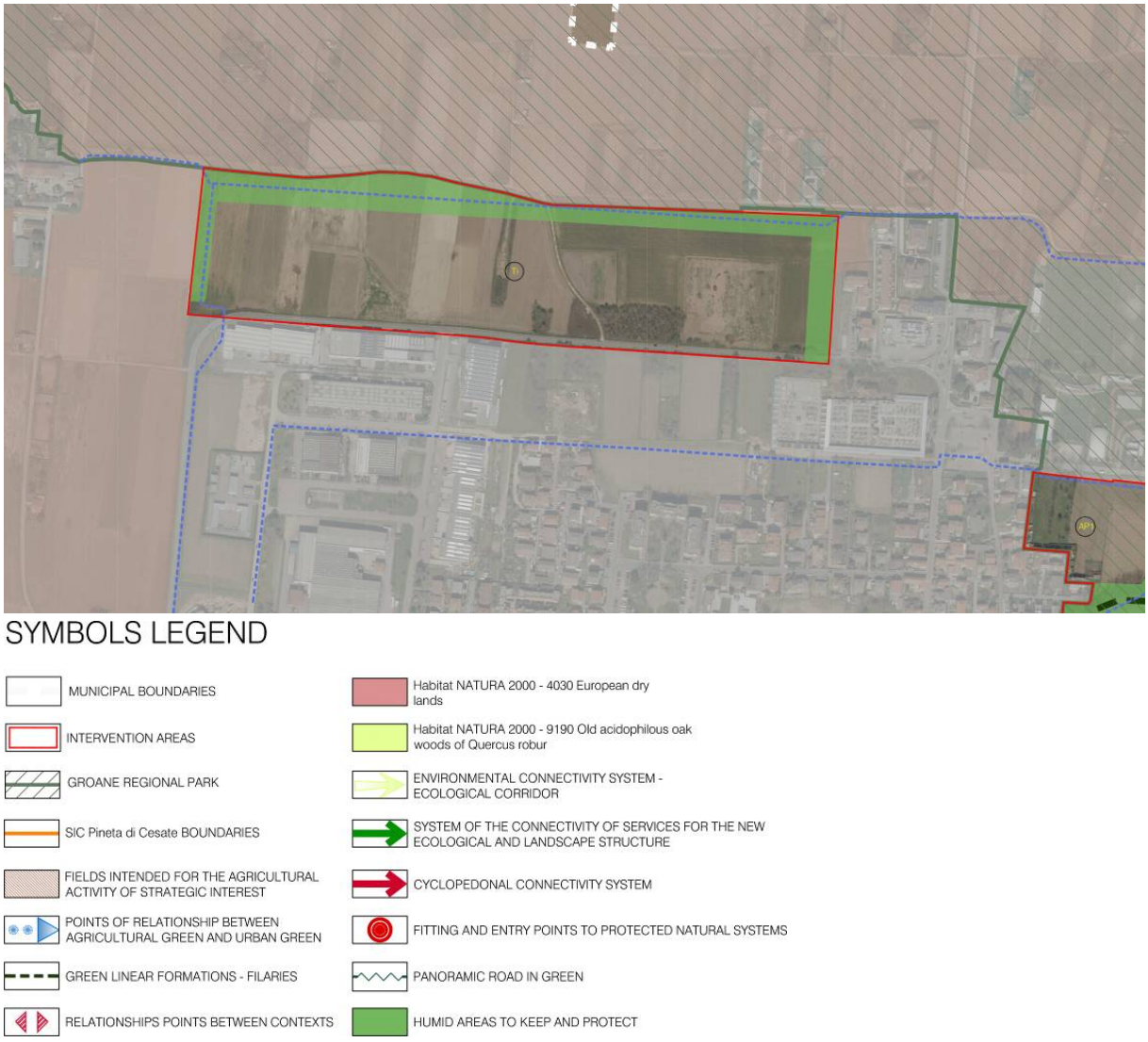


Figure 82 - Implementation of Ti areas

6.2 AP1 AREA

The areas identified by the local planning instrument as "AP1" correspond to the areas located within the Groane Regional Park immediately south of the sports center.

According to the urban planning tool they are destined to areas of particular environmental protection because of their particular position. In this sense the guidelines intend to indicate the action path for the creation of services for free connection and access to protected natural systems. This considering: the structuring of the strategic system of new urban centers; the construction of the new relations of dialogue between urban landscape and natural landscape through the grafting of urban green on the agricultural green and vice versa.

In the image below are located the AP1 areas and their boundary contexts.

Intervention localization

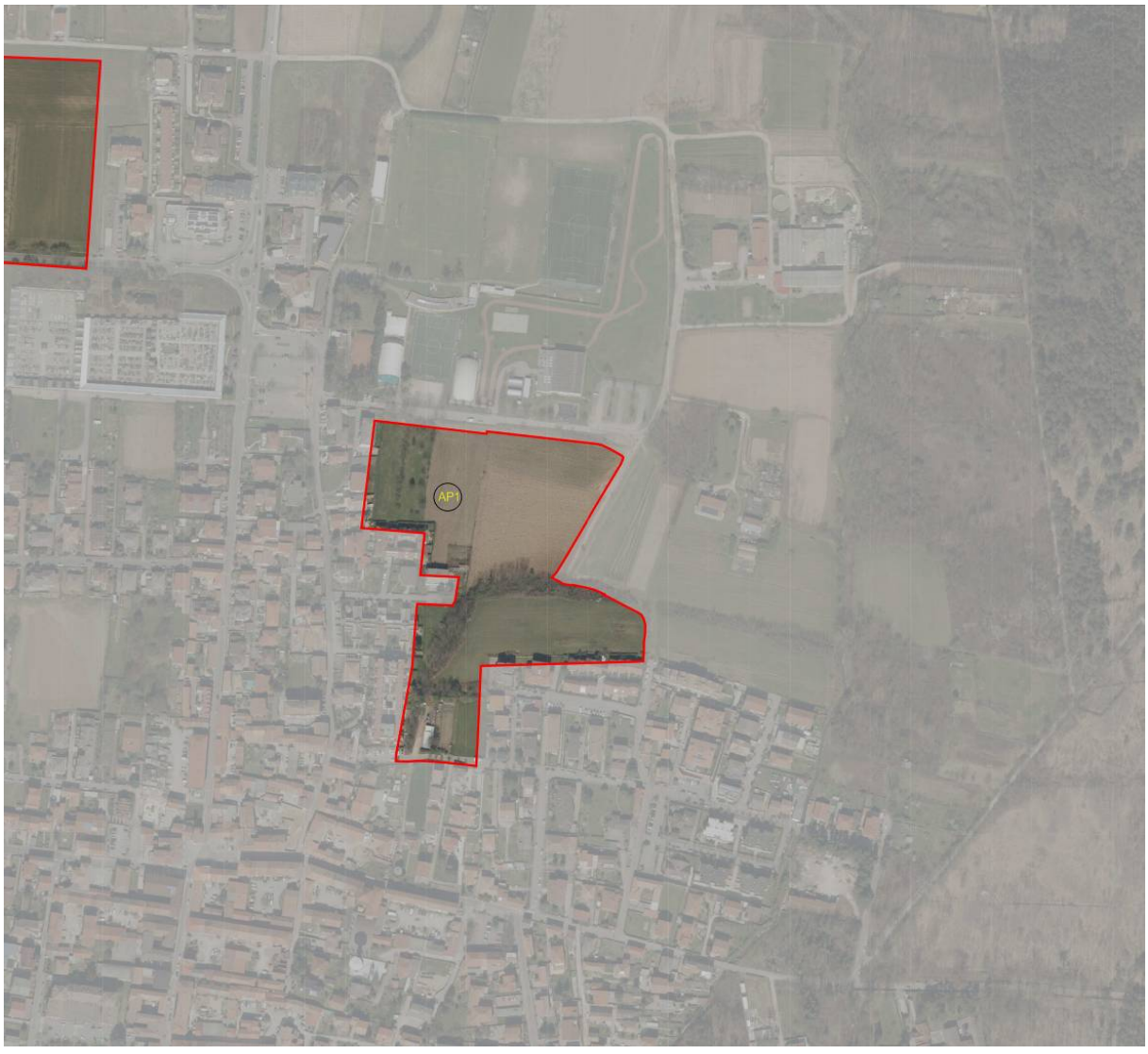


Figure 83 - "AP1" intervention area localization

Allowed uses

Catering activities

Accommodation activities

Socio-cultural activities

Sports activities

Training centers for environmental policies at the service of the Groane Park

Not allowed uses

Residential uses

Production uses

Tertiary uses

Business uses:

- medium sales structures
- large sales structures
- wholesale business
- fuel distribution facilities

Guidelines

The areas identified with the acronym AP1:

- Appropriate areas must be identified for parking and appropriately mitigated.
- The scope for its implementation must be submitted to the relevant impact assessment.
- The new built fabrics must stand in continuity with the existing buildings and must not in any way occlude both the entrance and the view towards the adjacent naturalistic green areas. In this direction, the forecasts on the area identified in green contribute to the elements of protection, connection and access to the natural system of the Parco delle Groane. It is further reiterated that the urbanized fronts must be organized in order to avoid caesura or division with the territory of the Groane Park.
- The area, within the protected area of the Parco delle Groane, must consider the naturalistic and landscape elements present and immediately adjacent as determining factors for its definition. In particular, the scope should provide for an adequate study of landscape and environmental insertion that analyzes the relations of continuity and visual contiguity with the adjacent context (built and natural).
- The indications and the themes contained in the graph below are to be implemented.
- During the implementation planning phase, the appropriate acoustic climate forecasting evaluation according to Law 447/1995 and s.m.i.
- Use of techniques and materials for the reduction of critical issues both in construction and management

In relation to the proximity to the protected areas of the Groane Regional Park and the "Pineta di Cesate" SIC, the scope must respect the following and further requirements:

- The areas destined for reforestation and the linear green formations (rows) that are both binding must be maintained and respected. Furthermore, in these areas the existing native plant elements must be kept totally.
- The scope for its implementation must undergo a new impact assessment in relation to the specific implementation project.
- In order to safeguard the SIC and the Habitats adjacent to the areas being planned, the preventive measures that must be adopted and which are always prescriptive are listed below:
    - operate the restoration and the planting of hedges or other linear connecting elements in order to restore or improve the degree of connectivity within the landscape;
    - exclude that the project or the intervention interrupt the continuity of linear connecting elements (hedges, mantles, rows, etc.);
    - respect the ecotonal bands during the works;

- protect the dynamic vegetative stages of community habitats;
- protect vegetation stages, agricultural crops and zootechnical practices in favor of animal species of major interest: primary and secondary grasslands, meadows pastures, mature forests, refuge crops, crops with organic farming, etc .;
- protect animal species in all their different biological phases: reproduction, feeding, migration, staging and wintering;
- planting specimens of trees or shrubs characterizing certain stages that dynamically lead to the vegetational stages typical of the community habitat, to be agreed in advance with the Park's managing body;
- contain or eradicate exotic animal species;
- planting selected species among the indigenous ones present on the site, inserted in the ecologically appropriate areas, to be agreed in advance with the Park's managing body;
- trimming and replenishing herbaceous habitats when relevant for the conservation of critical animal and plant species;
- arrange the arboreal and shrubby specimens in a non-geometric way;
- maintain the trend of the existing topographic surface;
- avoiding that the areas occupied by the building site and the access routes to the area subject to project interventions involve areas occupied by community habitats or species of Community or regional importance and which in no way compromise their state of conservation; in addition, avoid interrupting the continuity of elements that characterize the plant landscape which perform connecting functions (hedges, mantles, rows, etc.);
- provide extreme attention in the tourist-recreational activity and environmental education in order to avoid disturbing the activities of reproduction, feeding, stopping, refuge, migration of animal species of conservation interest;
- avoid the creation of roads and access paths to areas with habitats or species of particular interest, that cross them or that go to their margin, avoiding possible negative influences and the entry of cosmopolitan synanthropic species;
- use any materials extracted on site;
- clean up the area subject to interventions from pre-existing materials, unrelated to the natural environment and those deriving from the works, after the construction and operation phases;
- find the materials necessary for the realization of the works outside the site and in any case where this does not damage the survival of the species and the conservation of the habitats;
- pay special attention to the protection of wet areas (watercourses, springs, ponds, lakes, swamps) and temporarily flooded areas of margin;
- prescribe in the most complex cases that the works are carried out under the supervision of qualified experts in the botanical and zoological subjects who take part in the direction of the works;
- indicate to the operators of the intervention areas and situations to pay particular attention in order not to cause negative effects on habitats and plant and animal species of conservation interest;
- limit the interventions to the minimum necessary, preserving as far as possible the species and the habitats.

Containment areas and naturalistic filter's localization

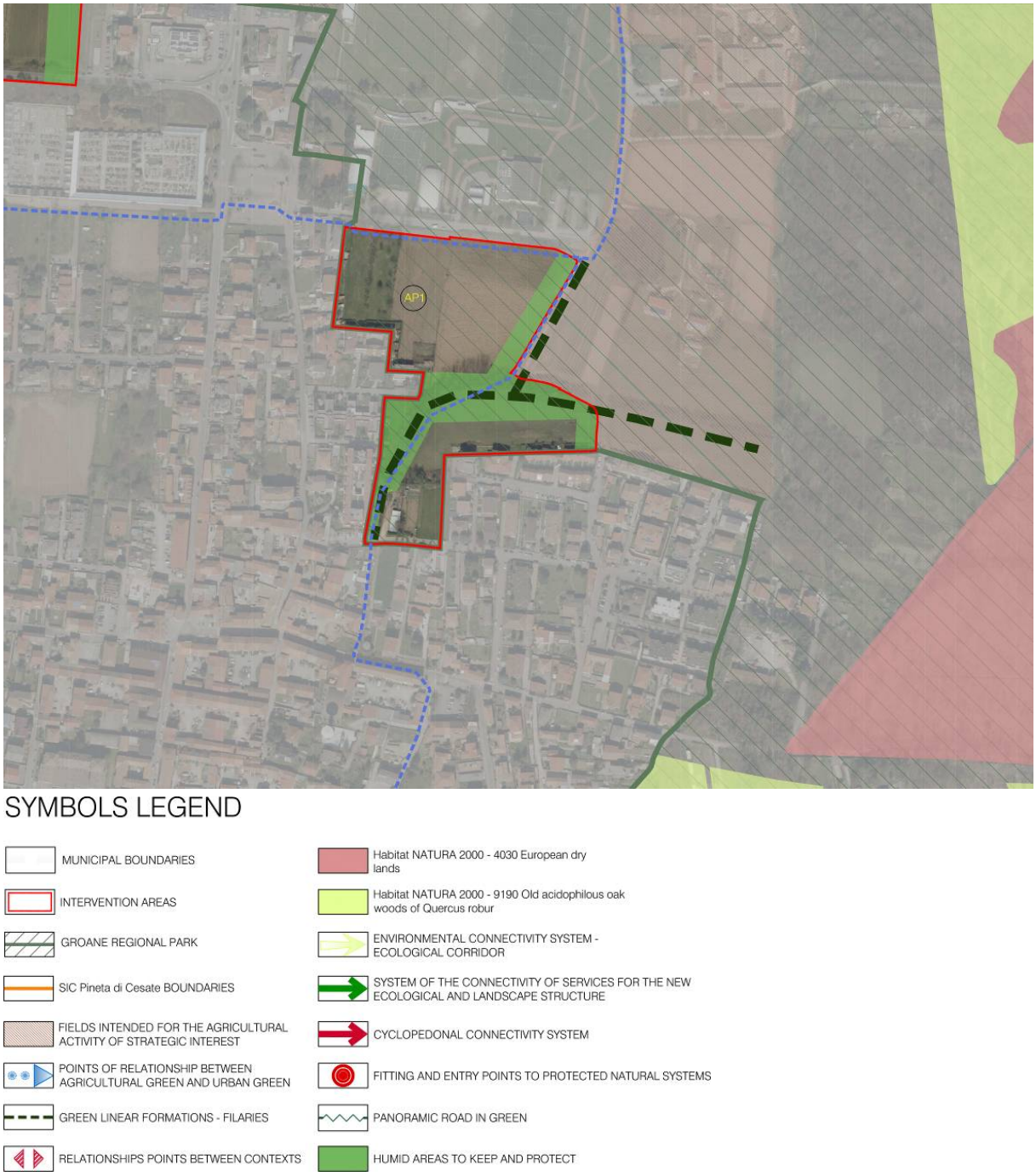


Figure 84 - Implementation of AP1 area

6.3 AP2 AREA

The abbreviation "AP2" indicates the area along the southeastern border of the city of Cesate, the area is completely inside the perimeter of the Groane Park and in the immediate vicinity of the two "habitats" that are enclosed in SIC "Pineta di Cesate". This entails particular attention in the design and construction phase in order to enhance and protect the neighboring areas.

For this reason the guidelines intend to consolidate and enhance the landscape value of the area in question in order to create a new organic dialogue between the built environment and the protected natural environment in which the area is located.

The area named AP2 is located in the image below.

Intervention localization

Figure 85 - "AP2" intervention localization

Allowed uses

Catering activities

Accommodation activities

Socio-cultural activities

Sports activities

Training centers for environmental policies at the service of the Groane Park

Not allowed uses

Residential uses

Production uses

Tertiary uses

Business uses:

- medium sales structures
- large sales structures
- wholesale business
- fuel distribution facilities

Guidelines

The areas identified with the acronym AP2:

- Appropriate areas must be identified for parking and appropriately mitigated.
- The scope for its implementation must be submitted to the relevant impact assessment.
- The new built fabrics must stand in continuity with the existing buildings and must not in any way occlude both the entrance and the view towards the adjacent naturalistic green areas. In this direction, the forecasts on the area identified in green contribute to the elements of protection, connection and access to the natural system of the Parco delle Groane. It is further reiterated that the urbanized fronts must be organized in order to avoid caesura or division with the territory of the Groane Park.
- The area, within the protected area of the Parco delle Groane, must consider the naturalistic and landscape elements present and immediately adjacent as determining factors for its definition. In particular, the scope should provide for an adequate study of landscape and environmental insertion that analyzes the relations of continuity and visual contiguity with the adjacent context (built and natural).
- The indications and the themes contained in the graph below are to be implemented.
- During the implementation planning phase, the appropriate acoustic climate forecasting evaluation according to Law 447/1995 and s.m.i.
- Use of techniques and materials for the reduction of critical issues both in construction and management

In relation to the proximity to the protected areas of the Groane Regional Park and the "Pineta di Cesate" SIC, the scope must respect the following and further requirements:

- The areas destined for reforestation and the linear green formations (rows) that are both binding must be maintained and respected. Furthermore, in these areas the existing native plant elements must be kept totally.
- The scope for its implementation must undergo a new impact assessment in relation to the specific implementation project.
- In order to safeguard the SIC and the Habitats adjacent to the areas being planned, the preventive measures that must be adopted and which are always prescriptive are listed below:
  - operate the restoration and the planting of hedges or other linear connecting elements in order to restore or improve the degree of connectivity within the landscape;
  - exclude that the project or the intervention interrupt the continuity of linear connecting elements (hedges, mantles, rows, etc.);
  - respect the ecotonal bands during the works;
  - protect the dynamic vegetative stages of community habitats;

- protect vegetation stages, agricultural crops and zootechnical practices in favor of animal species of major interest: primary and secondary grasslands, meadows pastures, mature forests, refuge crops, crops with organic farming, etc .;
- protect animal species in all their different biological phases: reproduction, feeding, migration, staging and wintering;
- planting specimens of trees or shrubs characterizing certain stages that dynamically lead to the vegetational stages typical of the community habitat, to be agreed in advance with the Park's managing body;
- contain or eradicate exotic animal species;
- planting selected species among the indigenous ones present on the site, inserted in the ecologically appropriate areas, to be agreed in advance with the Park's managing body;
- trimming and replenishing herbaceous habitats when relevant for the conservation of critical animal and plant species;
- arrange the arboreal and shrubby specimens in a non-geometric way;
- maintain the trend of the existing topographic surface;
- avoiding that the areas occupied by the building site and the access routes to the area subject to project interventions involve areas occupied by community habitats or species of Community or regional importance and which in no way compromise their state of conservation; in addition, avoid interrupting the continuity of elements that characterize the plant landscape which perform connecting functions (hedges, mantles, rows, etc.);
- provide extreme attention in the tourist-recreational activity and environmental education in order to avoid disturbing the activities of reproduction, feeding, stopping, refuge, migration of animal species of conservation interest;
- avoid the creation of roads and access paths to areas with habitats or species of particular interest, that cross them or that go to their margin, avoiding possible negative influences and the entry of cosmopolitan synanthropic species;
- use any materials extracted on site;
- clean up the area subject to interventions from pre-existing materials, unrelated to the natural environment and those deriving from the works, after the construction and operation phases;
- find the materials necessary for the realization of the works outside the site and in any case where this does not damage the survival of the species and the conservation of the habitats;
- pay special attention to the protection of wet areas (watercourses, springs, ponds, lakes, swamps) and temporarily flooded areas of margin;
- prescribe in the most complex cases that the works are carried out under the supervision of qualified experts in the botanical and zoological subjects who take part in the direction of the works;
- indicate to the operators of the intervention areas and situations to pay particular attention in order not to cause negative effects on habitats and plant and animal species of conservation interest;
- limit the interventions to the minimum necessary, preserving as far as possible the species and the habitats.

Containment areas and naturalistic filter's localization

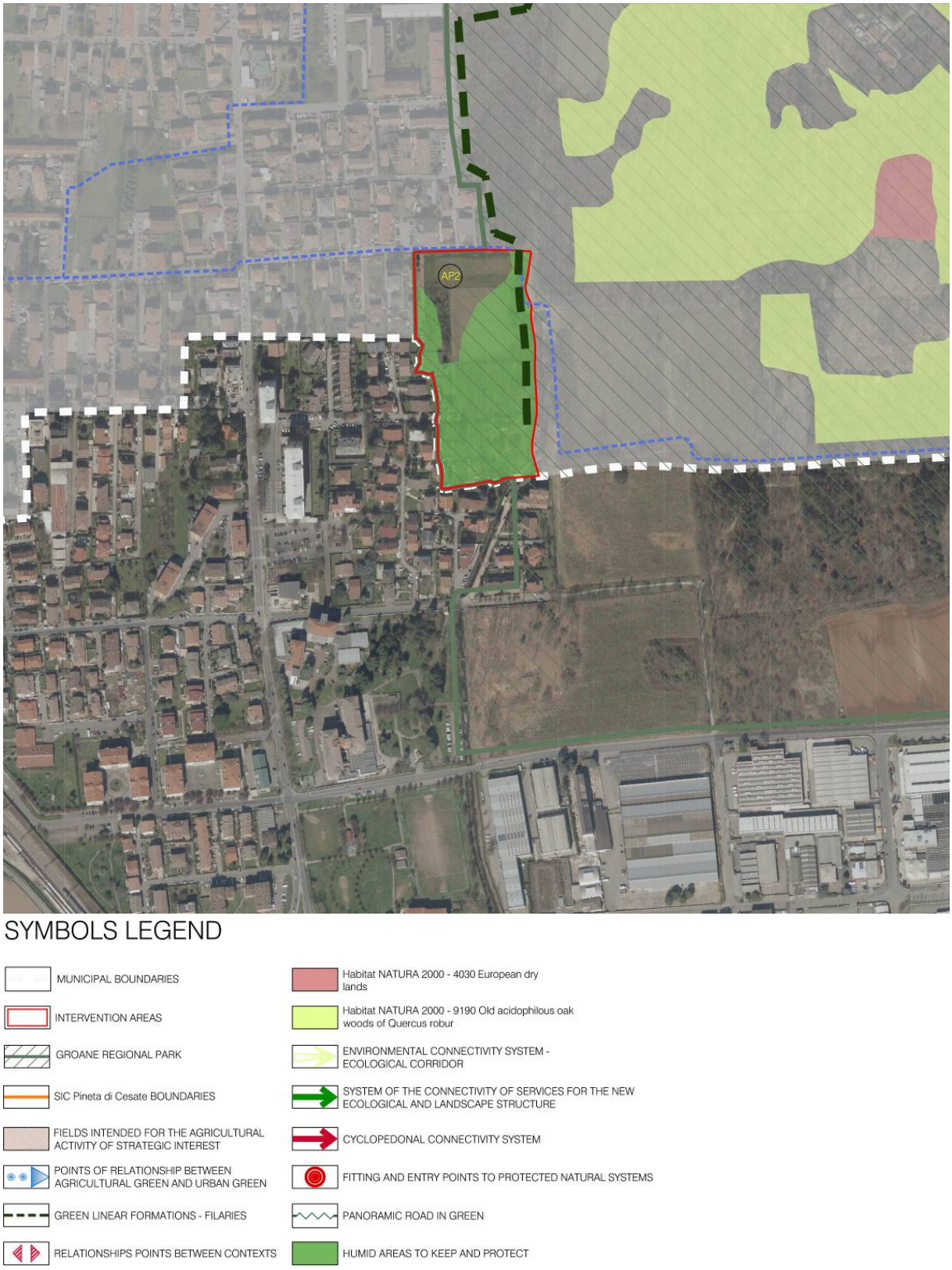


Figure 86 - Implementation of the AP2 area

7. Conclusions

In conclusion, given the guidelines and the possible implementation of the "Ti", AP1 and AP2 areas of the thesis project, this chapter will outline the negative and positive impacts that these transformations could generate on the territory of Cesate.

Being able to identify in this way the actions of transformations that are sources of pressure or generators of negative impacts on the territory and on the protected areas bordering the areas undergoing transformation.

7.1 THE EFFECTS OF THE IMPLEMENTATION OF THE PROPOSED SOLUTIONS

In order to highlight the effects of the transformations on the surrounding areas and to concretely identify the categories of pressure that the actions put in place can negatively affect the environment, a list of possible impacts has been drawn up, which correlates with the expected answers and the criticalities that could affect especially the areas immediately adjacent and part of the SIC "Pineta di Cesate", could generate impacts ranging from "nothing" to "significant", in which:

- ***significant impact***: this is the probability that the actions implemented by the transformation have the effect on the integrity of the SIC or of the strategic agricultural areas located to the north;
- ***negative impact***: it means the possibility that the actions implemented by the transformation have a significant impact on the SIC or on the strategic agricultural areas located to the north, causing negative effects on the integrity of the sites, in compliance with the objectives of the Natura 2000 network;
- ***positive impact***: it means the possibility that the actions implemented by the transformation have a significant impact on the SIC or on the strategic agricultural areas located to the north, not causing negative effects on the integrity of the sites, in compliance with the objectives of the Natura 2000 network;
- ***no or negligible impact***: it means the incidence produced by the transformations for which in relation to the actions and position of the areas outside the scope of the SIC or strategic agricultural areas, for which their size and distance make them ineffective on the dynamics environmental aspects of the site.

Therefore, before proceeding with the formulation of the comparison matrix, the following is a summary of the potentially expected negative impacts within the areas (Ti, AP1, AP2) subject to building transformations.

EXPECTED POTENTIAL IMPACTS
- Air pollution
- Generation of sewage waste water
- Increase in soil sealing
- Consumption of fertile soil
- Removal of soil by excavation and excavation
- Damaging of functional ecosystem units
- Noise pollution caused by traffic noise and activity management
- Light pollution

- Alteration of landscape relationships - Increase in human presences - Increase in waste production - Attraction of genealist / opportunistic species

Table 16 - Expected potential impact

A further useful element for the preparation of the comparison matrix is the summary of the actions envisaged by the guidelines to mitigate the negative impacts that could occur in the case of execution of the building transformations inside the areas Ti, AP1 and AP2, that took place without the use of the guidelines in the previous chapter.

GUIDELINES INDICATIONS
- Adoption of preventive measures aimed at ensuring the integrity, presence, maintenance and/or restoration of existing species and habitats - Use of techniques and materials to reduce criticality both in construction and management (green building) - Optimization of insertion in the landscape and in the ecosystem - Realization of green areas on project appurtenances and in interclassed areas with naturalistic modalities and species defined in coordination with the managing body of the existing naturalistic area - Maintenance of existing prevailing vegetational systems - Re-qualification and/or contruction of riparian groups - Introduction of specific actions aimed at a targeted control on the execution and qualitative level of the interventions to be carried out and realized (ante-opera control and post-work control) for the protection and improvement of the present environmental conditions

Table 17 - Guidelines indications

Having now summarized both the impacts and the indications provided by the guidelines, it is possible to proceed with the compilation of the matrix regarding the impact of the transformations realized according to the guidelines of the surrounding environment.

Effect type	Significant incidence	Negative incidence	Positive incidence	No incidence
Loss of habitat surface				
Fragmentation of habitats				
Potential for alteration of plant and animal communities				
Alterations of environmental characteristics of the site (eg water resource)				

Table 18 - Effect incidence matrix

The following table, on the other hand, illustrates the effects on the critical issues that can be found and the object of particular attention as elements of interest and for which it is necessary to guarantee protection within the SIC and strategic agricultural areas:

Critical issues	Significant incidence	Negative incidence	Positive incidence	No incidence
entry of alien species and formation of groupings with ruderal and synatropic species in the forest formations, due to the anthropic disturbance				
conservation of small and valuable wetlands				
fires, which periodically damage both the heath and the woods				
the presence of scattered houses and the widespread anthropization within the site that take away space from semi-natural vegetation and contribute to the spread of exotic species, already abundant in the area.				
biocenotic evolution of moorland formations				

Table 19 - Critical issue matrix

As can be seen from the two tables above, under no circumstances the transformations carried out following the guidelines set out in the previous chapter would damage or create negative effects that could generate negative effects on protected or agricultural areas. It should therefore be stressed a first element of sustainability of the actions proposed by the guidelines that is not affecting the current state of the surrounding area, thus acting on

strengthening the identity value of the surrounding areas and inserting themselves in an organic way in the reference context. This although they induce however a reduction of the naturalistic value of the existing areas on which the transformation interventions insist.

Therefore, it can be affirmed that the guidelines can allow a sufficient level of protection for the rural space and for the safeguard of ecosystem value elements present in the "Pineta di Cesate" SIC and in the agricultural areas located to the north. This inserting themselves as opportunities to improve the eco-landscape structure, the multifunctionality of agriculture and the compatibility between built-up space and naturalistic free space.

With regard to the availability and quality of natural ecosystems present and external to Natura 2000 sites, the works envisaged if implemented according to the guidelines, as found in previous matrices, do not include activities that may consume and/or alter the habitats of community interest or of naturalistic interest, being able to insert itself in an organic way and not distorting the surrounding context and that in which these works insist.

Moreover, it is important to underline the importance of the identified mitigation and compensation measures - such as, but not limited to, the maintenance of the rows and the wooded areas - which represent the exploitation of the opportunity of environmental requalification of the places through the creation of ecologically significant systems, able to increase, at least in part, the quality and the local ecosystem value, as well as the possibility of recomposing with the structural forms of the territory concerned.

7.2 INTEGRATION BETWEEN ENVIRONMENT BUILT AND NATURAL ENVIRONMENT

The implementation of the transformation areas with the indications of the guidelines would produce a project synergy that aims not only to safeguard and protect the existing naturalistic areas, but also to create a widespread and territorial green system that from an environmental point of view protects the naturalness of the territory and tends to create a sort of peri-urban ecological network.

Therefore, the application of the guidelines could generate not only the peri-urban ecological network described above but also the necessary relationship and correct dialogue between "city" and "countryside". In fact the indications of the guidelines would produce the actual realization of that belt park on which to realize elements to service the activities for leisure time with strongly extensive interventions of environmental naturalistic value in the parts adjacent to the naturalistic areas and less extensive in areas of interposition between parts of inhabited areas and naturalistic free areas.

In summary with the guidelines a modern vision of urban park would be introduced, different from the one that today is widely improperly diffused in the recent Milan urban redevelopment interventions characterized by extremely elaborate and equipped drawings. This is an urban park in which the space is weakly equipped and its main design is defined by pre-existing environmental presences, integrated with other environmental resources in order to build landscape, naturalistic and functional relationships with the urbanized and surrounding naturalistic areas. This modern urban park is a multifunctional system that develops different roles in its different parts; the organically integrated widespread naturalness constitutes the new connective of the environmental system as shown in the figure.

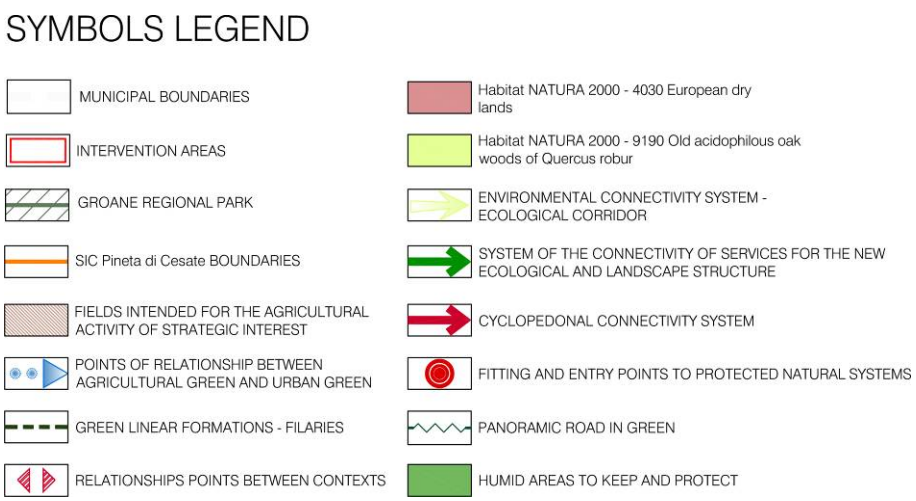


Figure 87 - Symbols legend

The first figure summarizes the symbols that will be found in the subsequent processing and that identify the new relationships that could be created with the implementation of the guidelines.

Figure 88 - New relationships in the Ti area

The image above shows the relationship between the built environment and the natural environment for the "Ti" areas located to the north, as can be observed a very strong interchange could be created between the wetland and the agricultural areas to the north.

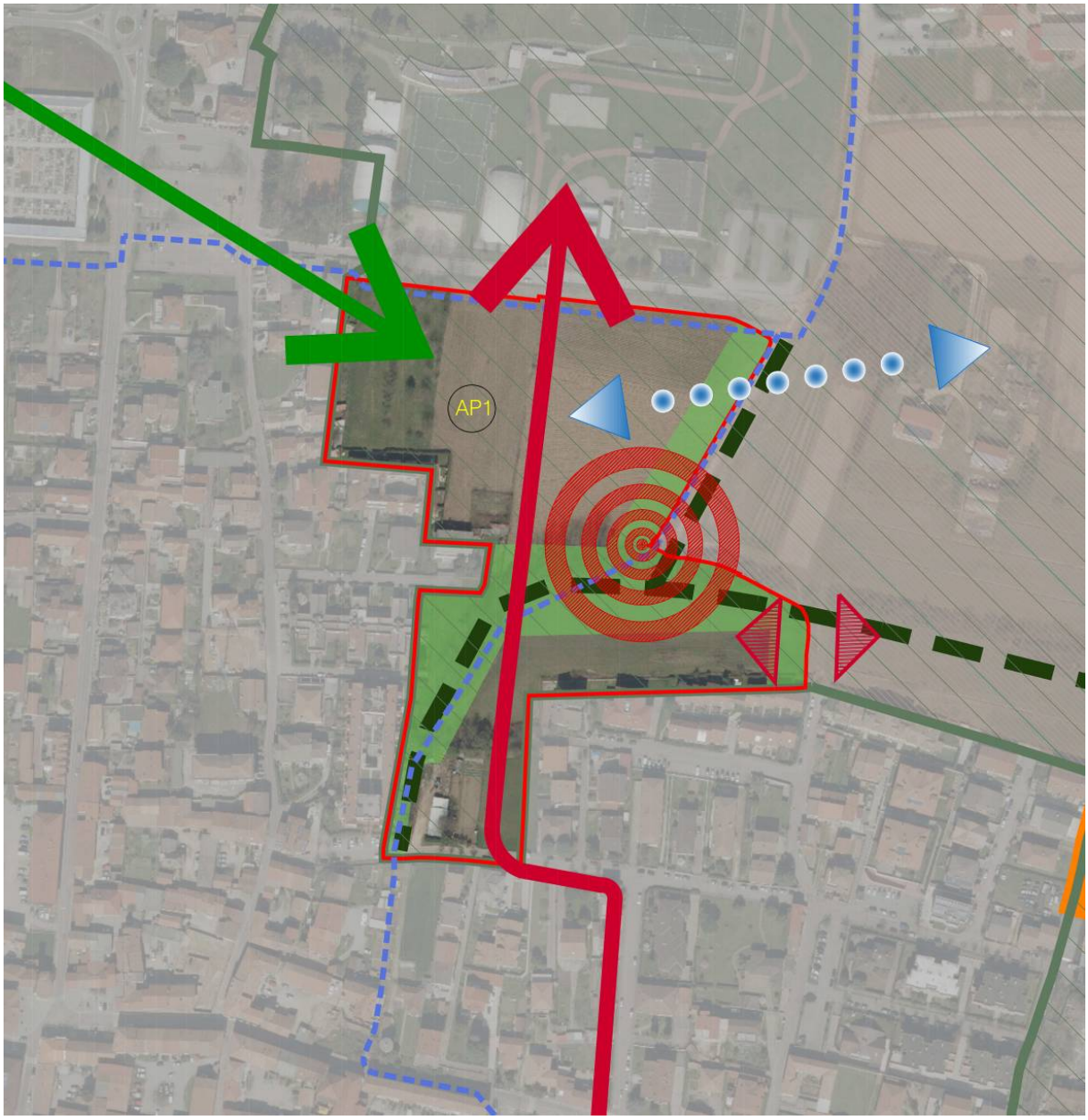


Figure 89 - New relationships in the AP1 area

As can be seen from this image, the AP1 range is very important for the possible creation of the bond and the filter with the protected areas located in the immediate vicinity, resulting as an entry point towards the Regional Park of Groane

Figure 90 - New relationships in the AP2 area

Also with regard to the AP2 area, implementation through the use of the guidelines involves the creation of new relationships between the built environment and the natural environment.

Ultimately, as can be seen from the general framework below, the use of the guidelines would allow, while introducing new constructions, the creation of an organic and integrated system that starting from the south-east border passes from the urbanized border to the north-east, from the north one and returns to the southwest border, allowing the creation of a belt park. Furthermore, it has led to the increase in the usability of the areas affected by the Groane Park through the new creation of leisure areas, as well as the introduction of filter areas that would allow further protection for protected and agricultural areas.

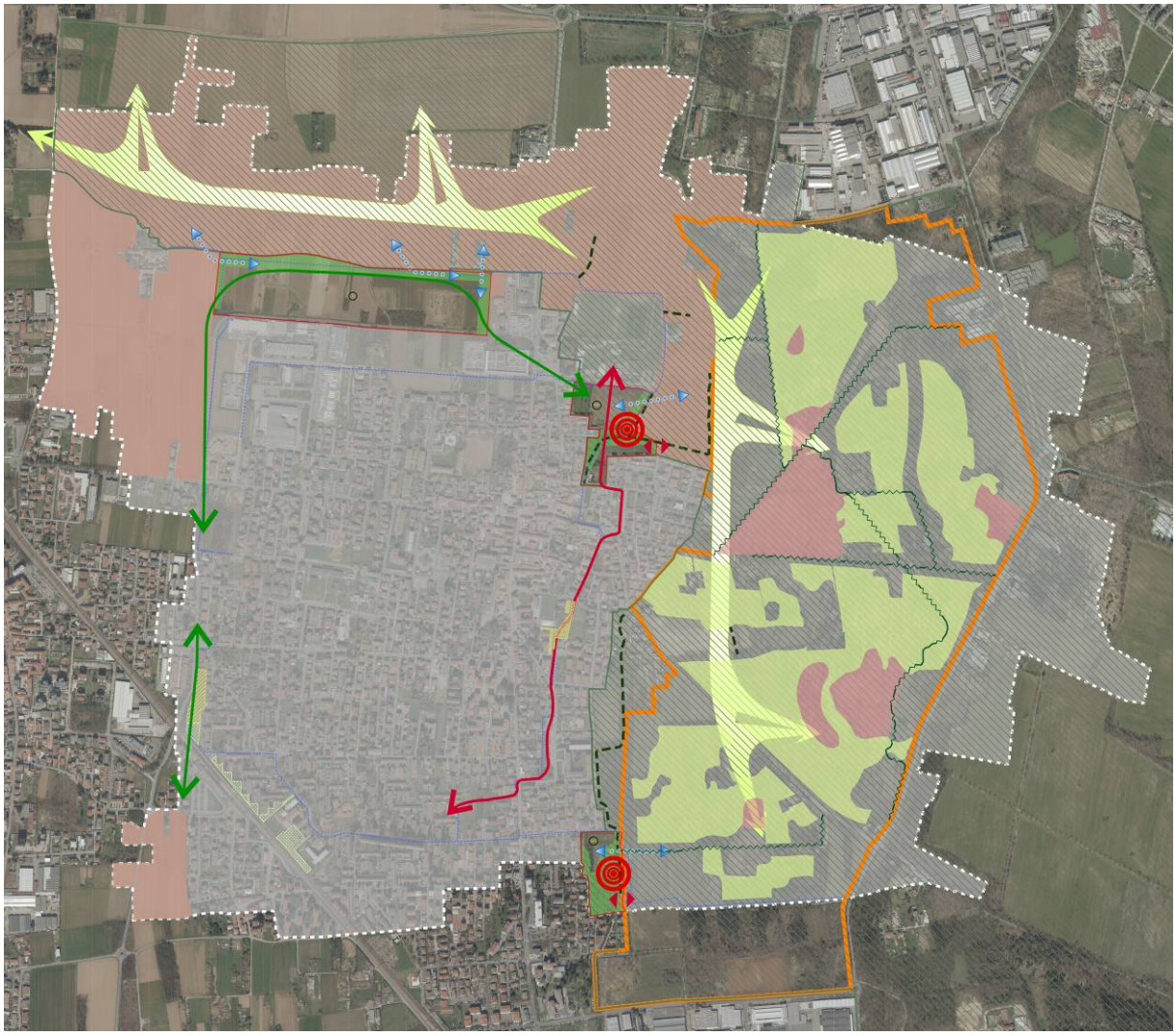


Figure 91 - General view of the new relationships that could be created through the introduction of the guidelines

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