

TIBER AS URBAN SPACE

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TIBER AS URBAN SPACE

TIBER WATER BODY

Tiber basin
Myth and history

A 38 KM JOURNEY: EXPERIENCE OF TIBER SPACE

SHAPING OF TIBER SPACE

Floods: Tiber as dynamic organism
Riverbanks: Tiber as threat
Evolution of infrastructures: Tiber as relict
Landuse along the river: Subversive occupation

A MONOFUNCTIONAL RIVER SPACE



Tiber as an Urban Space

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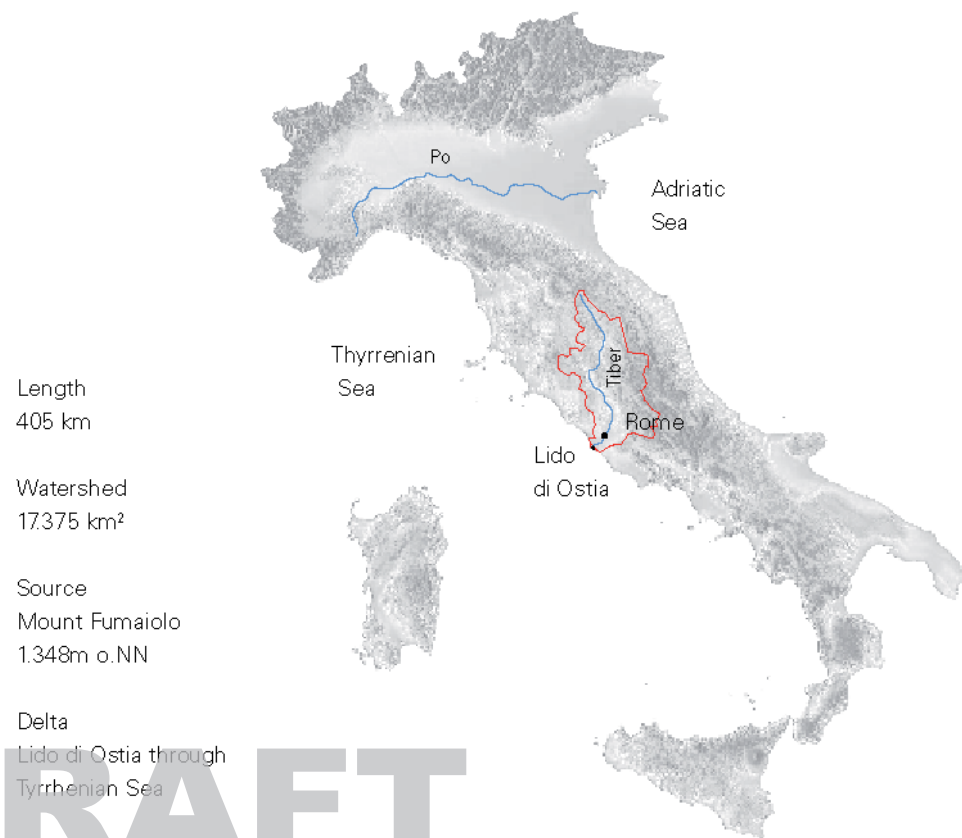
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TIBER WATER BODY

With a length of 405 km, the Tiber river is the second longest Italian river (after the Po river with a length of 652 km) rising on the slope of Monte Fumaiolo, a major summit of the Appennino Tosco-Emiliano. Twisting in a generally southerly direction through a series of scenic gorges and broad valleys, the Tiber flows through the city of Rome and enters the Tyrrhenian Sea.



Length
405 km

Watershed
17375 km²

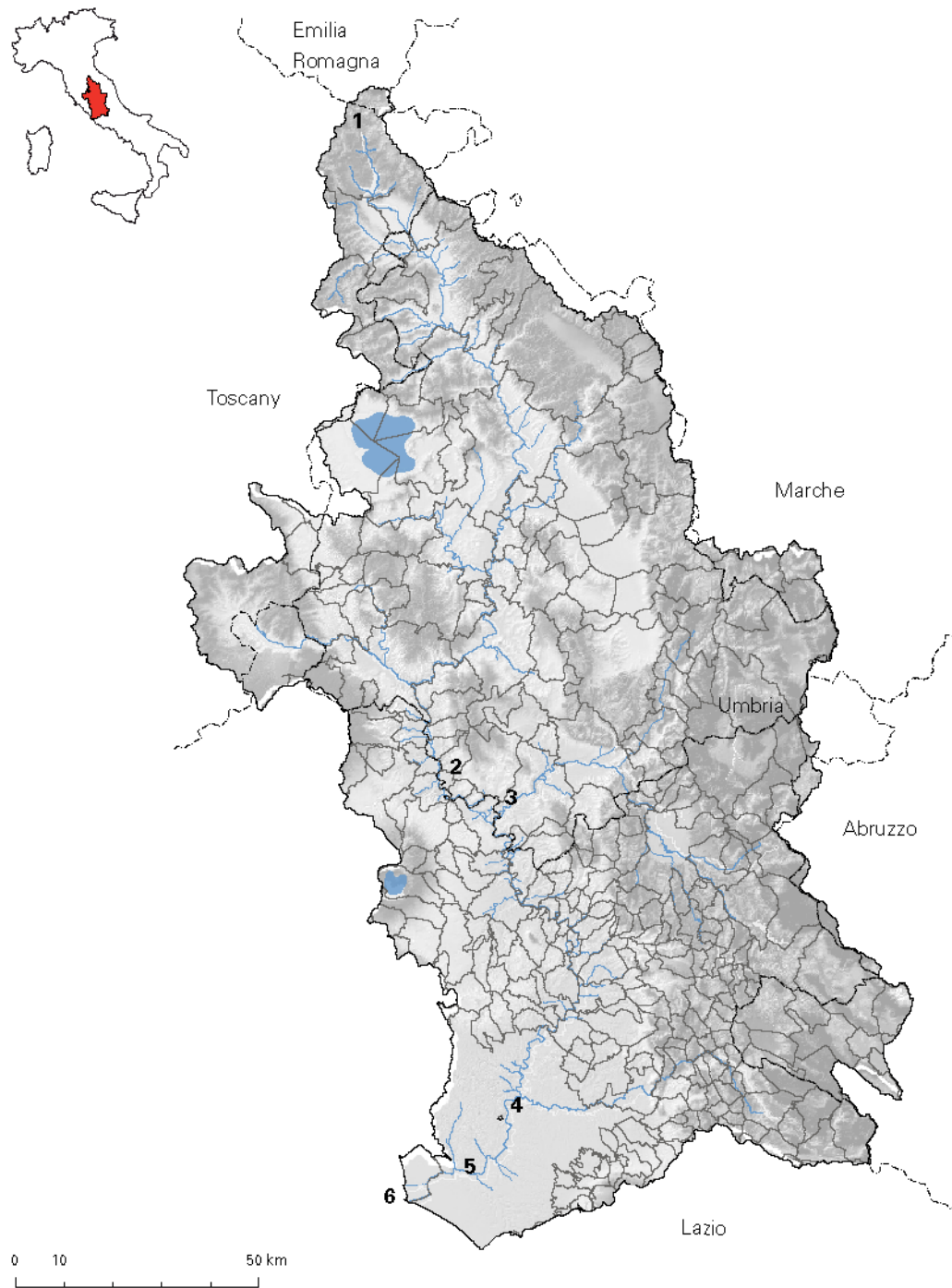
Source
Mount Fumaiolo
1.348m o.NN

Delta
Lido di Ostia through
Tyrrhenian Sea

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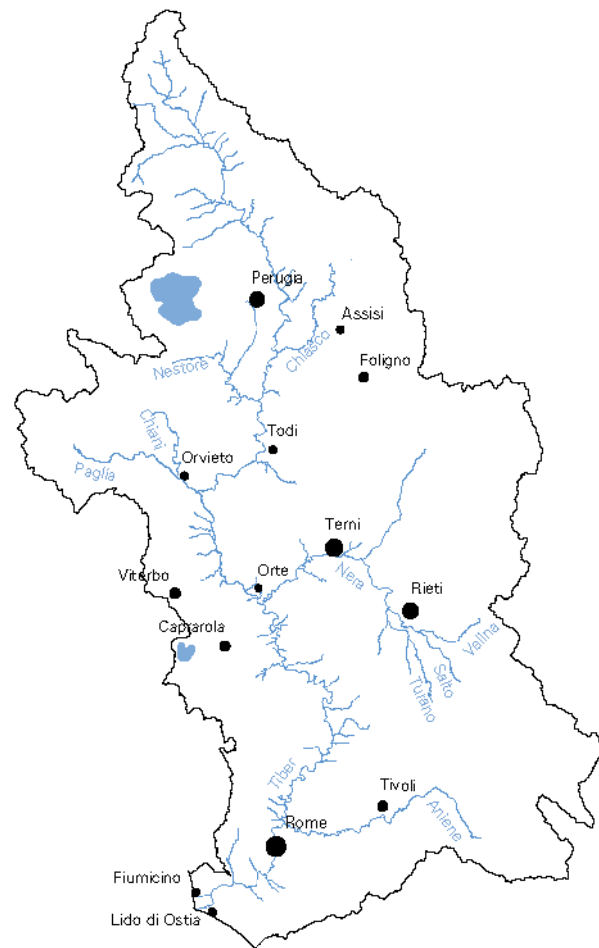


Tiber basin

The Tiber river drains a basin extending over 18.000 square kilometers. About 90% of its territory is located in the regions of Lazio and Umbria. The remaining 10% of the watershed is located in the regions of Emilia-Romagna, Toscana, Marche and Abruzzo. The Tiber basin includes 334 municipalities with a population of around 4.5 million. The river originates from Mount Fumaiolo in the Apennine Mountains which forms the backbone of peninsular Italy. On it's way down to the sea the river varying in depths between 2 to 6 meters



- 1 Source of Tiber river near Mount Fumaiolo
- 2 Lake Corbara near nature reserve „Parco Fluviale Tevere“
- 3 Dams for regulation near Poggio Mitteto Scalo
- 4 Tiber island in Rome
- 5 Drained loop because of the construction of G.R.A.
- 6 Tiber delta in Lido di Ostia and the channel in Fiumicino



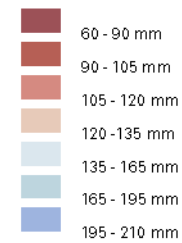
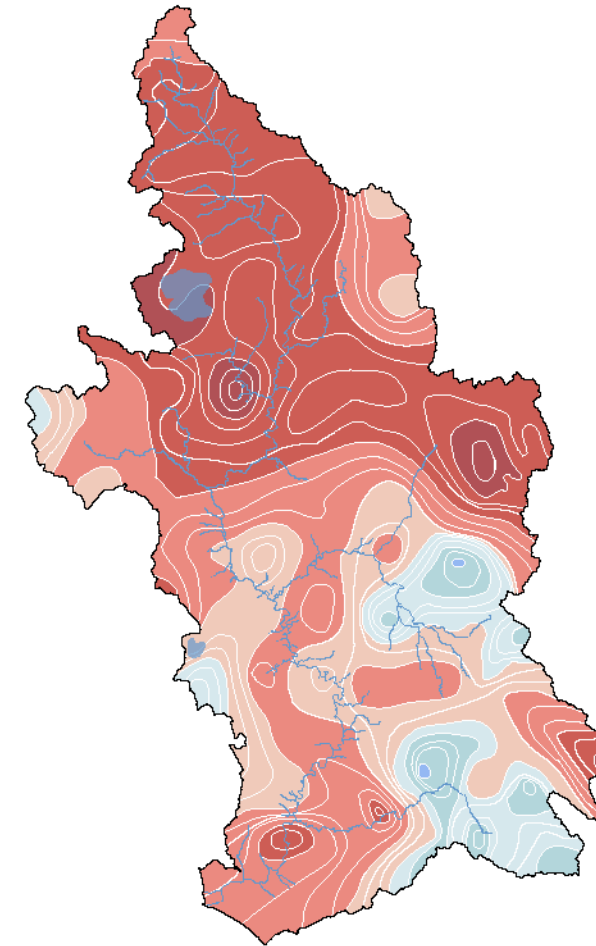
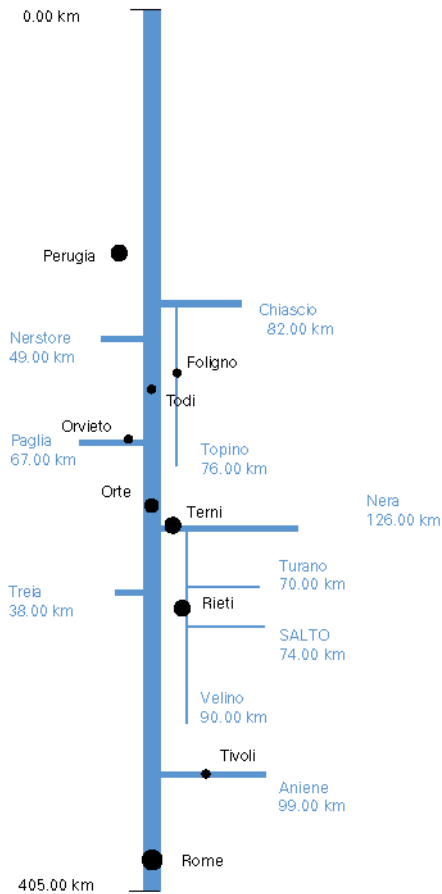
0 10 50 km

River networks

The river connects on a distance of 405 km the cities of Perugia, Rome and the sea port of Ostia di Lido. Although it is rather navigable over its whole length some parts like the stream around Orte and Terni are reliable passable.

Water system

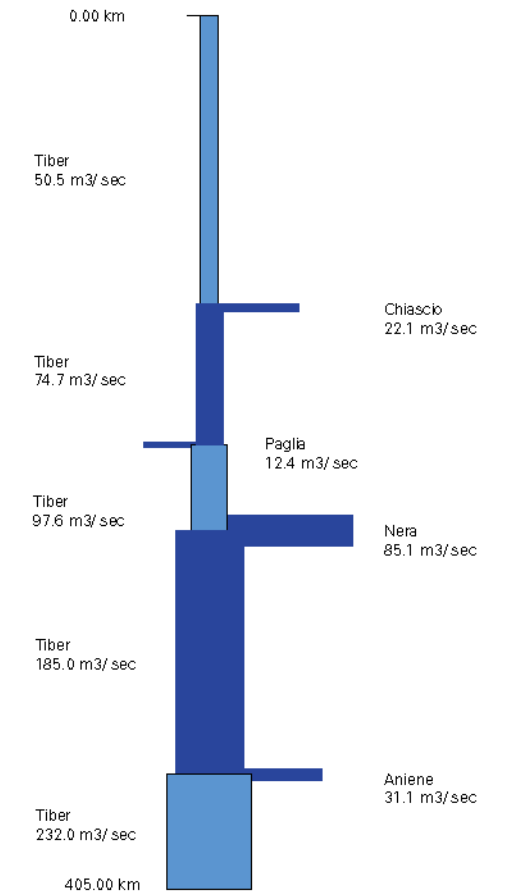
The Tiber is joined by a series of other rivers. Its major tributaries are the Chiascio draining the area around Assisi, the Nestore, the Paglia draining the area Orvieto, the Aniene and most notably the Nera which itself is joined by the Velino, Salo and Turano, draining the Rieti plain and the area around Terni. Below Rome, the Tiber branches out into a natural delta and the canal Fiumara Grande.



0 10 50 km

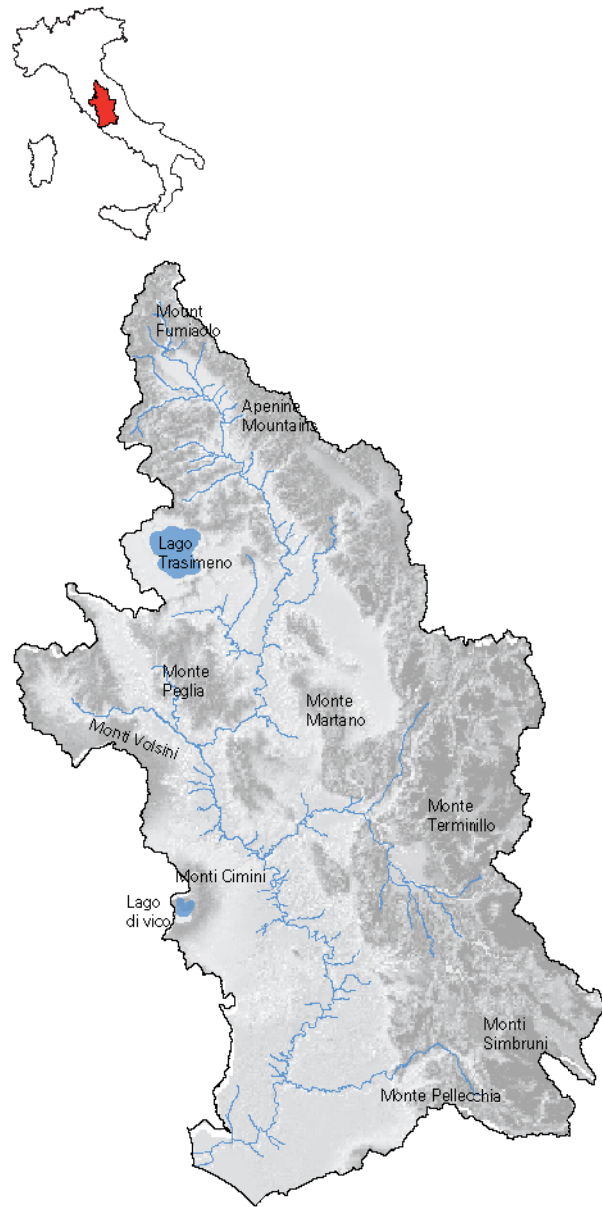
Precipitation

Most of Tiber water volume derives from the mountains situated east- south of the basin. The average rainfall can be up to 210 mm.



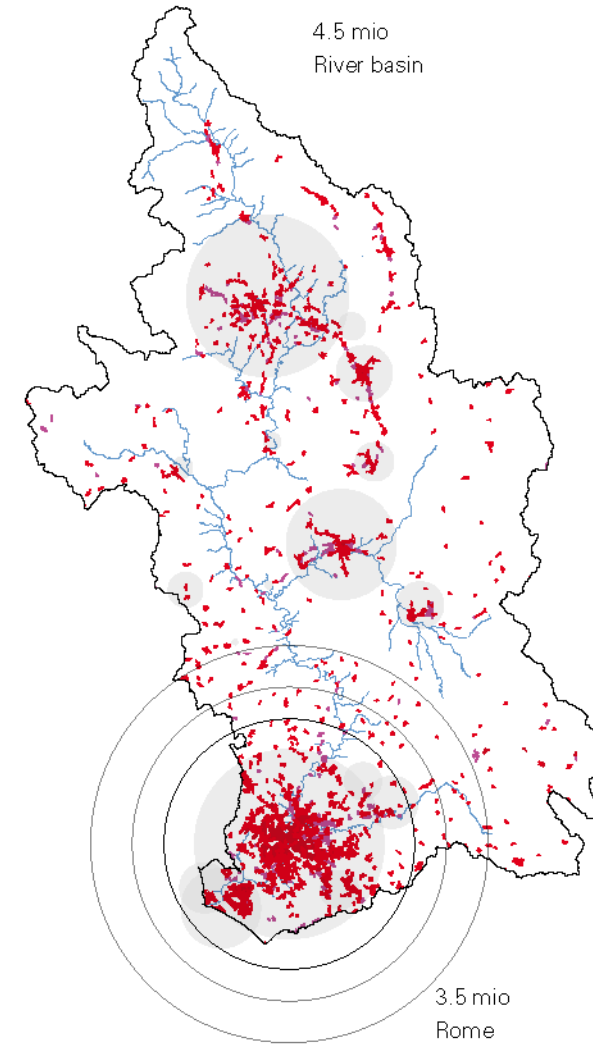
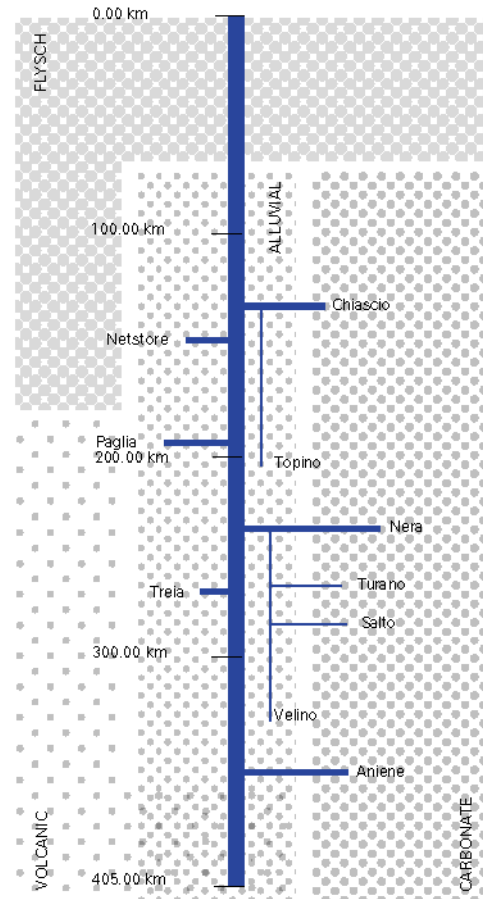
Water flow

The rainwater passed through the tributaries into the Tiber. These "feeder" cause on one hand the large quantities of flow and on the other hand the fluctuating water level of the river, which can ultimately lead to flooding. The size and importance of the Tiber are increased substantially by the inflow of Nera and Aniene, the addition of Neras water flow, for example, more than double its average flow.



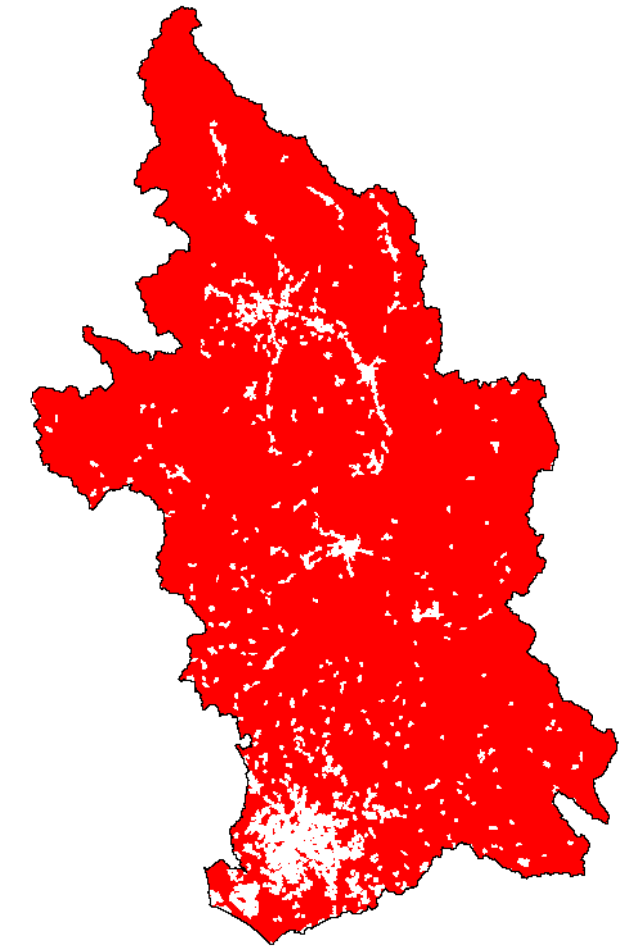
Surface conditions

The territory of the basin is characterized by four main types of sediments. One can find flysch in the northern part, volcanic sediments in the lower part and carbonates and alluvials in the middle part of the basin. Particularly this shows the enormous influence of the river water on the territory itself, as well as on soil composition and sediment textures. The rivers internal processes and fluctuations afford loose, unconsolidated sediments, which can't absorb and handle amounts of water.



Urbanisation of Tiber basin

The river basin is rather densely populated. With 260 inhabitants per km² and an overall population of more than 4.500.000 inhabitants the basin is unevenly distributed because around 3.500.000 inhabitants are concentrated in the metropolitan area of Rome and along the final stretch of the Tiber river on the slopes of the adjacent volcanic structures. This causes an increasing water demand and producing a strong impact on territory.





"Statue of Tiber river" sheltering Romulus and Remus



Role in the founding of Rome

According to legend, the city of Rome was founded in 753 BC on the banks of the Tiber about 25 km away from the sea at Ostia. The twin brothers Romulus and Remus, were abandoned on its water and stranded at the location were they founded the city. On one hand historical sources tell that the river was flooded and the man dispatched with the babies was unable to reach the main river bed. Other sources depict a low water level and the sedimentation of the basket which was filled with the babies.

Into the Tiber

In ancient Rome, executed criminals were thrown into the Tiber. This practice was also used for religious purposes. For example, the corpse of Pope Formosus was thrown into the Tiber in 897. During various festivals salt was thrown from the Pons Sublicius because it was seen to be worthy of the gods protection and instrumental in their appeasement. Every 1st January the jump of Ponte Cavour marks the beginning of the New Year.

Myth and history

The river marked the boundary between the lands of the Etruscans to the west, the Sabines to the east and the Latins to the south. According to history, river Tiber in Italy was originally called Albulula due to its white appearance. Albulula was renamed Tiberis in memory of King Tiberinus of Alba Longa who defended the western bridgehead of Pons Sublicius against Lars Porsenna's besieging Etruscan force until his comrades could cut the bridge behind him. Then he leaped from the bridge and swam to safety (or drowned, depending on the source). The Tiber was critically important to Roman trade and commerce, as ships could reach as far as 100 kilometer upstream. During the 1930s Benito Mussolini, born in Romagna, adjusted the boundary between Tuscany and Emilia-Romagna, that the springs of the Tiber would lie in Romagna.

A 38 KM JOURNEY: EXPERIENCE OF TIBER SPACE

The experience of 38 km journey starting in the center of Rome and going downstream at the Tyrrhenian Sea, reveals the territory characterized by various scattered uses, which are not or are only occasionally connected with the river itself. The atmosphere of the Tiber space changes within these 38 km from the dense city center of Rome to the open wide sea. Striking is the variation of space, but without any relation to the Tiber.

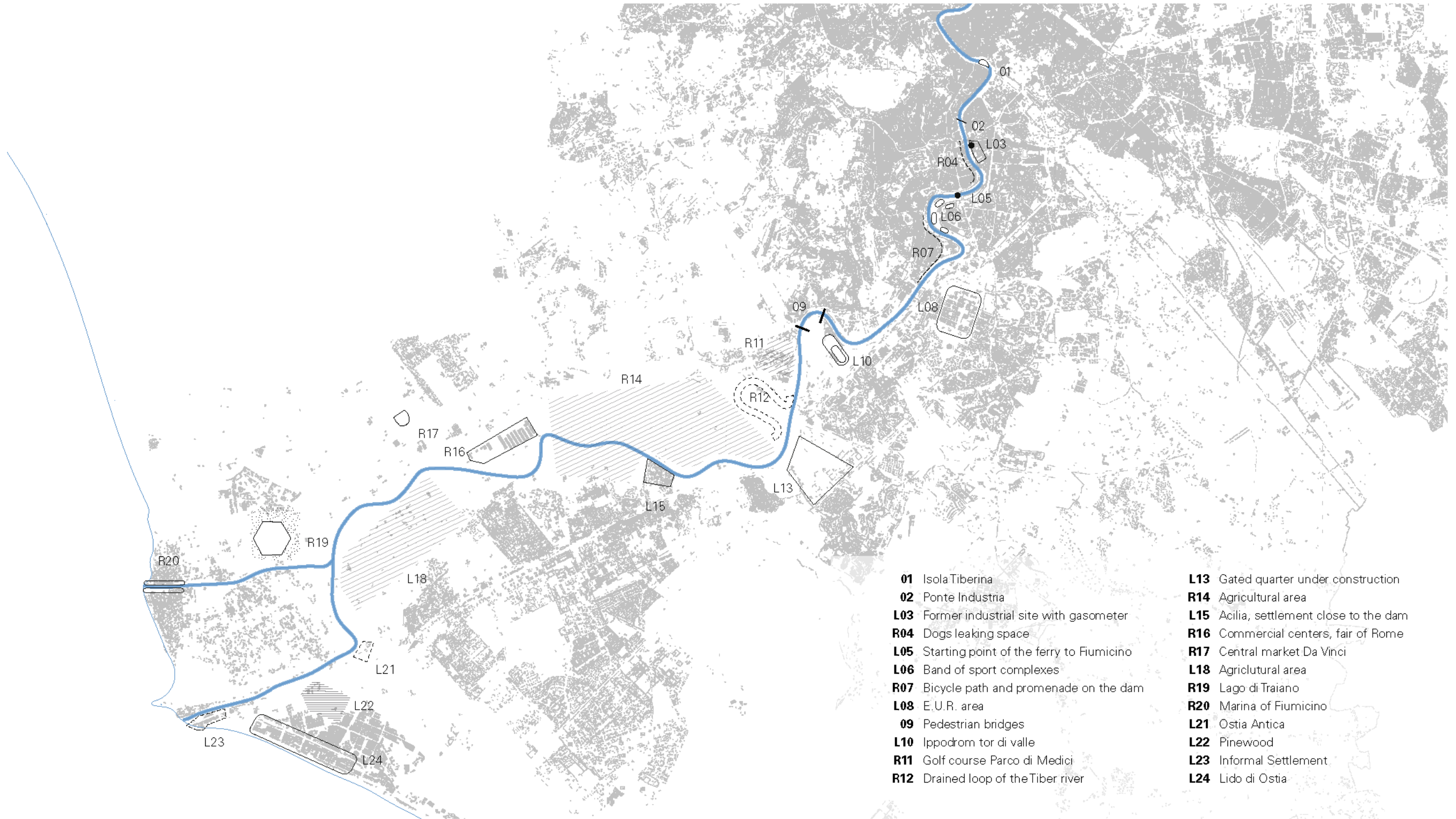


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- 01** Isola Tiberina
- 02** Ponte Industria
- L03** Former industrial site with gasometer
- R04** Dogs leaking space
- L05** Starting point of the ferry to Fiumicino
- L06** Band of sport complexes
- R07** Bicycle path and promenade on the dam
- L08** E.U.R. area
- 09** Pedestrian bridges
- L10** Ippodrom tor di valle
- R11** Golf course Parco di Medici
- R12** Drained loop of the Tiber river
- L13** Gated quarter under construction
- R14** Agricultural area
- L15** Acilia, settlement close to the dam
- R16** Commercial centers, fair of Rome
- R17** Central market Da Vinci
- L18** Agricultural area
- R19** Lago di Traiano
- R20** Marina of Fiumicino
- L21** Ostia Antica
- L22** Pinewood
- L23** Informal Settlement
- L24** Lido di Ostia

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 38 km journey: Uses along Tiber
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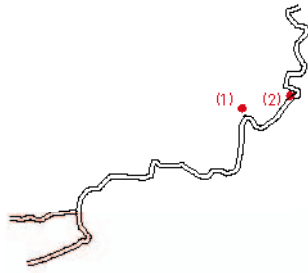
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The inner city riverspace
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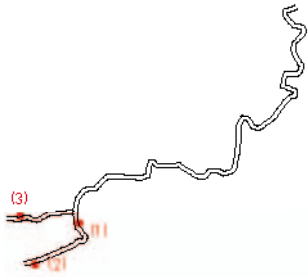
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 River space as backside
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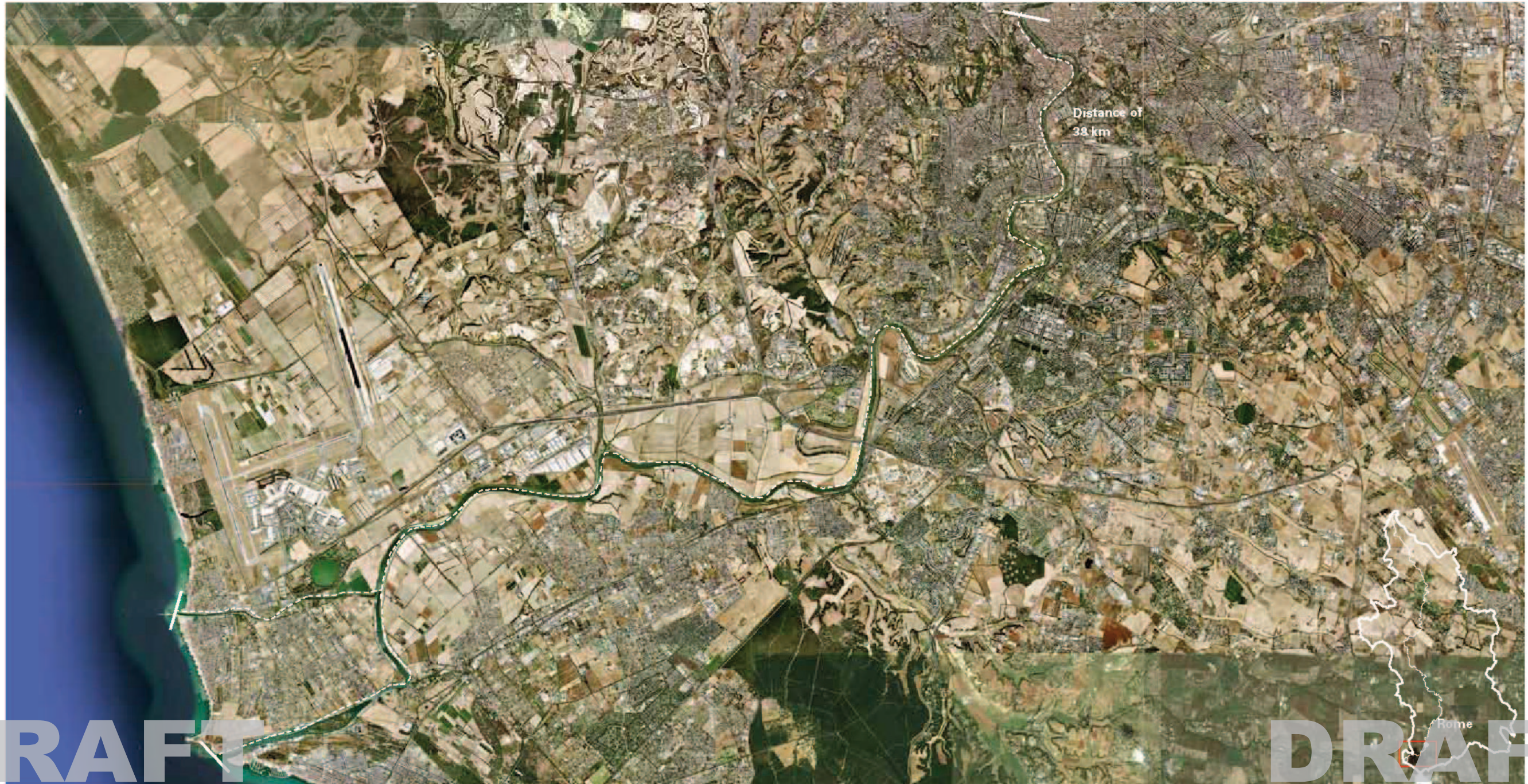
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Side by side with Tiber
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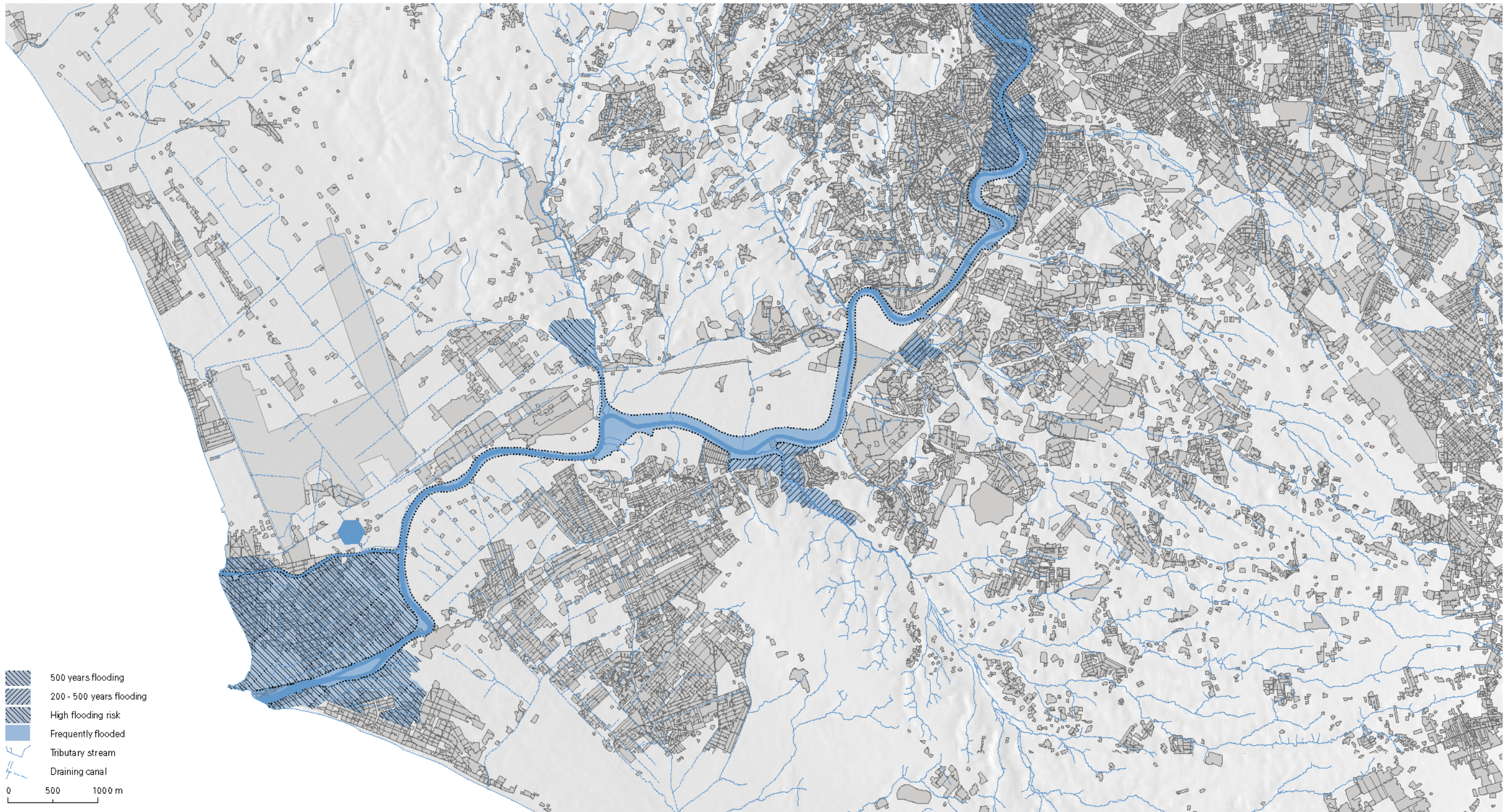
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SHAPING OF TIBER SPACE

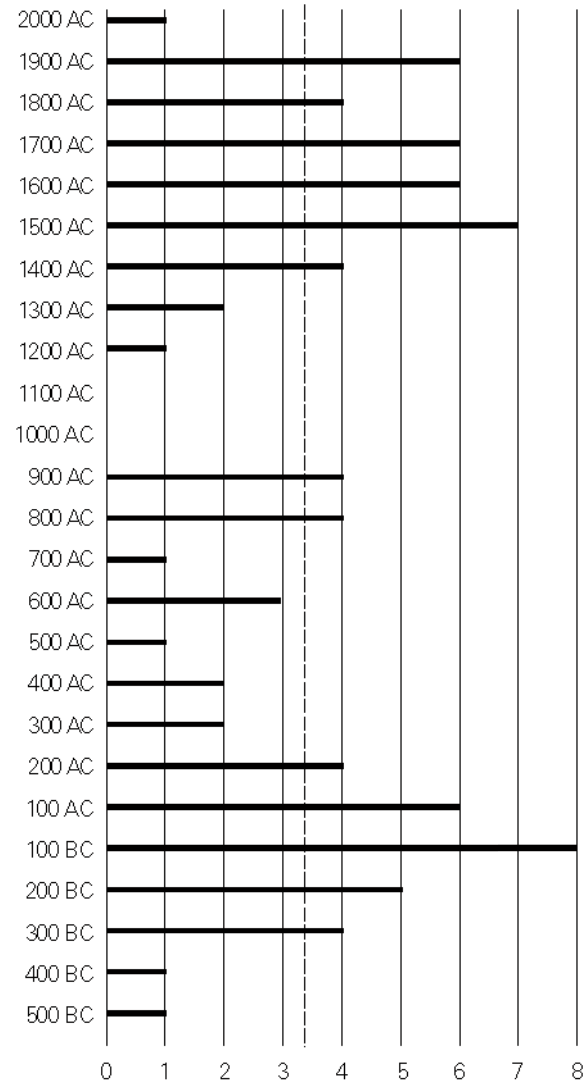
The distance from center of Rome to the river mouth is around 38 km. In this section, the influences of urbanisation on the river are evident. It is the most polluted part of the Tiber, and it interacts with a range of different urban programs. The Tiber landscape is characterized by dynamism: it reveals an fascinating interplay of different forces - from flood threat to settlements expansion - that have shaped this territory in the past as well as in the recent history.





Floods: Tiber as dynamic organism

The Romans choose to build the city squarely in an area that nature had designed as floodplain. Throughout the history, Rome has been subject to frequent and powerful floods. Today Rome is located in the 200-500 years flood risk area, the area of high flood risk has shifted to the south at the delta, occupying the Isola Sacra, parts of Fiumicino and Ostia di Lido.



Periodic flooding

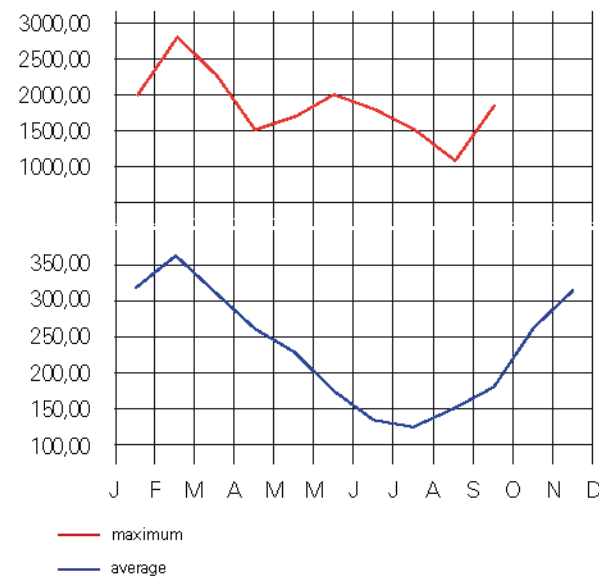
The mapping of flood events shows a frequency of about 3 major floods per century.

27 floods appeared in the period of the height of Roman power (300 BC - 200 AD) giving it an overall frequency rate of one flood per 19 years. One could see the flood as a continuous event in urban life.



Signs of flood

The city of Rome is marked with over 100 stone boards accurately recording the dates and heights of historic flood events. Most of them are attached to the church Santa Maria Sopra Minerva, in the center of Rome, with the earliest dating to the 13th century.



Extreme fluctuation of water levels

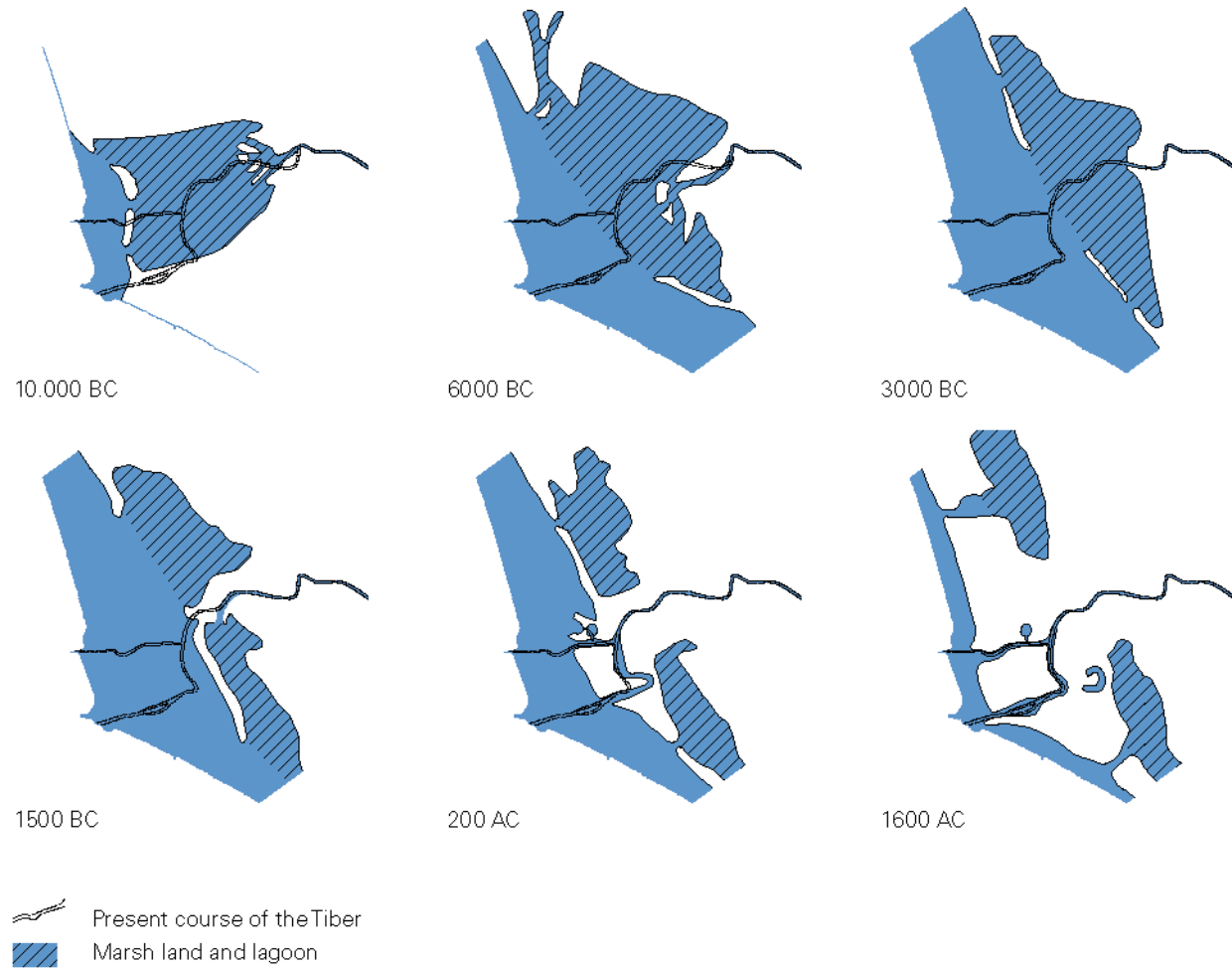
During the rain period from November to March the average maximum flow of the river reaches 360 m³/sec. The daily maximum can reach 2780 m³/sec. This extreme difference in flow causes frequent flooding in the Tiber valley.



Flooded area around the Pantheon, 1870

Living with the flood

Ancient sources mention the floods and their accompanying destruction but do not dwell on them, consistently describing them in a way that suggests they were regarded as routine aspect of urban life. Life went on despite the flood, with the inhabitants of Rome matter-of-factly making whatever accommodations were necessary to adjust to its presence.



Flooding and sedimentation

Popularly called "the blonde river", the Tiber is heavily charged with sediment but does not form a proportional delta owing to a strong north-flowing sea current, close to the shore, to the steep shelving of the coast, and to slow tectonic subsidence. The coastline has advanced at each mouth about 3 km since Roman times, leaving the remains of ancient Ostia inland. A century ago, the rate of advance at Fiumicino was estimated at 4 m per year.



"The blond river"
 Pictures taken around 1900 and 2000

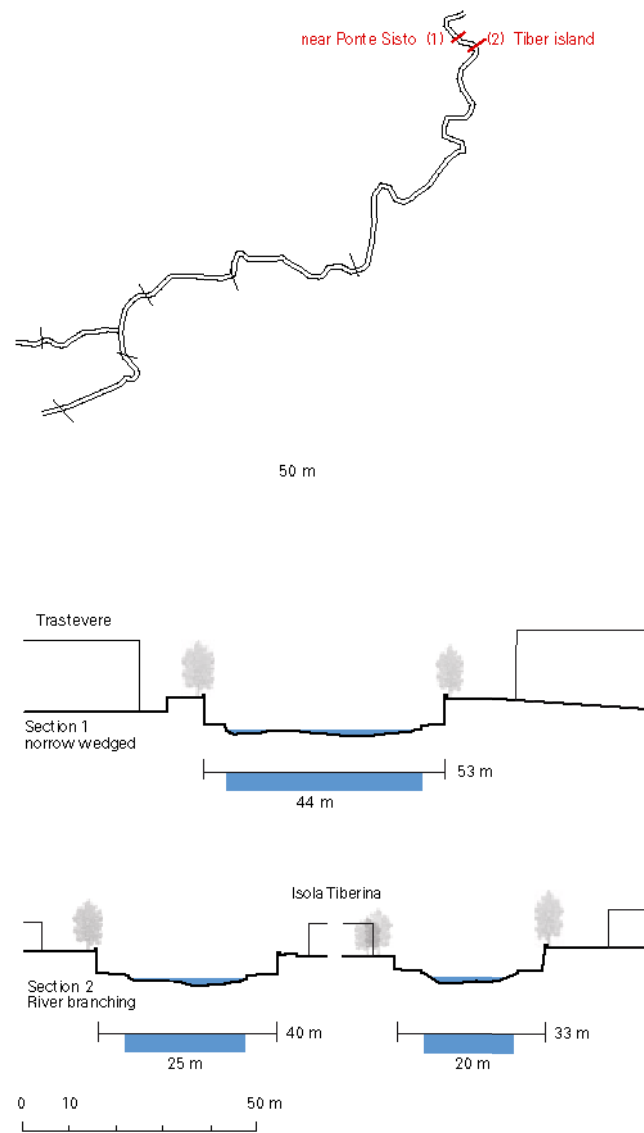


Van Wittel "Rome the Tiber near the porto di ripa grande" um 1700

Tiber riverbanks: Tiber as threat

Since ancient times Tiber has been known for its floods. The Campus Martius, a flood plain, was regularly flooded to a depth of several meters. The river is now confined between high stone embankments which have been built following the 1870 annexation of Rome by the Italian State and the appointment to its capital. After a long public debate on different projects to embank or bypass the Tiber, the government decided to build high walls along the river and granted a physical protection to the lower quarters next to the river. In the upper part of the river several other restriction to control the water body were introduced, for example, dams and mounds with vegetation, consolidating the earth and protecting them against erosion.





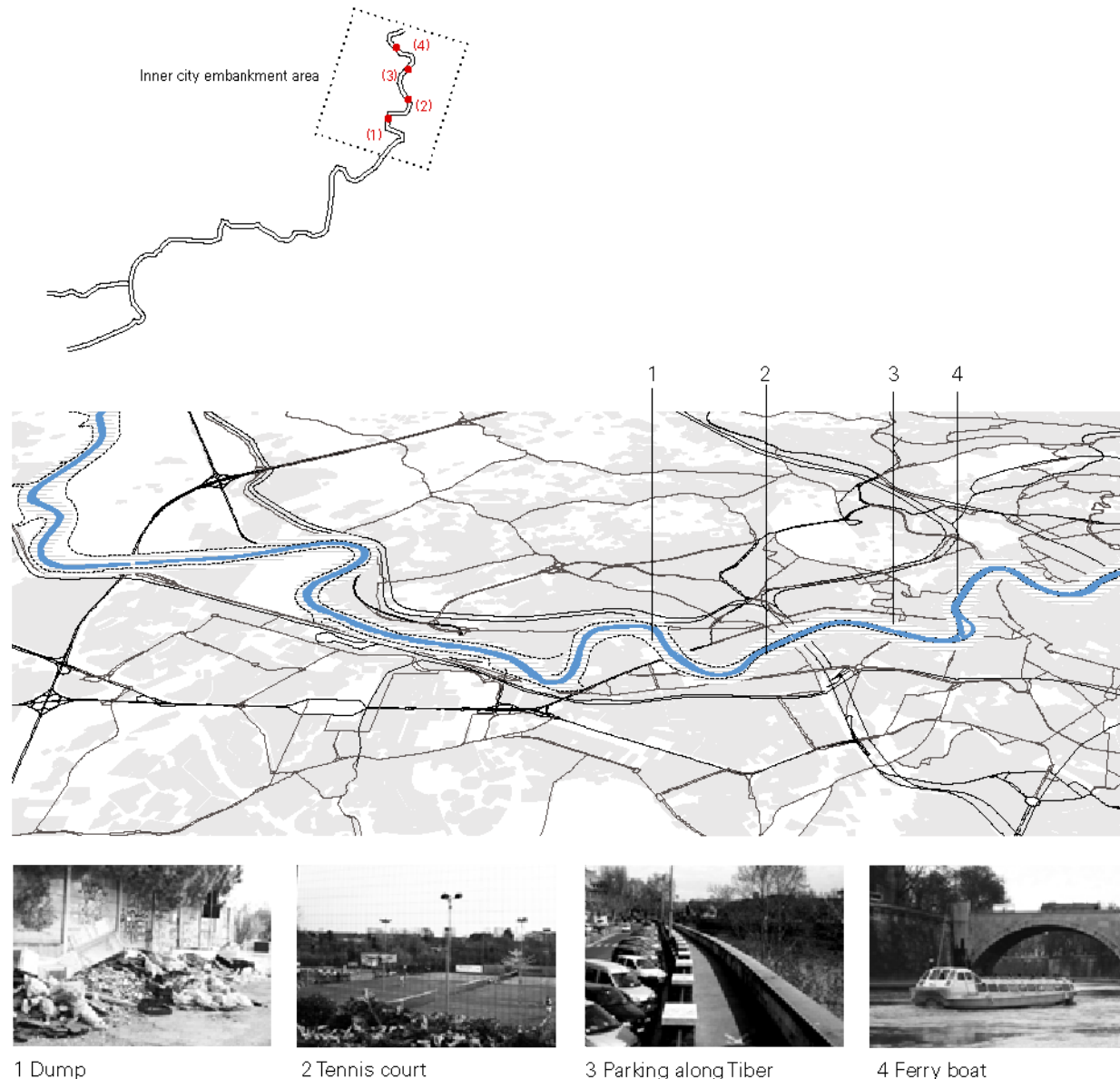
The wall: Inner city embankment

In 1870 the river has been contained with a wall of an average height of 12 m. This massive intervention on the water body in the inner city of Rome had affected a cut in the relation to the river (visually and atmospherically). The former houses located near the water were cut off by the construction of the wall or were demolished by the construction of the road running parallel to the river. At the same time, new bridges were built to connect Vatican City and other parts of the city on the right side (across the Tiber) to the rest of Rome. All the narrow streets leading to the river were lost, to make space for the embankments. This caused a significant disturbance of the relationship between the river and city.

Lost connection

Most of the ancient embankments have been either obliterated or buried by the construction of the modern Tiber flood walls in the late 19th century. The modern walls are at least 5-6m higher than the ancient Tiber embankments. Today the river in the city is only selectively accessible by narrow stairs. The wall forms a strong physical barrier. Bridges, ramps, stairs, retaining walls accompany the river and shape the urban space. There is no real relationship between the city and the river. Places for meeting of Tiber and man are the bridges. The only exception is the downtown Tiber Island, which is accessible by two bridges.



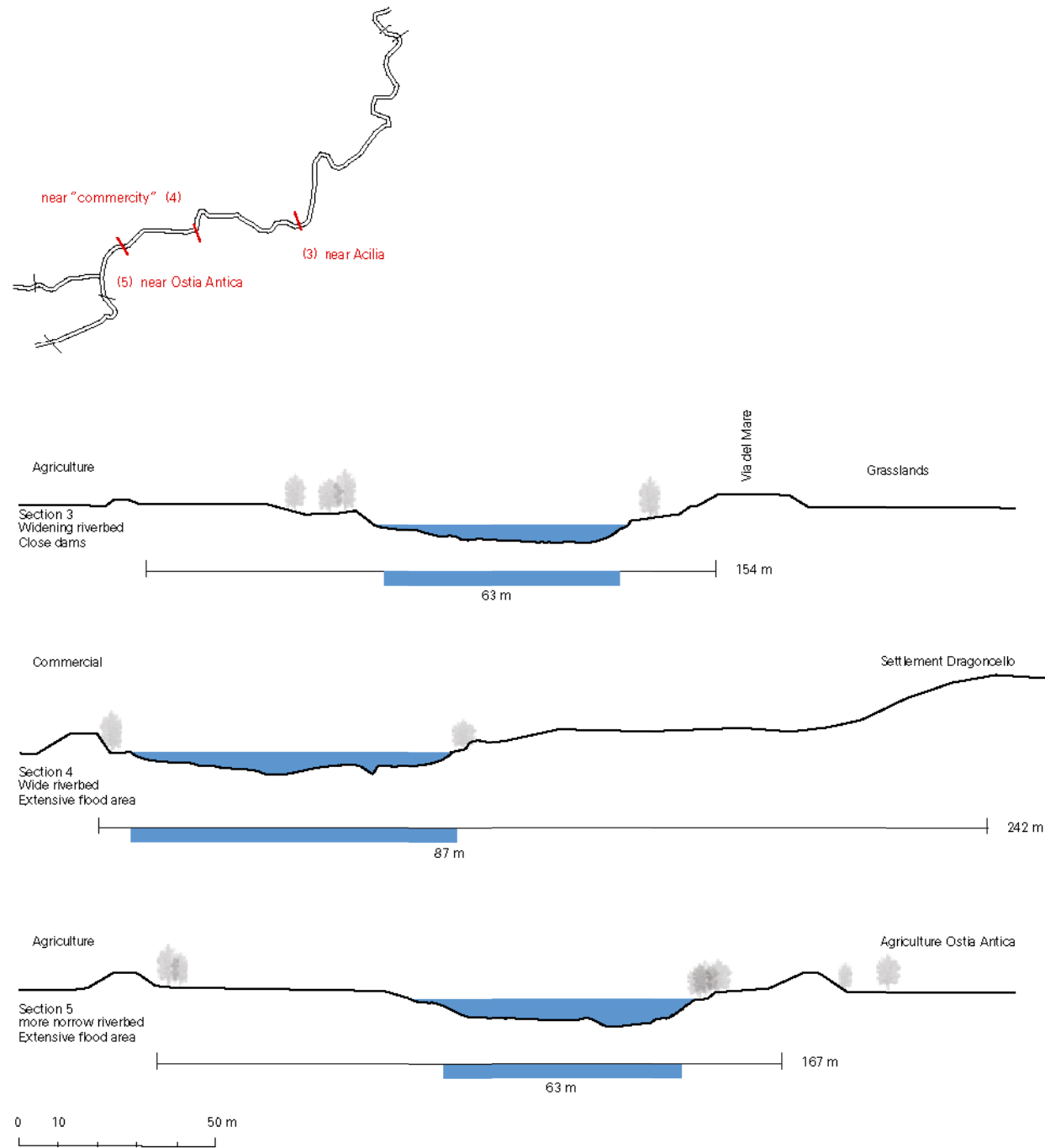


Temporary uses of "the wall"

The barrier of the embankment wall is approximately 5m above the usual level of Tiber flooding. The space between the walls is also not available between the flood phases because Tiber burst its banks regularly. That causes a completely dependent on water level concerning the use of this urban space. That effect allows only temporary uses, e.g. the festival "Lungo er Tevere" which is a summer-long arts and crafts fair held along the banks. The road running parallel to the wall intersects the river in use like a promenade in the downtown area. Only a narrow path beside the wall which is rare used, not well secured and accessible accompanies the Tiber.



Rising water within "the wall"



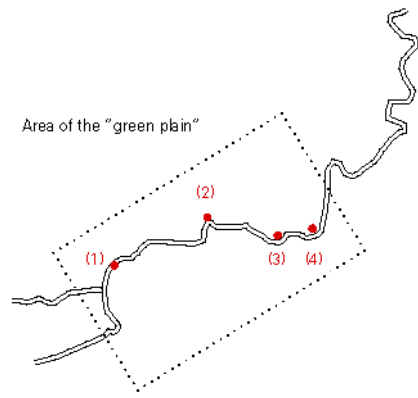
The plain: Green riverbanks

South of Rome the river is limited by an earth fill dam. After Ponte Mezzocammmino (meaning "half of the way"), the dam widens and has its largest expansion with 242 m (section 4), where the left side of the dam is formed by natural topography. The riverbank and the area behind are covered with lush vegetation.

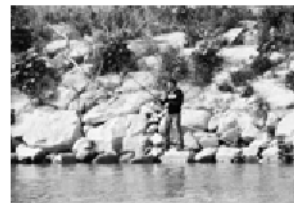
Selective accessibility

The dam and the underlying floodable area are only sporadically accessible. The dam road is largely used by agricultural vehicles and it is not successfully developed as a walking trail. Vast shrub and bushes behind the dam make access to the riverside difficult and restrain the visual connection.





1 Illegal shipping



2 Fishing



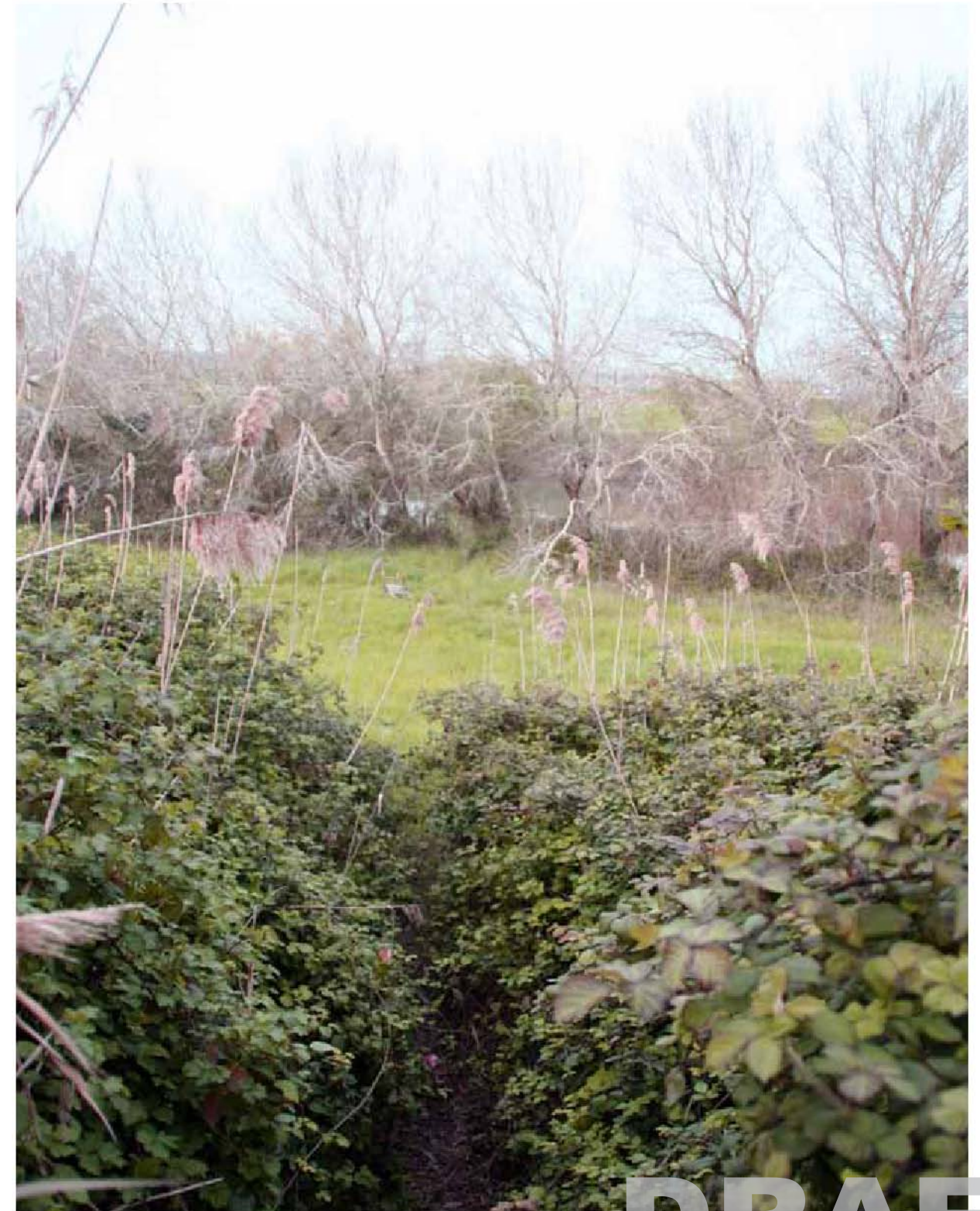
3 Agriculture within the dam



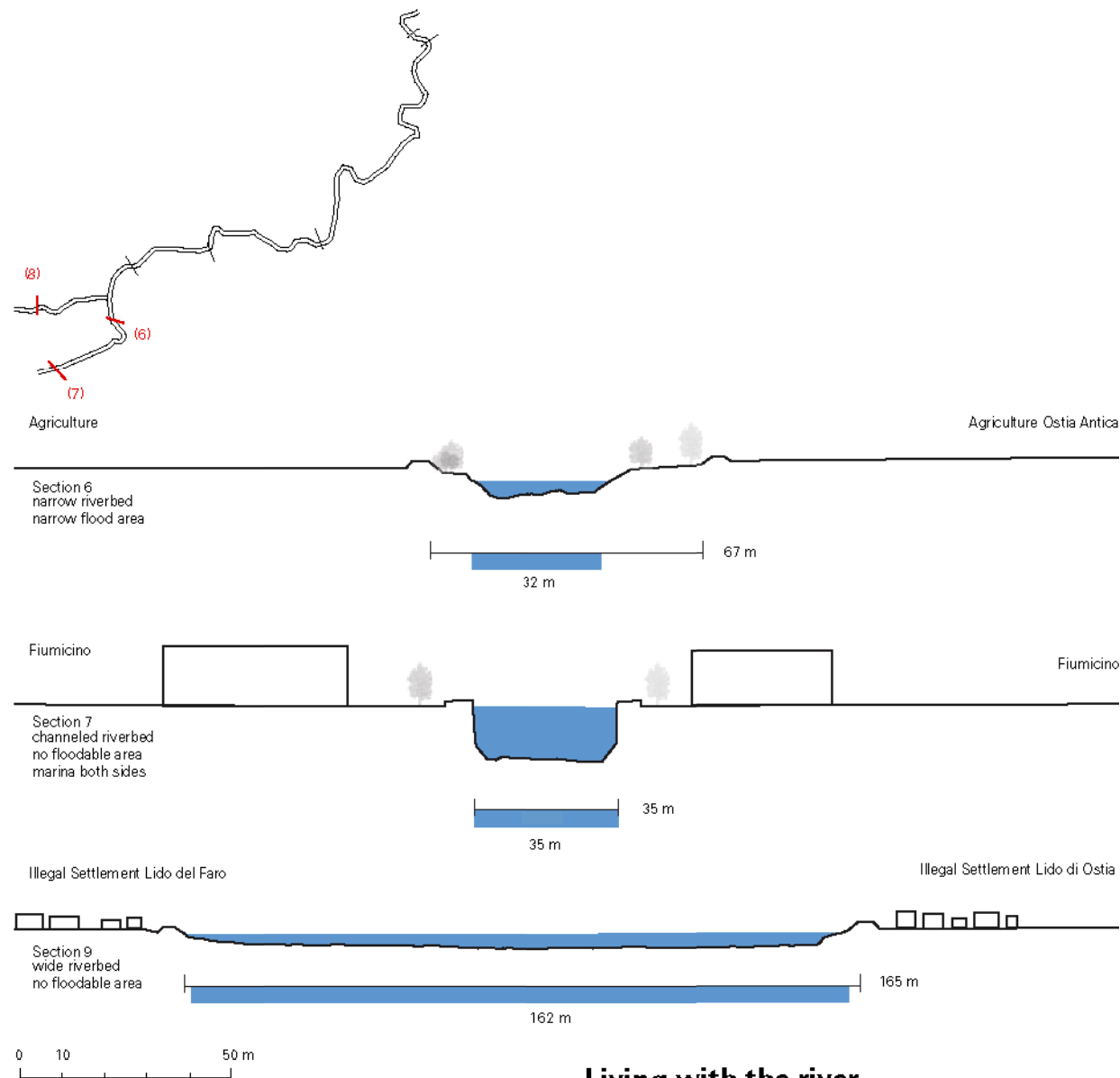
4 Bike path

Uses discovering the green plain

At this area the space between dam and river is basically used by agriculture. There are also a few strip of protected vegetation. Uses like fishing or the houseboat restaurant are only at place that are accessible by car because the distance between the settlement and the river is wide.



Access to "the plain" near Acilia



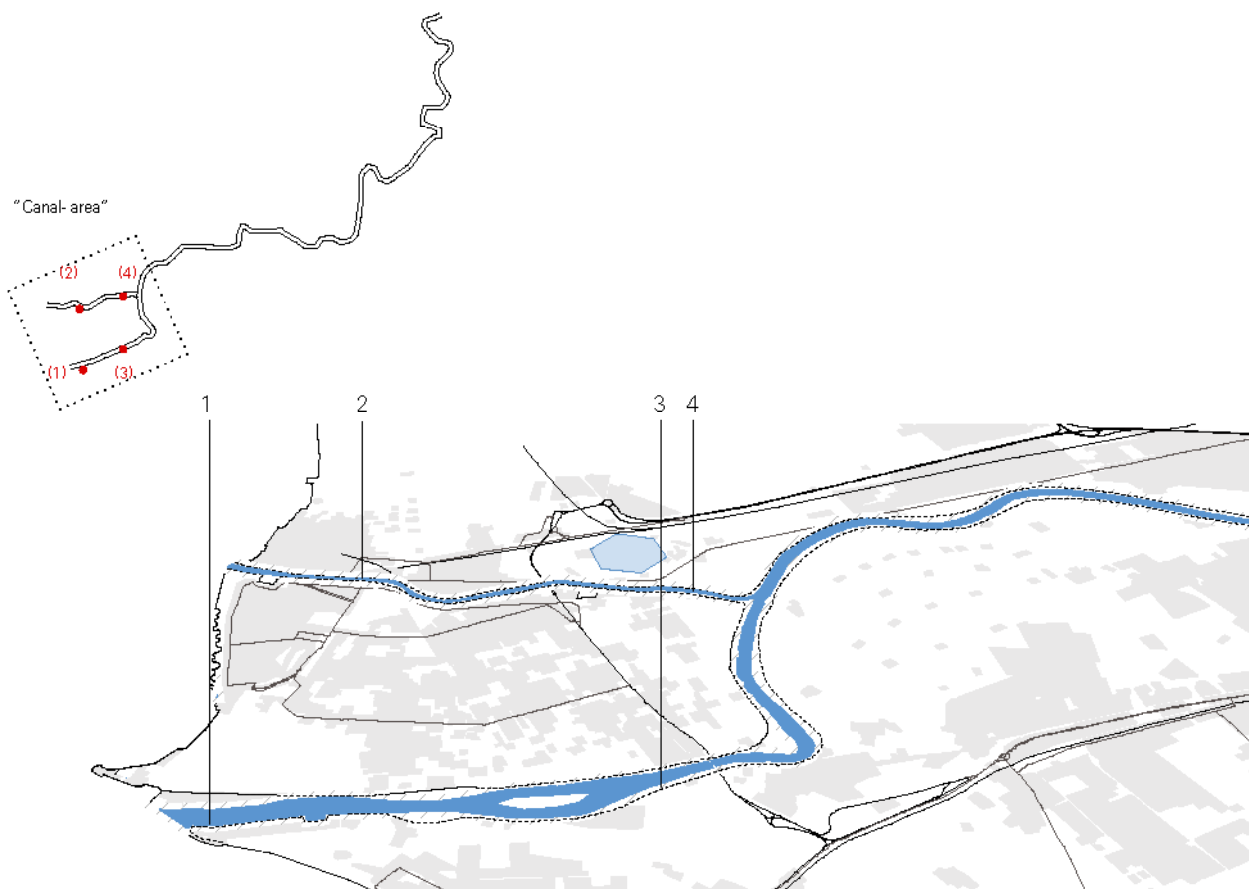
The canal: Paved waterfront

The river branches 5 km before it flows into the sea and forms the Isola Sacra. The riverbed of the canal di Fiumicino (mouth at Fiumicino) is very narrow. The northern part of the channel is unpaved. In Fiumicino the waterfront is developed as marina, close to the sea on the left bank the local port joins. The Fiumara Grande Canal (located at Lido di Ostia) is wider and opens to the Tyrrhenian Sea. It largely has a natural vegetative embankment. At the delta it is protected by rock barrier against erosion.

Living with the river

The lower Tiber is characterized by two different characters of access. Private houses and property occupied the riverfront on both sides of the Isola sacra and prevent public access. At the Canal Grande Fiumare near Ostia an informal settlement (Ostia Idroscalo) is located behind the dam. These dwellings are not a barrier to the river and leave the access open. Next to the Canal di Fiumicino in the City of Fiumicino many use as restaurants, shops, studios and factory have been settled. In corporation with the promenade the river become a firmly established public space. In total in the lower Tiber space the river has shortcuts, even selective ones. The river forms a lived space that is aligned to the water.





1 Illegal Settlement



2 Pier



3 Dockyards



4 Ship cemetery

Uses requiring "the canal"

The boat parking in the canal creates a strip of boats along the southern part of the Tiber. Starting at the branch of the river and ending at the sea the density of boats increases in the Canal di Fiumicino. A mix of sailing boats, house-boats, fishing boats, boat restaurants, yachts, small leisure boats uses the space. Different kind of boat marinas can be identified in relation to these different types of boats. The Dockyard along the island "isola boacciana", small harbors at the beginning of canal Fiumicino next to "ship cemeteries" sport boat strips in the inner city of Fiumicino and in the local port and small and bigger fisher boats along the promenade in Fiumicino right to the sea.



Rock barrier of canal Grande Fiumara



Evolution of infrastructures: Tiber as relict

The Tiber operated as an ancient "highway" between the sea port of Ostia and the inner city harbor. As a territorial connection the river delivered the city with agricultural products and building materials from the upper Tiber valley. Over times, and especially since the 19th century faster transport systems changed the role of the river as important route.



G. B. Piranesi "Veduta de Porto di Ripa Grande"

Tiber as infrastructure

Treated by law like a consular road allowed everybody to use the river and made it a busy traffic space. But the Tiber also supplied the city with fresh water and powered lots of mills along the river banks. The main sewer of Rome, the Cloaca Maxima, built to drain the marshes in the valleys between the hills, emptied into the Tiber river. All of this different uses changed the Tiber from a water body crossing the city to a lived space.



Unknown 1905



J. Anderson 1860



From a supplier ...

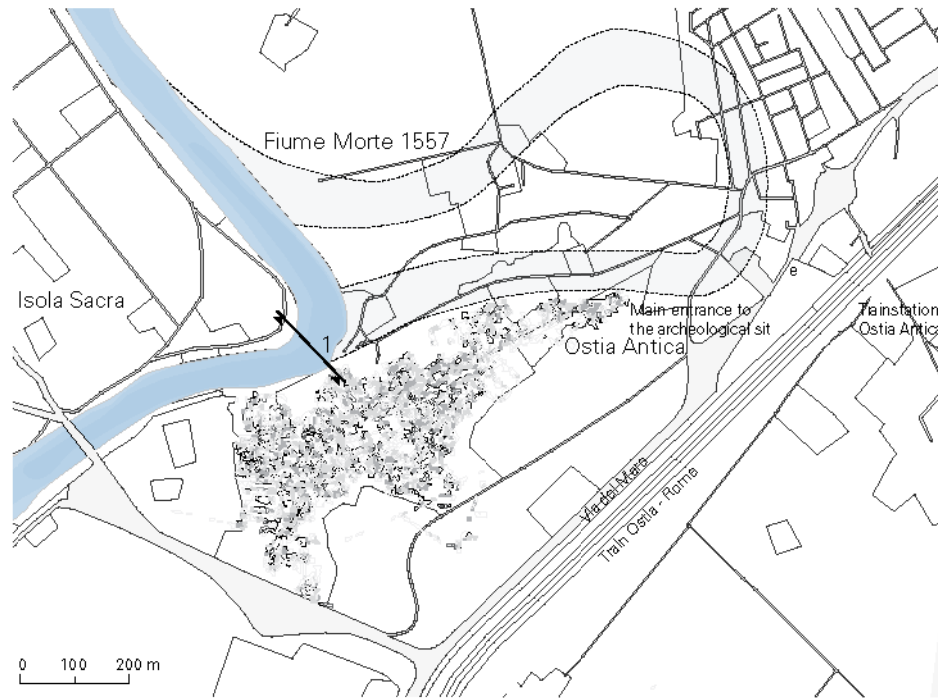
The Tiber was called the first consular road of Rome, used by "naves caudicariae," a sort of large river barge, which transported goods from the seaport to the river ports of Rome. These boats, without sails, were towed by ropes pulled by men or oxen, proceeding slowly along the bank. The system of propulsion by "haulage" or "towage" was used up until the end of 19th century.

... to a forgotten waterway

Today shipping on the river is rare and divided into three different parts. The lower part, at Ostia di Lido and the Canale Fiumicino with private yachts, anchorage and dockyards. On the part between the branch at Ostia and Ponte Marconi shipping is prohibited. In the city of Rome boats can only drive north of the Isola Tiberina, stopped by a sedimentation barrier which defends the island from erosion.



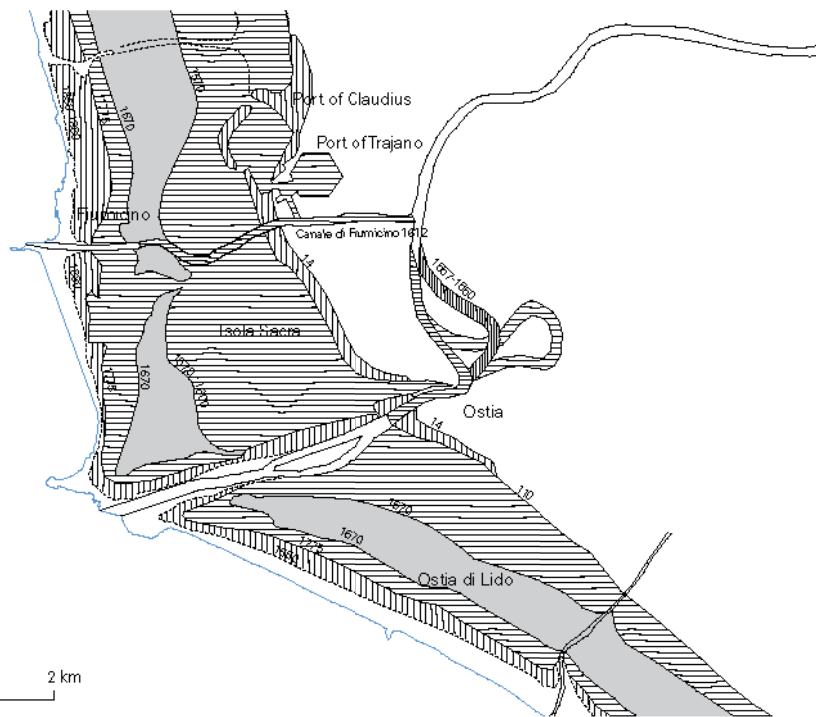
Section 1 Ostia Antica
0 10 20 m



Ostia Antica

The city of Ostia Antica, located approximately 32 km downstream from Rome, was meant to be Rome's first colony. The name Ostia derives from the Latin Ostium which means mouth. During a major flood event 1557 the river changed his course and break itself free of the city. Today archaeological site of Ostia Antica is totally isolated to the river. Without access from the riverfront and visual separated by the embankment.

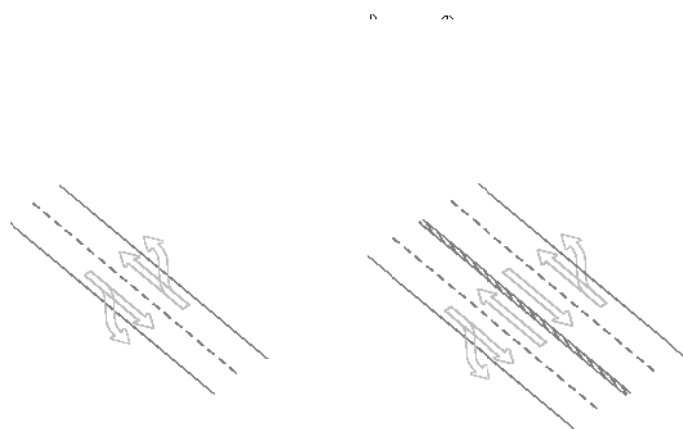
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Harbors at the river mouth: Fighting against the river

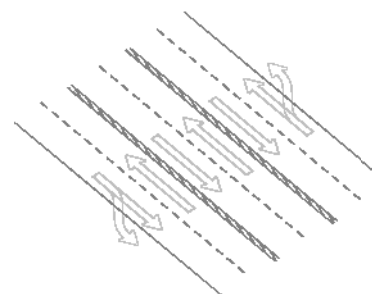
Ostia was the first port of ancient Rome. To accommodate the growing trade, Claudius constructed a second harbor, countering the effects of years of river silting. Finished 64 AC by Nero, the new port first supported but slightly displaced Ostia as main port. After heavy sedimentation Trajan expanded the harbor to the inland. As a result of ongoing shift of the coastline through fluvial accumulation all of this ports are today 3 km behind the river mouth.

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Constructed when the later Aurelian Walls were built, the road left the city through the Porta San Paolo

1927 construction of one of the first highways of Italy, Via del Mare



Built to supply the growing settlements along the way to Ostia, Viale dei Romagnoli

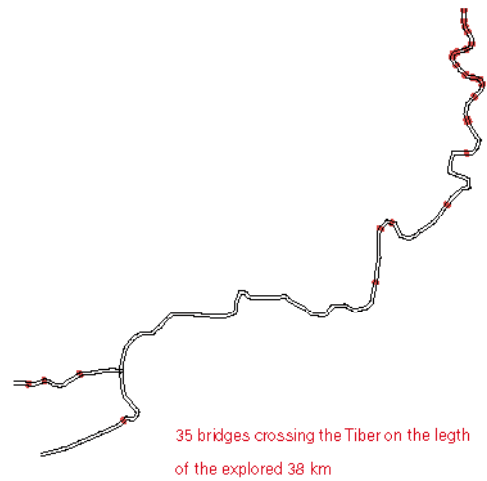
Multiplied infrastructures beside Tiber

At first paths arise out of the traces of man haulage boats upstream to the city of Rome. The first roads built next to the river connecting Rome to the sea are via Ostiense on the left and the via Portuense on the right side. These infrastructures expanded not as network rather as canal generated by different streets adjacent to each other. This intensification of infrastructures created several different borders framing the Tiber space which is separated by the river itself.



Side by side

Multiplied infrastructures creating narrow, linear, fast spaces with limited access beside the Tiber river.



Acceleration of infrastructures

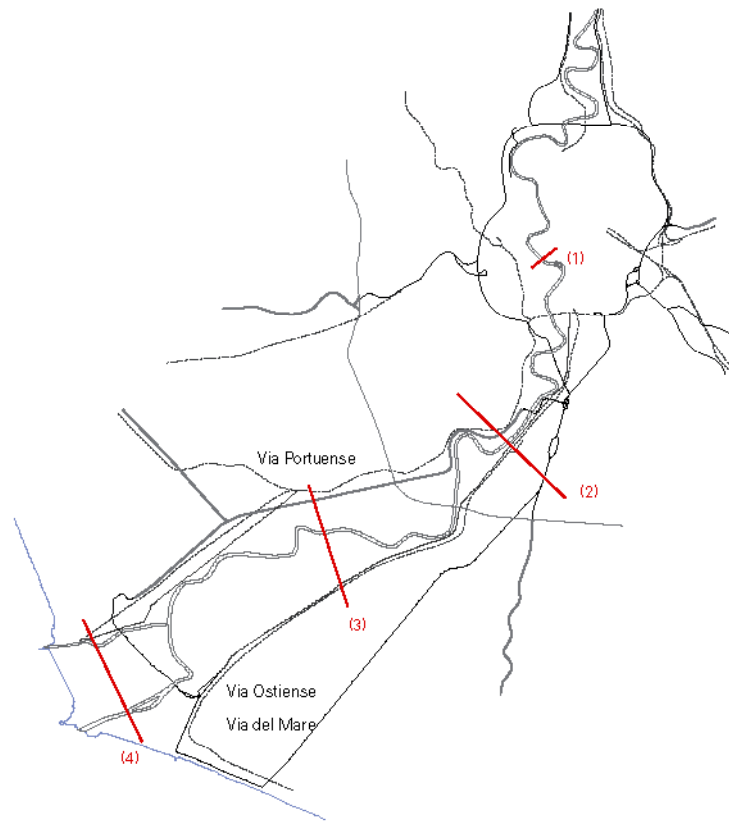
In ancient times the passage from Ostia to Rome by boat took about 3 days, today it takes 32 minutes for the same distance. This acceleration leads to a change in the perception of the river. The only intersections of this high speed space and the Tiber are the bridges.

Bridges: Hit the Tiber

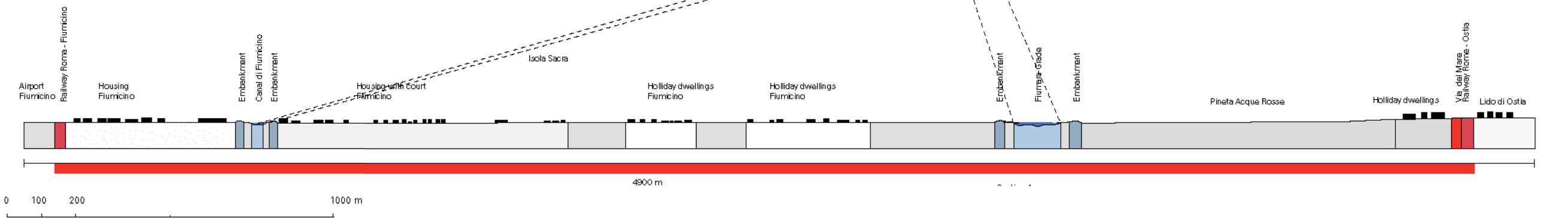
The first bridge, probably Ponte Sublicio, crossing the Tiber was built to connect the city to the territory. It was never thought as part of the physical urban expansion instead it was built as crossing of an important highway, the via Aurelia. The first "urban" bridges spanning the river at the Isola Tiberina did not serve to link one side with the other, but to bring the riverbanks into communication with the island.

Bridges: Shaping the city

In total 35 bridges crossing the Tiber from the north of Rome to Ostia, 27 in the city center, 4 at the river mouth and only 4 along the 31 kilometers between Ostia and Rome. This lack of connection can be identified in the different urban structures along the Tiber. The bridges became distinctly urban structures in the way that they shaped the neighborhoods on both sides of the river.

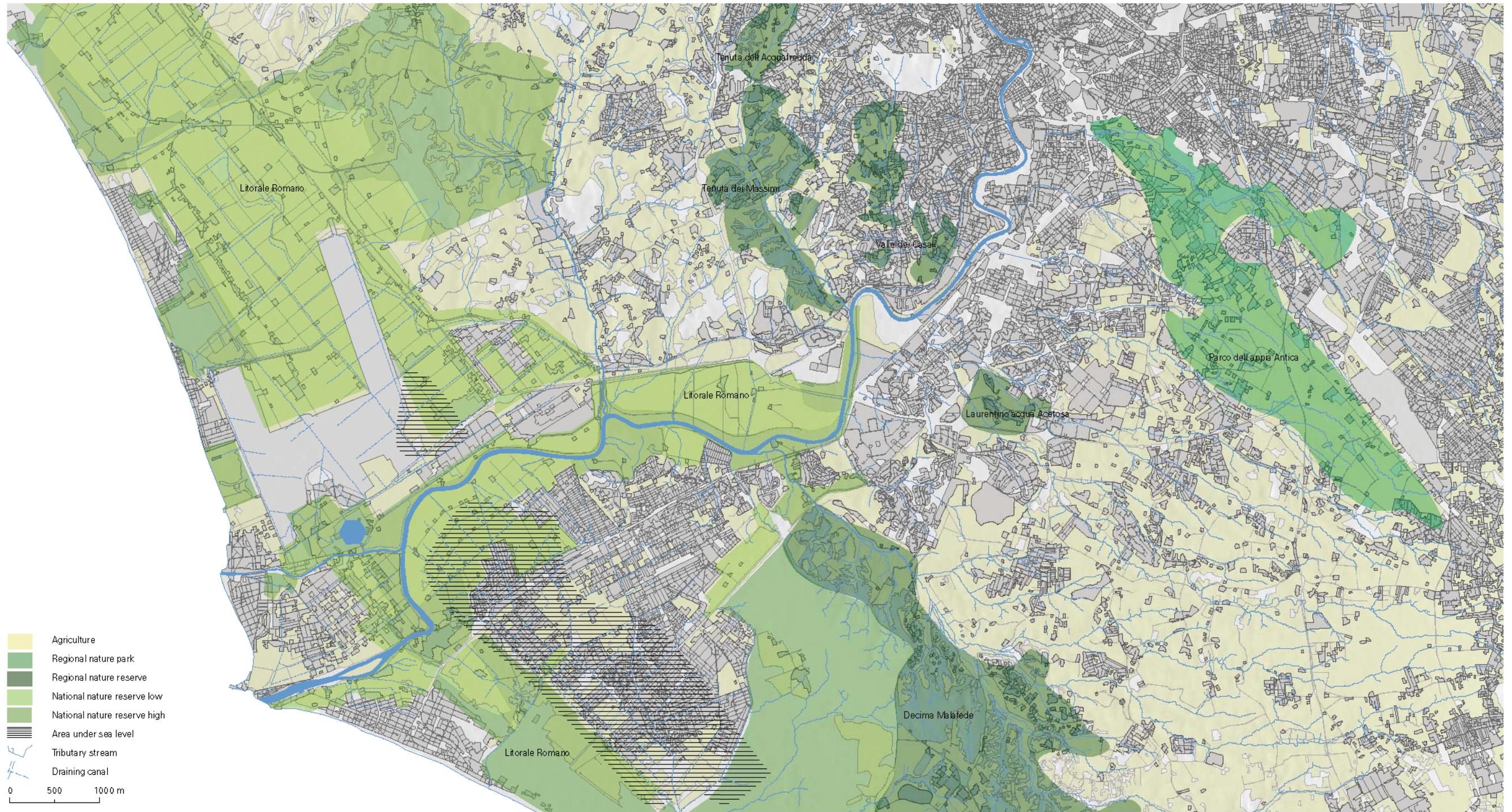


The multiplied infrastructures along the Tiber is creating a kind of "physical edge" of the Tiber space.



Bunding: The folded border space

The intensification of infrastructures created several different borders framing the Tiber space which is separated by the river itself. They also form the imagine border of qualitative differences concerning the edges ("inside and outside").



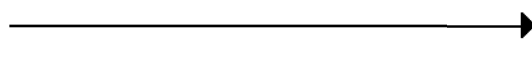
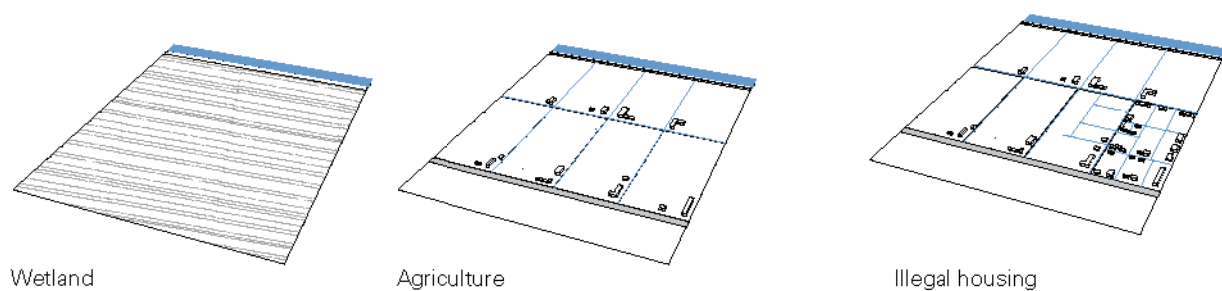
Landuse: Subversive occupation of Tiber space

The bonification which started at the beginning of the 20th century prepared the coastal area reclaimable for agricultural use. Today different legal and an illegal processes can be identified. In fact both of those mechanisms are countering to protect the area as natural reserve.

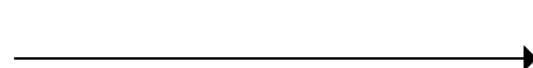


Agriculture as pioneer:

Since earliest times, the coastal areas of Rome had been unhealthy swampy marshlands. At the late 19th century a law was passed which turned the area at the coast into agricultural land and thus give origin to major social and geographical changes. With the help of laborers from entire Italy the construction of hundreds of draining and irrigation canals began. Lots of roads, bridges and embankments were built.



Draining:
Construction of canal system over the entire area.



Occupy:
Digging of small canals and self construction of homes. Aggregation and establishing. Additional administrative planning.

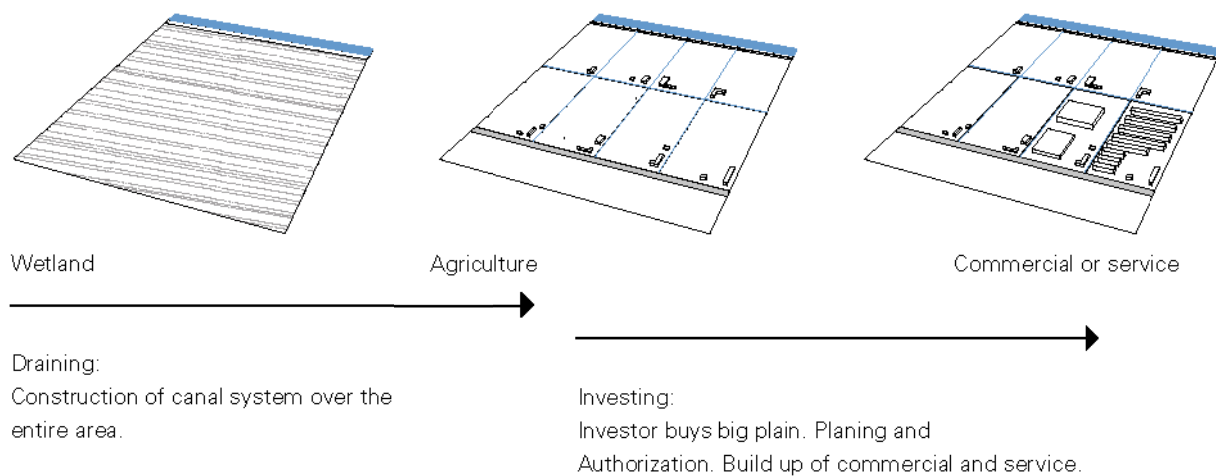
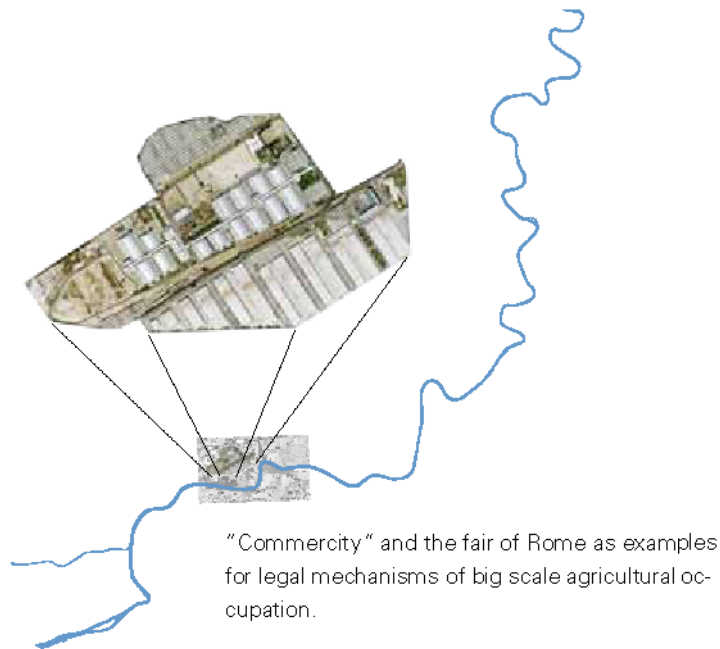
Illegal mechanism of agricultural occupation

People are digging small canals to drain the area specifically for their own house. This occupation produces an intricate network of channels and a dense settlement structure. Most of these settlements are underdeveloped. Even if they are afterwards transformed and connected to sewer and electricity they are not fully rehabilitated.



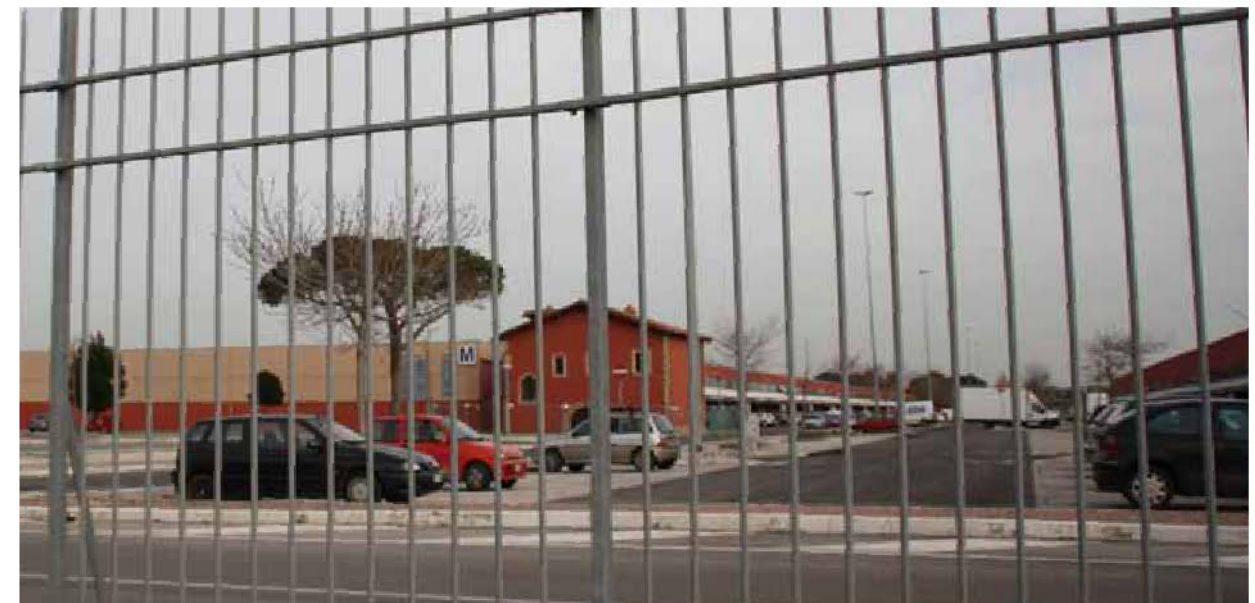
From wetland to village

Created 2006 the "Litorale Romano" is the biggest protected area on the Mediterranean. Urbanisation occupies just a little plot but infiltrates more and more of the area.



Legal mechanism of agricultural occupation

A big plot of former agricultural land is sold to investors who developed large commercials or service areas. Examples are the fair of Rome, the Leonardo shopping mall or the commercity wholesale area which are located at the highway Fiumicino - Rome.



From preserved agriculture to "Commercity"

The "Commercity" is an area created for wholesale trade. Covering an area of 110 ha, it provides space to 15 trade blocks and a parking lot of 17 ha. In the middle of the gated "city" one can still find remains of former agriculture.

A MONOFUNCTIONAL RIVER SPACE

The Tiber river is deeply inveterated in Roman history, whether as flood risk, mythos or sewer. The river once was linked to the cities life. This connection seems firstly been interrupted in 1870 with the limiting construction of the “high wall embankment” in the inner city of Rome and the displacement of the riverfront out of the daily life and perception.

The second main intervention was the construction and development of high speed infrastructures along the Tiber, consolidating over times.

These main interventions on the Tiber space leads to the today infolded limited river space, creating an inner and an outer side of the space more than real physically edges.

Although on can encounter variable uses (e.g. the bike path, the ferry and commercial services) and programs (e.g. draining and protected areas) downstream the river, it is rarely possible to find “real” overlaps in interactions or relation.

Today the urban development of adjacent urban structures is orientated and connected to the infrastructures more than to the river.

With its loose of function (infrastructural as well as remaining) on could name the Tiber as former used, today “monofunctional space”. Vitiating in structures and width, but relating on itself as natural water body, the Tiber river Space seems to be confronted with the backside of urban development.



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